

A comparison between urea reduction ratio and urea kinetic model in assessing hemodialysis adequacy in end stage renal disease

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Abstract

Introduction: In recent years the burden of chronic kidney disease has increased worldwide. End Stage Renal Disease (ESRD) needs Hemodialysis as a common renal replacement therapy to reduce its morbidity and mortality. Hemodialysis adequacy must be maintained for effective treatment and is measured either by Urea Kinetic Model (Kt/V), Urea Reduction Ratio (URR), natural log Kt/V or Daugirdas 2nd generation formula. Though Kt/V is accurate, URR is commonly used in clinical practice because of its simplicity and clear concept.

Objective: To estimate and compare URR with single pool Kt/V in assessing hemodialysis adequacy.

Materials and Methods: An experimental prospective study consisting of 100 ESRD patients of either sex between 18-70 years, who were on hemodialysis maintenance. Blood urea was estimated by GLDH- urease method and serum creatinine by Jaffe's method. Values were substituted in URR and Kt/V formula.

Results and Conclusion: There was a significant difference in serum Urea levels after dialysis treatment ($P < 0.05$). The values of URR and kinetic model of urea (Kt/V) were near to adequacy guidelines set by National Kidney Foundation: KDOQI. URR showed positive correlation with Kt/V. Since the URR and Kt/V are closely related, their predictive power in terms of patient outcome is similar. However, use of Kt/V and urea modelling allows for comparing expected with predicted dialysis dose that can be used to analyse dialysis treatment and dialyzer clearance.

Keywords: Urea reduction ratio, Kt/V, ESRD, Hemodialysis adequacy, Renal Dialysis, Urea.

Introduction

Chronic kidney disease (CKD) is an important emerging chronic disease globally.¹ Chronic kidney disease and end stage renal disease (ESRD) place an immense strain on the health-care system in the society. But the exact magnitude of the burden of chronic kidney disease or end stage kidney disease is not known.² Prevalence is estimated to be 8-16% worldwide.³ An Indian population-based study determined the crude and age-adjusted ESRD incidence rates at 151 and 232 per million population respectively.^{4,5} and annually more than 100,000 new patients are entering renal replacement programs in India.⁶

CKD encompasses the spectrum of different pathophysiological process lasting for more than 3 months, associated with progressive and irreversible deterioration of renal function due to slow destruction of renal parenchyma and a progressive decline in GFR, eventually terminating in death when sufficient numbers of nephrons have been damaged. Leading causes of CKD includes diabetes mellitus, glomerulonephritis, hypertension, nephropathy, autosomal dominant polycystic kidney disease. Diabetic glomerular disease is the major cause of CKD (31.2%) in India.⁷

Based on clinical guidelines of National Kidney Foundation-Kidney Disease Outcomes Quality

Initiative(NKF/KDOQI), ESRD represents 5th stage of CKD with GFR $< 15 \text{ mL/min/1.73 m}^2$. There is accumulation of toxins, fluids and electrolytes which are normally excreted by kidneys and disturbances in the nutritional status resulting in uremic syndrome. This affects virtually every organ system leading to death. Hence, hemodialysis as one of the renal replacement therapies can reduce the incidence of morbidity and mortality in patients with ESRD.⁷

Hemodialysis (HD) is based on law of diffusion and is targeted at removing both unwanted low and high molecular weight solutes and maintains equilibration of desired solutes. Hence, urea is a small molecule with substantial clearance. Also urea levels correlate with symptoms and well being. Efficiency of dialysis is also determined by blood & dialysate flow through the dialyzer as well as dialyzer characteristics. Even clinical indexes like good natural health, good regulation of arterial pressure, liquid balance & absence of uremic symptoms may be considered for effective HD thereby dose of dialysis is adjusted by knowing its efficacy to maintain the effective treatment.⁸

The mathematical indices like Kinetic model of urea (UKM) Kt/V, Urea reduction ratio (URR), Natural log Kt/V and Daugirdas 2nd generation formula are used to measure HD adequacy.

UKM- Kt/V is dimensionless formula introduced by Gotch F. & Sargent J. (1985) during the revision of National Cooperative Dialysis Study (NCDS)⁹ where,

A correlation between oxidative stress and hypertriglyceridemia in lichen planus - A case control study

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Abstract

Introduction and Objective: Chronic inflammation & lipid peroxidation plays a pivotal role in the etiopathogenesis of cardiovascular risks in many clinical conditions. Whereas, Lichen planus (LP), is a chronic skin inflammatory disorder which disturbs lipid metabolism & increases the lipid peroxides. However, there are limited data about the correlation between oxidative stress & hypertriglyceridemia in LP, hence the study was undertaken to 1) Estimate the levels of TG (triglycerides) & MDA (malondialdehyde) levels & 2) to correlate between the MDA & TG levels in LP patients.

Materials and Methods: A case control study was done at KIMS hospital, Hubli, which included 50 LP patients and 50 healthy individuals. Serum levels of TG (GPO-PAP method) and MDA (TBA method) was done.

Result: Patients with LP presented higher significant TG values (182.93 vs. 113 mg/dl), MDA values (4.81 vs. 3.99 nmol/ml) vs. controls. Also, our study showed positive correlation between TAG & MDA levels which is statistically significant (0.012).

Interpretation and Conclusion: Thus, the present study showed increased levels of TG & MDA, indicating that hypertriglyceridemia & lipid peroxidation may have domino effect with each other due to chronic inflammation & thereby may increase the cardiovascular complications in LP patients.

Keywords: Atherosclerosis, Cardiovascular risks, Dyslipidemias, Chronic inflammation, Lichen planus, Oxidative stress.

Introduction

Atherosclerosis, is one of the precursor to many diseases like stroke, peripheral vascular disease & myocardial infarction which increases impermanence across the worldwide. Overall, the disease is mainly due to the chronic inflammation, which is promoted by lipid accumulation & increased reactive oxygen species (ROS).¹ But many subclinical skin inflammatory diseases like atopic dermatitis, lichen planus undergo undiagnosed for cardiovascular risks where its etiopathogenesis remains baffled. Lichen planus (LP) is a cryptogenic inflammatory disorder which impinges mainly on skin, mucous membranes, nails, and hair.² Chronic inflammation, altered lipid metabolism and oxidative stress are accountable for increased frequency.³ Psoriasis, another chronic inflammatory skin disorder which is alike LP in etiopathogenesis, due to dysregulated T-cell interactions there is over expression of pro-inflammatory cytokines that leads to the hyperproliferation of keratinocytes and activation of neutrophils in the epidermis which finally results in chronic T-cell activation, resulting in persistent cycle of inflammation.^{4,5}

Not only that, this persistent inflammation causes the disturbances in lipid metabolism like low levels of High Density Lipoproteins – Cholesterol (HDL-C) or high levels of triglycerides^{3,6}. Hypercholesterolemia & hypertriglyceridemia are contributing risk factors, that can act individually or together for the development of atherosclerosis.¹

Origin of cellular degeneration in LP is believed to be subepithelial infiltration of T-lymphocytes that contributes

to cytokines production which in turn can stimulate production of ROS and cause oxidative damage to tissues.^{7,8}

Oxidative stress represents as lipid peroxidation in the cell membranes⁹ which alters the lipid rich membrane fluidity and their signalling efficiency, leading to inflammatory changes and to aberrant cell proliferation responses. MDA (Malondialdehyde), is one of the end products of polyunsaturated fatty acid peroxidation & commonly used as a biomarker for oxidative stress.¹⁰⁻¹² It has been proposed that a derangement in the elimination of ROS through sebum results in an increased blood level of circulating lipids and cholesterol, thereby increasing the risk of dyslipidemia.^{13,14}

Thus, chronic inflammation, lipid disturbances and lipid peroxidation may form a vicious cycle in the etiopathogenesis of LP, hence the present study was done to know the levels of TG & MDA & to correlate between the oxidative stress & hypertriglyceridemia in LP patients.

Materials and Methods

Study Participants: This case-control study was done at KIMS, Hubli. Ethical clearance was obtained from the Institutional Ethical Clearance Committee. Convenient sampling method was done as exact prevalence was unknown.

The study group consists of 50 diagnosed LP patients from the Dermatology Department OPD and the 50 healthy controls. Both the cases and controls are interviewed to obtain relevant data after taking informed consent.

Inclusion Criteria:

Cases: 1) > 18 years of either sex. 2) Newly diagnosed LP patients. 3) LP patients who stopped therapy.

Association of dyslipidemia in lichen planus patients at KIMS, Hubli – A case control study

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Abstract

Background and Objective: Lichen planus (LP) is an idiopathic chronic inflammatory skin disorder where it etiopathogenesis is not fully understood. Persistent inflammation causes lipid disturbances, which precipitate the increase of cardiovascular risk. However, there are limited data about the lipid levels in LP patients and hence this study was undertaken to estimate the lipid levels in LP patients. **Methods:** A case control study was conducted, including 50 LP patients and 50 age and sex matched controls. Serum levels of TC (CHOD-PAP method), TAG (GPO-PAP method), and HDL-C (CHOD-PAP method) were estimated. LDL-C was calculated by Friedewald's formula. **Results:** Patients with LP presented higher significant triglyceride values (182.93 vs. 113 mg/dl), total cholesterol values (178.69 vs. 145.56 mg/dl), LDL-C values (100.5 vs. 81.5 mg/dl), and lower HDL-C values (40.36 vs. 47.6 mg/dl) vs. controls. **Interpretation and Conclusion:** The results obtained in this study indicate the association of dyslipidemia in LP patients. Thus, dyslipidemia may play a role in its etiopathogenesis, hence, the lipid levels screening in LP patients will be useful to detect individuals at risk and start preventive treatment against the development of cardiovascular disease. **Key Words:** Cardiovascular diseases; Dyslipidemias; Inflammation; Lichen planus;

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INTRODUCTION

Atherosclerosis is one of the major contributing risk factors for cardiovascular diseases. Moreover, current predictions estimate that by the year 2020 cardiovascular diseases, notably atherosclerosis¹ will become the leading global cause of the total disease burden. Many subclinical diseases and inflammatory pathologies go undiagnosed for the risk of cardiovascular diseases where its etiopathogenesis still remains perplexing. Chronic inflammatory skin disorders such as psoriasis are

associated with increased cardiovascular comorbidity which is a well-known fact. Leaving aside a few, majority of studies conducted worldwide have clearly pointed towards a positive association between psoriasis and dyslipidemia. Recently this association has been extended to various other dermatological conditions such as androgenic alopecia, skin tags, lichen planus, and even skin cancers. Lichen planus (LP) is a chronic inflammatory skin disorder and affects everyone irrespective of age, sex and geographical location. The etiology and pathogenesis of LP are not fully understood and still remains unknown. It is thought to be a T-cell-mediated inflammatory disorder and has been associated with multiple disease processes and agents, including viral infections, autoimmune diseases, medications, vaccinations and dental restorative materials^{2,3,4}. Recently, a case-control study showed that LP was associated with dyslipidemia⁵. Persistent inflammation causes the disturbances in lipid metabolism such as decrease in High Density Lipoproteins – Cholesterol (HDL-C), increase in Very Low Density Lipoprotein-Cholesterol (VLDL-C) and hypertriglyceridemia.

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Original Research Article

Association of serum lipid levels with depression

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ABSTRACT

Introduction and Objectives: Depression is a type of mood disorder. It is considered as one among the major health problems worldwide as it is highly prevalent in general population and leads to significant loss of quality of life and social functioning in the affected individual. It has been postulated that changes in the cholesterol content of the synaptosomal membrane leads to decrease in the number of serotonin receptors due to decrease in cholesterol concentration leading to depression. Nevertheless, there are contradictory opinions about the association of serum lipid levels and depression. Thus, the present study was undertaken to study the association of serum lipid levels with depression.

Materials and Methods: A case control study was conducted including 100 age and sex matched diagnosed cases of depression and 100 age and sex matched healthy individuals as controls. In all the subjects, serum levels of triglycerides (TG) was estimated by GPO-PAP method, total cholesterol (TC) by CHOD-PAP method, LDL cholesterol (LDL-C) by direct assay and HDL cholesterol (HDL-C) by CHOD-PAP method. Results were expressed as mean \pm SD. Student's independent t-test was used for comparing the means of two groups. Relationship between parameters was assessed by Pearson's correlation coefficient by using SPSS (Statistical package for social sciences) software version 19. For all the tests, the probability value (p-value) of less than 0.05 is considered statistically significant.

Results: Serum levels of TC were significantly lower in cases of depression compared to controls and found no difference with TG, LDL-C and HDL-C levels. We also observed from the results that, there was a negative correlation between TG, TC, LDL-C and HRSD scores which was found to be highly significant statistically.

Conclusion: In conclusion, serum TC level was significantly lower in depression cases compared to controls and also has high negative correlation with HRSD score. Thus, the patients with low serum cholesterol levels should be screened for depression and further studies may establish serum cholesterol as a new biological marker for depression.

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1. Introduction

Mood is a sustained pervasive emotional response which has been known to man since antiquity. It magnifies human experiences to larger than life proportions. Normal or an average mood is the state of not feeling particularly euphoric or sad except under right circumstances. Superficially, depression is viewed as extremes of the normal fluctuation in mood. But, clinical depression is more than extremes of normal mood, it represents syndromes in which in addition

to mood, there are disturbances in thought, psychomotor state, behavior, motivation, physiology and psychosocial function.¹

The term "depression", variably defines an affected mood state, a disorder or a specific entity which is defined as depressed mood characterized by sadness, indifference, apathy or irritability and is usually associated with changes in sleep pattern, appetite, motor agitation, fatigue, impaired concentration and decision making.¹

Depression is considered as one among the major health problems world wide as it is highly prevalent in general

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Is saliva, a possible alternative to correlate serum lipids? - An exploratory study

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Abstract

Background and Objective: Serum lipid panel screening has become a routine check up to rule out cardiovascular risks in many clinical conditions & it mainly serves as diagnostic, prognostic & monitoring purposes. But the salivary lipid profile has been poorly recognized. Hence the present study was undertaken to evaluate & to correlate between salivary & serum lipid profile. **Method:** A prospective study included 50 healthy individuals. Serum & salivary TC (CHOD-PAP method), TAG (GPO-PAP method), HDL-C (CHOD-PAP method) were estimated. Salivary & serum LDL- & VLDL-C was calculated by Friedewala's formula. **Results:** There was a moderate correlation between salivary & serum TC, TAG which was statistically significant ($p < 0.05$). No correlation found between salivary & serum HDL-C, LDL-C. **Interpretation and Conclusions:** For the present study, salivary TC & TAG can be used as a non-invasive to assess lipid parameters.

Keywords: Lipids; Saliva; Serum;

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INTRODUCTION

Current guidelines by the American Heart Association recommends that all adults above 20 years should undergo for routine lipid screening in order to rule out the lipid disorders like familial hypercholesterolemia or individuals having cardiovascular risks. Most commonly used to assess the lipid panel is in the serum which makes the patient more uneasiness. Saliva is a complex biofluid which reflects the both systemic and oral homeostasis, any changes in salivary composition reflects the disease susceptibility¹ in an individual. Whole saliva contains about 10-100µg/mL lipids mainly consists of glycolipids and neutral lipids. Salivary lipids are mostly of glandular origin and also believed to diffuse directly from serum^{2, 3}. As a clinical tool, saliva sampling has more benefits compared to serum collection. 1) Sampling of saliva is

non-invasive method 2) Method is quite easy and fast 3) Allows multiple collections whenever required for patients 4) Collection of saliva is painless, reliable and suitable for population based screening 5) Collection of saliva doesn't require a skilled person, thereby reduces the costs 6) The person who collects sample is away from infectious agents, such as hepatitis/HIV, while handling saliva. 7) Lessens manipulations 8) No special equipment is required 9) Reduces anxiety and discomfort⁴⁻⁹. Hence, the present study was undertaken to evaluate and to correlate between serum and salivary lipid profile.

METHODOLOGY

Source of data: A prospective study included 50 healthy individuals who had no complaint or any major illness in recent/past. Patients with medically compromised or with other illness were excluded.

Method of collection of sample: After obtaining detailed history and written informed consent, oral examination was done. Saliva (2ml) and blood (2ml) samples were collected from each individual after overnight fasting. Blood samples were drawn from an antecubital vein under aseptic conditions. Saliva samples were collected under resting conditions following flushing of mouth with 100ml of distilled water. For a healthy individual, detailed information about the saliva collection protocol was given: the importance of the samples, to brush the teeth properly without toothpaste by using bass technique.

A Study of Seminal Hyaluronidase, Fructose, Lipid Peroxide and Zinc in Primary Male Infertility

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Summary

40 fertile control males and 90 primary infertile males were selected for the determination of seminal hyaluronidase, fructose, lipid peroxide and zinc levels. The levels of seminal hyaluronidase and zinc were significantly increased in all groups of primary infertile patients in comparison with control subjects ($P < 0.001$). The maximum alterations in above biochemical parameters were found in azoospermic patients. Negative correlations were found in the levels of a) Hyaluronidase and Fructose b) Hyaluronidase & Lipid peroxide c) Lipid peroxide and Zinc d) Zinc and Fructose in control subjects and in primary infertile patients. Positive correlations were observed in the levels of a) Hyaluronidase and Zinc b) Lipid peroxide and Fructose in control subjects and primary infertile male patients.

Introduction

Approximately 15% of couples show primary infertility as they have been unable to achieve a pregnancy after one year of unprotected intercourse. Male factor is found to be responsible for 50% of infertility (Kery Chang, et al., 1995). Hence an increasing interest has developed in the study of different biochemical parameters of male infertility.

Male infertility may be associated with one or more abnormalities such as obstruction of epididymis, local infection, immunological disorders etc. Semen analysis is the only step to investigate the male infertility which provides information about sperm count, morphology and motility. The biochemical analysis of semen can provide information about secretory function of the organs contributing to this fluid. Recent studies have been concerned with the biochemistry of semen as

semen contains many secretions of prostate, seminal vesicle and other glands.

Hyaluronidase, fructose, free radicals and zinc play an essential role in fertilization (McRorie and Willows 1974; Mann and Parson 1964; Halliwell 1994; Eliasson 1971). In view of noticing the role of above biochemical parameters in fertilization the present study was aimed to determine the levels of seminal hyaluronidase, fructose lipid peroxide and zinc in different groups of primary infertile patients and known fertile control subjects and to study correlation among these biochemical parameters in control subjects and primary infertile male patients if any.

Material and Methods

Present study included 40 fertile control male subjects and 90 primary infertile male patients. Male

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EFFECT OF ANTIOXIDANTS AND ANTIBIOTICS ON LEVELS OF SEMINAL OXIDATIVE STRESS IN LEUKOCYTOSPERMIC INFERTILE MEN

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ABSTRACT

Defective sperm function is the most common cause of infertility. A prospective study was carried out to correlate the concentration of nitrite (the stable metabolite of nitric oxide) in seminal plasma with leukocytospermia, and sperm membrane integrity. Total Fifty-seven normozoospermic subjects with and without leukocytospermia visiting the infertility clinic at KH and MRC, Karad, were included in the present study. Semen samples were checked for sperm concentration, total sperm count, sperm motility, seminal leukocyte concentration and sperm membrane integrity as Hypoosmotic Swelling Test. Similarly the concentration of nitrite in seminal plasma was measured by Griess reaction and total antioxidant power measured as ferric reducing ability of plasma. The concentration of nitrite in seminal plasma was found to be raised with significantly increased leukocyte concentration in semen. Also significantly lowered levels of total antioxidant power along with defective sperm function was observed. Our results suggest that supplementary treatment of antioxidants with antibiotic for leukocytospermic infertile male patients may improve the sperm membrane integrity.

KEY WORDS

Leukocytes and Total antioxidant power, Nitric oxide (as a nitrite), Sperm membrane integrity.

INTRODUCTION

Reproductive health is a state of complete physical, mental and social well-being in all aspects relating to the reproductive system and to its functions and processes (1). Defective sperm function is the most common cause of infertility because many etiological agents like Klinefelter syndrome, varicoceles, hypogonadotropic state and many diseased conditions like mumps, tuberculosis, syphilis, pancreatitis etc. are responsible for male infertility and hampers the spermatogenesis and sperm motility.

Mammalian spermatozoa membranes are rich in high unsaturated fatty acids and are sensitive to oxygen induced damage mediated by lipid peroxidation. The excessive generation of ROS (Reactive Oxygen Species) by abnormal spermatozoa and by contaminating leukocytes has been identified as one of the few etiologies for male infertility (2).

A controversy has evolved as to whether the source of ROS in semen of subfertile men originates in the spermatozoa themselves, in the germ cells or in infiltrating leukocytes (3). However leukocytospermia is associated with poor semen quality and possible subsequent infertility. Further it is also known that fertile men may have highly variable numbers of WBC (4) suggesting that a factor besides leukocytospermia may be responsible to affect seminal quality.

The nitrogen derived free radicals nitric oxide (NO) and peroxynitrite anion (ONOO-) also play significant role in the reproduction and fertilization. Nitric oxide may play a part in tissue damage for it may be cytostatic or cytotoxic not only for invading microorganism but also for the cells that produce it and for neighbouring cells (5).

In a normal situation the seminal plasma contains antioxidant mechanisms which are likely to quench these ROS and protect against the damage to spermatozoa. However, during genitourinary infection/inflammation these antioxidant mechanisms may downplay and create a situation called oxidative stress (6).

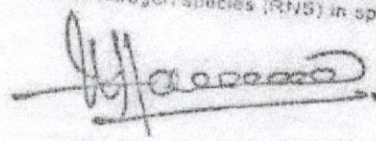
The present study is planned to evaluate the role of reactive nitrogen species (RNS) in spermicidal effect

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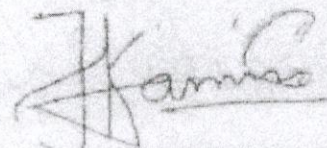
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Antioxidant treatment a new therapeutic approach to reversible male infertility

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Key Words: Antioxidants, Male infertility, Oxidative stress, Sperm function ability

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Abstract

The imbalance between reactive oxygen species (ROS) production and total antioxidant capacity in seminal fluid indicates oxidative stress and is correlated with male infertility. One of the rational strategies to counteract the oxidative stress is to increase the scavenging capacity of seminal plasma. In such cases a combination of antioxidants may be more useful treatment of male infertility. We therefore undertook this study the usefulness of antioxidant supplementation on seminal oxidative stress and its relation with sperm function test. In present study total Sixty-one oligozoospermia patients and forty-four fertility proved healthy donors with normal sperm analysis were included in the study. Seminal lipid peroxide, nitric oxide and total antioxidant power and various parameters were compared including sperm function test among the fertile control and before & after treatment of oligozoospermic patients. Of the 61 untreated oligozoospermia patients the mean lipid peroxide and nitric oxide levels were found to be increased along with decreased total antioxidant power and sperm function ability as compared to fertile control subjects. However significant reduction in lipid peroxide and nitric oxide and improvement in seminal total antioxidant power, sperm function ability were observed after supplementary treatment of combined antioxidant.

Introduction

Infertility is defined as the failure of conception at least 12 months of unprotected intercourse [1]. Infertility is a worldwide problem and approximately 8-10% of couples within reproductive age group are infertile [2]. It is estimated that globally 60-80 million couples suffer from infertility every year, of which probably between 15-20 million are in India alone [3].

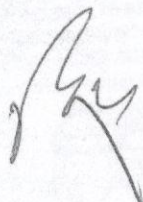
In the era of evidence-based medicine specific management of infertility should be based on identifying reversible causes of infertility and treating them with suitable medications. However this may constitute a challenge. Since inspite of extensive research no identifiable cause can be found in 25% of infertile males [4].

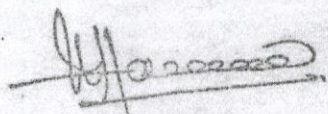
Recently, oxidative stress has become the focus of interest as a potential cause of male infertility [5,6]. Normally,

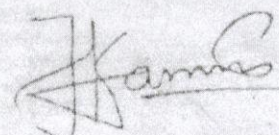
equilibrium exists between reactive oxygen species (ROS) production and antioxidant scavenging activities in the male reproductive tract.

Under physiological conditions, spermatozoa produces small amount of ROS, which are needed for capacitation acrosome reaction and fertilization [7]. However excessive amount of ROS produced by leukocytes and immature spermatozoa can cause damage to the normal spermatozoa by inducing lipid peroxidation and DNA damage [8,9,10].

High concentration of ROS was detected in the semen of 30-80% infertile men [11]. In view of this rational strategies with the goal of reducing concentration of oxidative stress may be effective in the treatment of male infertility. Initially Clinician can identify and treat the cause for increased ROS production like reproductive tract infection, smoking, varicocele etc. [12]. Following this, augmenta-




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Impact of examination stress on blood glucose level and physiological parameters in first MBBS students

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Abstract

Background & Objectives: Presently medical students in India have undergone stress due to pattern of syllabus and examinations. Therefore, we attempted to determine whether examinations faced by medical students are stressful enough to produce the changes in physiological parameters and blood glucose levels. **Methods:** Total 58 first MBBS Students (36 Boys & 22 Girls) appearing for preliminary examinations were included in this study. Students were screened twice; one month before preliminary examination and on the day of examination for Stress score, which was measured by Zung's self-rating depression scale along with Systolic Blood Pressure (SBP), Diastolic Blood Pressure (DBP), Pulse rate, Height, Weight & Body mass index (BMI). Fasting & Postprandial Blood glucose levels were also estimated. **Results:** Non-significant changes in stress score, DBP, weight, BMI, Fasting & Postprandial blood glucose levels, While significant ($P < 0.001$) increase in the SBP along with significant ($P < 0.01$) decrease in pulse rate were observed on the day of examination, as compared to one month before examination. Significant increase in glucose tolerance was observed in girls on the day of examination. **Interpretation & Conclusion:** Preliminary examinations of the first MBBS medical students are stressful enough to produce physiological changes. If not appropriately controlled, may affect the health of the students.

Key words: Blood glucose level, Examination stress, MBBS students.

Introduction

It is usually observed that medical students undergo tremendous stress during various stages of the MBBS course. Even there are few reported cases of suicide among them due to examination stress. The present curriculum of the first MBBS is vast having Anatomy, Physiology and Biochemistry subjects. A large syllabus is fitted in a short period of one year. Busy schedule of lectures, practicals, tutorials, demonstrations and university pattern of internal assessment examinations imports stress on their studies. Emotional factors were found to be significantly more in first MBBS students as compared to second and third MBBS students (1). This may be due to entry into a reputed professional college which makes students feel insecure in the initial period (2). However, rise in depression scores and their persistence over time

suggest that emotional distress during medical education is chronic and persistent than episodic. Also, the women had more significant increase in depression scores than men (3). In previous studies, emphasis has not been given on examination oriented stress and physiological effects in MBBS students. Hence, the present study was designed for to assess the effect of examination stress on physiology parameters and blood glucose level in first MBBS students and to examine whether gender difference exists in it.

Materials and Methods

The present study was carried out in the Department of Biochemistry, in Krishna Institute of Medical Sciences (KIMS), Karad, India. A total of 58 Students (36 boys & 22 girls) volunteers from first MBBS (2006-2007) batch appearing for preliminary examination were included.

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EVALUATION OF REFERENCE INTERVALS OF SERUM LIPID PROFILE FROM HEALTHY POPULATION IN WESTERN MAHARASHTRA

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ABSTRACT

Fasting samples of 514 subjects from healthy population were analyzed for total cholesterol, triglyceride and three major fractions of lipoproteins i.e. high-density lipoprotein cholesterol, low lipoprotein cholesterol and very low-density lipoprotein cholesterol. The values obtained were (in mg/dl) 165.7 ± 30.2 , 98.36 ± 31.2 , 44.89 ± 10.69 , 101.66 ± 23.8 and 18.11 ± 7.35 respectively. When these subjects were grouped according to the age and sex, no appropriate differences were observed between most of the groups. Triglycerides were found to be low and HDL cholesterol was high in female when compared with male of similar age. Beyond age 40 years cholesterol level and low density lipoprotein cholesterol was found to be gradually increased in case of women. Minor difference was observed with dietary pattern. Present study suggests that clinical evaluation of patient should be made on the basis of these reference values for Western Maharashtra population.

KEY WORDS

Total cholesterol, Triglyceride, HDL cholesterol, Lipoprotein cholesterol Reference Intervals.

INTRODUCTION

The concept of reference intervals was introduced by international federation of clinical chemistry (IFCC) to avoid the problems with normal values and values obtained from an individual under clinical investigation (1). An important part of medical decision in diagnosis is dependent on comparison of patient related observations with reference values. Since the serum lipid levels even in healthy normal population are affected by a number of factors such as age, sex, racial differences, dietary factors, socio-economic status, geographic conditions which influence these values.

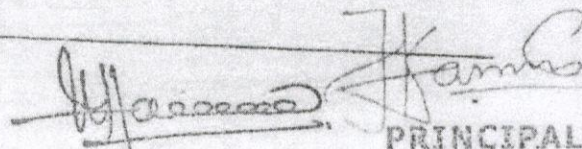
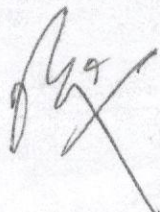
It is therefore essential to establish reference range of the values of serum lipids and lipoproteins for a given population in India. Few studies have been carried out in some population

(2,3). The diversity in the findings though attributed to socio-economic status, nature of diet/dietary fat and genetic predisposition, the different methodology adopted also could not be ignored. In the light of guidelines suggested by National Cholesterol Education Programme (NCEP) (4) of USA it was also necessary to establish normal reference intervals for plasma lipids in various parts of India. In India laboratories across the country follow reference values which have been establish in western population even though diet, life style, and genetic pool is different. The serum lipid evaluation in Western Maharashtra population was carried out with this purpose, because Krishna Hospital is referral Centre of Karad Taluka population. Also to be best of our knowledge there is no documented data available on Maharashtrais biochemical reference interval therefore we took up this research project

The main objectives of this study are evaluating mean \pm SD for lipid profile from Healthy population in western Maharashtra, find out any difference with respect to age and gender, calculate reference interval for given population and compare the reference interval values with other geographically different regions.

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Impact of examination stress on blood glucose level and physiological parameters in first MBBS students

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ANTIOXIDANT ADJUVANT THERAPY: A NOVEL APPROACH TO TREAT PSORIASIS

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⁵Subscribed are: 07/12/2009

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Abstract

Background & Objectives: Psoriasis is a dermatological disorder affecting 0.1-5% of the world's population. Oxidative stress is considered as one of the factors for development and exacerbation of psoriasis. The present study was aimed to analyze the effect of Routine Psoriasis Treatment plus Antioxidant Adjuvant Therapy (RPT + AAT) and only Routine Psoriasis Treatment (RPT) on oxidative stress and severity of psoriasis.

Methods: The patients selected for study were from age group of 20-60 years. The patients severity was determined by using Psoriasis Area & Severity Index (PASI) score and patients were grouped as mild, moderate and severe psoriasis, 60 cases from each of mild, moderate and severe psoriasis (total 180) and 60 controls were studied. The serum sample was evaluated for Malondialdehyde (MDA) and Nitric Oxide (NO) as oxidants, Superoxide Dismutase (SOD) activity as antioxidant and Total Antioxidant Status (TAS) at 1st day. Out of 60 cases from each mild, moderate and severe psoriasis, 30 cases were treated with only Routine Psoriasis Treatment (RPT) and 30 cases were treated with Routine Psoriasis Treatment plus Antioxidant Adjuvant Therapy (RPT + AAT). Serum MDA, NO, SOD, TAS and PASI were determined at 20th day of the respective treatments.

Results: In moderate and severe psoriasis, the oxidative stress and PASI at 20th day of RPT + AAT were decreased significantly ($P < 0.001$) than at 20th day of only RPT. The mild psoriasis showed non-significant ($P > 0.05$) decrease in oxidative stress and PASI at 20th day of RPT + AAT than at 20th day of only RPT.

Conclusion: The Routine Psoriasis Treatment plus Antioxidant Adjuvant Therapy (RPT + AAT) improves clinical condition of psoriasis earlier, and may be used to treat psoriasis instead of only Routine Psoriasis Treatment (RPT).

Key words: Antioxidant adjuvant therapy, Oxidative stress, Psoriasis, PASI.

Introduction

Psoriasis is a dermatological disorder affecting 0.1-5% of the worldwide population. It generally develops at second decade of the life but no age is exempted. Psoriasis is characterized by development of

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psoriasis patients that healthy controls. Earlier results of oxidative stress in psoriasis are conflicting and also there are two reports regarding anti-oxidant therapy and its effect on oxidative stress and severity of psoriasis.

Therefore, this study was aimed to evaluate the effect of Routine Psoriasis Treatment plus Antioxidant Adjuvant Therapy (RPT + AAT) on serum oxidant and antioxidant status and clinical improvement of psoriasis as compared to only Routine Psoriasis Treatment (RPT).

Materials and Methods

This study was conducted in Department of Biochemistry, RIMS, Raichur, Karnataka (India) & Dr. V. M. G.M.C. Solapur, Maharashtra (India) (Maharashtra). The ethical committee has approved this research work. The psoriasis patients attending Dermatology OPD of RIMS, Raichur were included in this research work with their consent. The psoriasis was diagnosed by using clinical features of skin like erythema, inflammation, thickening, scaling and Auspitz sign. The histopathological study was carried out whenever required to confirm the psoriasis. The subsequent patients were from age group of 20-60 years.

The severity of the psoriasis was determined by using PASI score¹⁰ and patients were grouped as mild, moderate and severe psoriasis. The study was conducted on 60 psoriasis patients from each mild, moderate and severe psoriasis (total 180) and 60 age and sex matched normal healthy controls. The patients having past or concurrent disease like diabetes mellitus, coronary heart disease, infectious diseases, habits like smoking, alcoholism are that may affect the oxidative stress were excluded from the study. The psoriasis patients without history of any drug therapy for preceding one month were included in the research work.

On the 1st day, with all aseptic precautions, 5 ml of blood sample was collected in a plain bulb and allowed for clot retraction. The serum was separated and analyzed for Malondialdehyde (MDA)¹¹, Nitric Oxide (NO)¹² concentration as oxidants, Superoxide Dismutase (SOD) activity¹³ as antioxidant and Total Antioxidant Status (TAS)¹⁴ on the same day. Out of 60 psoriasis patients in each mild, moderate and severe psoriasis, 30 patients were treated with Routine

Psoriasis Treatment plus Antioxidant Adjuvant Therapy (RPT + AAT) and 30 patients were treated with Routine Psoriasis Treatment (RPT) only. The Routine Psoriasis Treatment (RPT) comprised daily once topical application of emollient cream (Carboxylated-2.5% w/w, sodium lactate-2.5% w/w, Olive oil-3.0% w/w, Vitamin E acetate-1.0% w/w, performed cream base-1.5) and betamethasone cream (betamethasone-0.05% w/w). The Antioxidant adjuvant treatment (AAT) comprises antioxidant tablet everyday (Table 1). Antioxidant - Vitamin C-100 mg, Nicotinamide-50 mg, Vitamin B1-10 mg, Vitamin B2-10 mg, Vitamin B6-3 mg, Calcium Pantothenate-12.5 mg, Folic Acid-1 mg, Vitamin B12-5.0 micro g, Vitamin A-500 IU, Vitamin D3-500 IU, Vitamin E-25 IU, Zinc Oxide-15 mg, Cupric Oxide-7.5 mg, Sodium Selenate-60 micro g, Manganese chloride-1.4 mg, Chromium Chloride-60 micro g. The respective treatment was given for 20 days & at the 20th day again 5 ml blood sample was collected. After clot retraction serum was separated and analyzed for MDA, NO, SOD & TAS to assess the oxidative stress on same day at the earliest. The clinical improvement of psoriasis was assessed by using PASI score. The results were collected and statistical analysis was done by using Student T test with Microsoft Excel.

Results

The baseline values of serum MDA & NO were found to be significantly higher ($P < 0.001$) in all psoriasis patients than controls. Further these values were found to be increased significantly ($P < 0.001$) from mild to moderate & from moderate to severe psoriasis patients.

At 20th day of Routine Psoriasis Treatment (RPT), PASI & serum MDA, NO values were observed to be decreased significantly ($P < 0.001$) than baseline values of respective psoriasis patients (Table No. 1). In Moderate & Severe psoriasis at 20th day of Routine Psoriasis Treatment plus Antioxidant Adjuvant Therapy (RPT + AAT), serum MDA, NO values & PASI were found to be decreased significantly ($P < 0.001$) than at 20th day of respective psoriasis patients treated with Routine Psoriasis Treatment (RPT) only. Mild Psoriasis had shown non-significant ($P > 0.50$) decrease in serum MDA, NO & PASI at 20th



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**Effect of obesity on the incidence of type 2 diabetes mellitus varies with age
among Indian women**

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ABSTRACT

Diabetes is a condition in which a person has a high blood sugar (glucose) level as a result of the body either not producing enough insulin, or because body cells do not properly respond to the insulin that is produced. Obesity is a medical condition in which excess body fat has accumulated to the extent that it may have an adverse effect on health, leading to reduced life expectancy and/or increased health problems. The present study sought to investigate whether the effect of obesity on the incidence of type 2 diabetes varies with age among Indian women's. The study is an independent cohort study at different parts of Karnataka for one year; the combined effect of body mass index (BMI) and age on the incidence of type 2 Diabetes was evaluated by regression analysis. A total of 2564 subjects were enrolled in the cohorts and the follow up rate was 75%. In our study ratio for incidence of type 2 diabetes was significantly higher in obese subjects ($25.0 \text{ kg/m}^2 \leq \text{BMI}$) in normal weight subjects ($18.5 \text{ kg/m}^2 \leq \text{BMI}$) across all age groups. With the highest hazard ratio observed in the youngest group aged 40-59 year. Analysis for the interaction between age groups and obese subjects versus normal weight subjects revealed significant weakening of the effect of obesity in women in both subjects aged 60-69 and 70-79 years compared to younger subjects aged 40-59 years. Based on data from the study group; the effect of obesity on the incidence of type 2 diabetes was found to decline with age in Indian women but not in men.

Key words: Obesity, Type 2 Diabetes mellitus, Body mass index, Insulin

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Body mass, level of glucose and serum myeloperoxidase in offsprings of diabetic and non-diabetic parents.

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ABSTRACT

The offspring of Diabetic mellitus have a higher risk incidence of impaired glucose tolerance and elevated body mass index (BMI) at the age of 20 years compared with the offspring of non-diabetic healthy parents. Myeloperoxidase (MPO) heme enzyme found in the azurophilic cytoplasmic granules of polymorphonuclear leucocytes or neutrophils and in the lysosomes of the monocytes. In Type II Diabetes mellitus the Myeloperoxidase level is found to be higher. The aim was to investigate the relationship between body mass index, glucose and serum MPO, in the offspring of diabetic and non-diabetic parents. The study was approved by the ethical committee of the A. B. Shetty Dental College. Informed consent was obtained from the offspring. 97 offspring (age 18-26) of diabetic parents were investigated in the study and compared with the age and sex matched offspring of non-diabetic parents. There was correlation between BMI, FBS and serum MPO level in offspring of both diabetic and non-diabetic parents. In our study 26% of offspring of diabetic were found to be overweight and only 6% of the offspring of normal parents were overweight. In the offspring of Diabetic parents FBS level (105 ± 23.75) mg/dl, Serum MPO level (69.99 ± 31.76) pM/L. In the offspring of healthy parents FBS level (89 ± 15.54) mg/dl, Serum MPO level (63.00 ± 23.64) pM/L. The higher BMI, FBS and Serum MPO level in the offspring of diabetic when compared to the offspring of non-diabetic may be the marker for the risk of developing diabetic.

Key words: Body mass, Fasting blood sugar, Diabetes, Myeloperoxidase.

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Role Of Oxidative Stress In Obesity With An Insight Into Type II Diabetes Mellitus

Suman S Dambal, Indumati V And Sucheta Karmali

ABSTRACT

In the present study, the antioxidant status of obese and overweight individuals was analyzed with an insight into the role of diabetes mellitus towards increasing oxidative stress in the subjects. The assay of enzyme superoxide dismutase (SOD) in erythrocytes and that of antioxidant vitamin C in serum was carried out. The assay of vitamin C alone cannot completely focus on the antioxidant status of the system; the Total antioxidant capacity (TAC) of the serum was also assayed to give a summation of the antioxidants in the system.

The study was carried out on five groups of subjects in the age group of 40-60 years. Fifty non-diabetic and non-obese subjects formed the Group A, which were designated as the Controls. The study group was categorized into 4 groups, of

which, 50 overweight patients were taken as Group B and Group C consisted of 50 overweight subjects who were diagnosed with diabetes mellitus. Fifty obese individuals were considered as Group D and 50 obese subjects with diabetes mellitus were taken to be Group E.

The levels of the enzyme, superoxide dismutase were significantly higher ($p < 0.0001$) and the Total Antioxidant Capacity and vitamin C levels were significantly lower [$(p < 0.0001)$ and $(p < 0.0054)$] respectively in the study groups, as compared to those in normal individuals, as the disease conditions like obesity and diabetes mellitus in the study groups contributed to increasing the load of the reactive oxygen species in the system, thus utilizing and depleting the dietary antioxidants.

Key Words: Body Mass Index, Diabetes Mellitus, Obesity, SOD, Total Antioxidant Capacity, Vitamin C

INTRODUCTION

Obesity may be referred to as a disease condition, wherein excess body fat accumulates to such an extent, that it affects the health adversely [1]. Obesity occurs primarily due to the lack of physical exercise and to a lesser extent, due to a decrease in the basal metabolic rate [2]. BMI (Body mass index) is used as an index to measure body fatness and thus, the obesity status [3]. Obesity has been implicated in the pathogenesis of several diseases like diabetes mellitus, myocardial infarction, etc [4].

Diabetes mellitus is a condition which results from insulin resistance, which is characterised by elevated glucose levels in the blood. The conditions of obesity and diabetes mellitus contribute significantly towards the production of excess free radicals [5].

Free radicals are reactive oxygen species having an unpaired electron, which are generated under physiological conditions during aerobic metabolism. These free radicals have the potential to trigger chain reactions when they happen to react with proteins, lipids and other biological molecules, which are fatal to the cell [6]. Under normal conditions, the free radicals which are produced, are scavenged by a repertoire of enzymatic antioxidants like SOD, catalase, glutathione peroxidase, etc. and also by non-enzymatic antioxidants like ascorbic acid (Vitamin C), α -Tocopherol, ceruloplasmin, glutathione, etc., thus preventing oxidative stress, which is a state which ensues due to the excess accumulation of free radicals in the system [7].

Super Oxide Dismutase (SOD) is an enzymatic antioxidant that selectively acts on the superoxide free radicals and dismutates them into lesser toxic O_2 and H_2O_2 . Further, there are non-enzymatic antioxidants like vitamin C, vitamin E, etc, which act as worthy reducing agents and oxidise the free radicals and reduce cellular toxicity [8].

In the present study, the antioxidant status of obese and overweight individuals were analysed with an insight into the role of diabetes mellitus towards increasing oxidative stress in the subjects. The assay of enzyme superoxide dismutase in erythrocytes and that of antioxidant vitamin C in serum was carried out. The assay of vitamin C alone cannot completely focus on the antioxidant status of the system; the Total Antioxidant Capacity of serum was also assayed to give a summation of the antioxidants in the system.

METHODS

The obesity status was categorized by analysing the BMI. The study was carried out on five groups of subjects in the age group of 40-60 years. Fifty non-diabetic and non-obese subjects (BMI 18.5-24.9 kg/m²) formed the Group A, which were designated as the Controls. The study group was categorised into 4 groups, of which, 50 overweight patients (BMI 25.0-29.9 kg/m²) were taken as Group B and Group C consisted of 50 overweight subjects who were diagnosed with diabetes mellitus. Fifty obese individuals (BMI 30 kg/m² and above) were considered as Group D and 50 obese subjects with diabetes mellitus were taken to be Group E.

The study was approved by the Ethical and the Research Committees of the Institute. After obtaining informed consent from the subjects, 5 mL of venous blood was drawn, of which 1 mL was transferred into a fluoride bottle for the estimation of SOD, Haemoglobin and Random Blood sugar (RBS). Haemoglobin estimation was carried by the Cyanmethaemoglobin method. The whole blood was then centrifuged and plasma was used for the assay of RBS by the GOD-POD method. The suspended erythrocytes were washed thrice with normal saline and were lysed with cold distilled water to attain a dilution of 1:20, which was used for SOD estimation. The remaining 4 mL was transferred into a plain bottle and was centrifuged and the

Serum Enzymes, Initial and follow- up Lipid profile in Acute Myocardial Infarction

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Abstract

Background & Objectives: Despite impressive studies in the diagnosis and management of Acute Myocardial Infarction (AMI) over the last three decades it continues to be a major public health problem in the world. There is paucity of literature on the enzyme levels in Stable Angina Patients. Hence the present study was taken up to study the diagnostic values of serum enzymes in AMI and as well as in Stable Angina. We also studied the Lipid Profile four weeks after AMI with initial levels measured within 24 hours of onset of symptoms.

Methods: 30 cases of AMI, 30 cases of Stable Angina and 30 age and sex matched controls were studied. The sample was analysed for Serum Total CK, CK-MB, AST, LDH, Total cholesterol, HDL-C, LDLC, VLDL, Non-HDL and triglycerides.

Results: There was a significant increase in Total CK, CK-MB, AST and LDH levels in AMI patients when compared to both normal controls and Stable Angina patients ($P < 0.0001$). There was no significant change in enzyme levels in Stable Angina patients when compared to Controls. There was a significant increase in the levels of Total Cholesterol, Triglycerides, LDLC, VLDL, Non-HDL and significant decrease in HDL-C in AMI patients when compared to healthy controls ($P < 0.0001$). There was no significant difference between the initial and follow-up Lipid profile levels in AMI patients.

Interpretation & Conclusion: Our study showed no significant changes in the enzyme levels in Stable Angina Patients when compared to healthy controls. This is important if extrapolated to the clinical situation as this parameter (Enzymes) can help in distinguishing between a case of stable Angina and AMI. Although there may be several phasic changes in serum Lipids during the course of AMI, Lipid measurements made within 24 hrs of AMI are still useful guide in order to identify patients requiring follow-up.

Key words: Acute Myocardial Infarction, CK-MB, Lipid profile.



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Research article

Effect of Adjuvant Oral Zinc Sulphate Therapy in Psoriasis Patients

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Article information

ABSTRACT

Keywords:

Psoriasis,
Zinc sulphate adjuvant
therapy

Background: Psoriasis is a common, distressing dermatological disease with no unique curative systemic or topical treatment. Zinc has been described in many literatures as an effective treatment for many dermatological diseases. Hence oral zinc sulphate is used in this study as an adjuvant therapy in the treatment of psoriasis.

Objectives: To evaluate the effectiveness of oral zinc sulphate as an adjuvant therapy to topical treatment in comparison with topical treatment alone. Also to estimate the serum zinc levels before and after the treatment.

Material and methods: A total of 100 patients with psoriasis vulgaris, exfoliative and palmoplantar psoriasis, who were consulting the Department of Dermatology were enrolled in this study. There were 60 males (60%) and 40 females (40%) with a male: female ratio of 3:2. Patients were divided into two groups: Patients in group I were treated with only topical treatment while group II patients received oral zinc sulphate along with topical treatment. All patients were followed up after 2 months. Serum zinc levels were estimated in both the groups before and after the treatment.

Results: The mean serum zinc value in group I before therapy was 81.7 ± 15.7 $\mu\text{g/dl}$ & after therapy it was 89.0 ± 15.70 $\mu\text{g/dl}$ & in group II before therapy it was 81.8 ± 15.60 $\mu\text{g/dl}$ & after therapy was 84.5 ± 15.4 $\mu\text{g/dl}$. The rise in serum zinc levels after an adjuvant therapy with zinc sulphate was statistically significant but there was no statistical significance in the other group treated with topical therapy alone.

Conclusion: The combination of zinc sulphate with topical treatment proved to be more effective than topical treatment alone.

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1. INTRODUCTION

Zinc is one of the important trace elements related to health and disease. It is present in all cells and is indispensable for the normal functions of cells, tissues and organs of the body.^[1] It is an integral part of a number of metalloenzymes necessary for normal protein, carbohydrate, lipid and nucleic acid metabolism. More than 300 enzymes in the body need Zinc in order to function properly.^[2] Zinc has been used Successfully in the treatment of many skin diseases such as Cutaneous

leishmaniasis^[3,4] where it was found to be safe, economical and effective therapy.

Decreased serum zinc levels have been reported in number of cutaneous disorders by some investigators^[5,6,7] while others have refuted these findings.^[7,8]

Our aim was to evaluate the effectiveness of oral zinc sulphate as an adjuvant therapy to topical treatment in comparison with topical treatment alone.

Drug prescription pattern in paediatric out patient clinic in a tertiary hospital

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Abstract

A prescription by a doctor may be taken as a reflection of physician's attitude to the disease and the role of drug in its treatment. Feedback from the study would help both the prescriber and institutional authorities to review their prescribing practices and modify if necessary to facilitate better health care delivery. To evaluate the prescription patterns and to generate data on rational/irrational prescribing in patients suffering from upper respiratory tract infections attending paediatric OPD at a tertiary hospital. A prospective cross sectional study was conducted and the prescription data of patients with upper respiratory tract infection were collected for a period of three months. A total of 667 drugs were prescribed to 300 patients suffering from upper respiratory tract infection. Drug classes with largest representation were the antibiotics (37%). Penicillins represented the largest antibiotic drug class (76%). The most commonly used group of drugs were antibiotics out of which penicillins were largely prescribed. From the data it is understood that the administration of antibiotics was inappropriate as the duration of treatment was insufficient (3 days). Over prescription of antibiotic for insufficient duration may increase the risk of resistance.

Key words: URTI, Prescription patterns, Antibiotics resistance

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Introduction

A prescription by a doctor may be taken as a reflection of physician's attitude to the disease and the role of drug in its treatment. It also provides an insight into the nature of health care delivery system. Prescription writing is a science and an art, as it conveys the message from the prescriber to the patient. Infants and children are among the most vulnerable population groups to contract illnesses. The use of antimicrobial agents, especially antibiotics has become a routine practice for the treatment of paediatric illnesses[1,2]. However, there are also reports of an irrational use of antibiotics [3,4] which may even lead to infections that are worse than the originally diagnosed ones. Irrational prescription of drugs is a common occurrence in clinical practice [5] In the medicine practice, there is a growing concern regarding the irrational prescription pattern and use of antibiotics.

The assessment of drug utilisation is important for clinical, educational and economic reasons[6]. Various factors influence the prescribing behaviour of clinicians and to change the behaviour it is necessary to understand the reasons behind it[7]. It is necessary to define the prescribing pattern and to target the irrational prescribing habits

for sending a remedial message[8]. Drug Utilisation Reviews (DURs) are useful for obtaining information about drug usage patterns and for identifying high cost drugs, which are of economic interest[9]. Data about drug usage patterns in India are particularly lacking. Keeping these facts in consideration the present study has been planned to define the pattern of antibiotic use in the paediatric outpatient department at a tertiary care hospital in Hubli, Karnataka, India.

The treatment of diseases by the use of essential drugs, prescribed by their generic names, has been emphasized by WHO and National health policy of India [10]. Upper respiratory tract infection is the most common morbidity in paediatric age group. It is a loose term which includes infections of nasal cavity, throat, nasopharynx, ears and sinuses[11]. Most common organisms causing upper respiratory tract infections are *S. pneumonia* (30%), *H. influenza* (20%) and *M. catarrhalis* (12%) [12].

The present study was undertaken to evaluate the drug prescription patterns in patients suffering from upper respiratory tract infections attending the paediatric outpatient department and to generate data on the extent of rational/irrational prescribing in this institute. Feedback from the study would help both the prescriber and institu-

DIETARY RESTRICTION (DR) AND ITS ADVANTAGES

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ABSTRACT

Dietary restriction (DR) also called dietary control or calorie restriction is reported to have many advantages with regard to human health. It leads to suppression of obesity, mitigates free radicals and increases available antioxidants which are accounted for extending the life span of individuals. DR is also reported to induce synthesis of heat shock proteins in animals as a control mechanism against stress. Further, it is known to play a significant role in decreasing toxicity and lethality due to a variety of toxic chemicals and drugs by stimulating tissue repair damaged by the toxicants leading to restoration of intact organ and its functions. Moreover, extensive work done on animals indicate DR has an important role in suppressing certain types of cancer. In this review an effort is made to highlight the various advantages of DR from the point of human health perspective.

KEY WORDS

Calorie restriction, hepatocellular regeneration, obesity, cancer, reactive oxygen species, dietary restriction, aging, toxicity

INTRODUCTION

Dietary control, which may also be called as dietary restriction (DR), is an important aspect of food consumption where nutritionally essential components of the diet are not restricted. However, unnecessary intake of food which is more likely to be stored as fat is avoided. DR which is also synonymous with calorie restriction has major health benefits. Experimentally it has been shown that DR consistently decreases the physiological changes associated with aging of mammals (1). DR has also been shown to significantly reduce the incidence of cancer in experimental animals compared to those exposed to unlimited food (2). Further it has been reported (3) that diabetes state of certain obese persons can return to normal after weight loss due to DR. The benefits of DR are far too many but it has not touched the Indian health scenario to the extent seen in advanced countries. Under the circumstances the aim of this review is to highlight the various advantages and beneficial aspects of DR.

a) Obesity and DR

Obesity generally defined as an increase in total body fat is a chronic disease, which poses a serious risk for the development of diabetes mellitus, hypertension, heart disease, gall bladder disease and certain forms of cancer (4). Genetic determinants have been

indicated in some individuals to play a role in the pathogenesis of obesity (5). There is also another group of obese individuals who tend to increase body weight with fat storage due to their uncontrolled eating habits (6). The disposition to obesity in such individuals is more a physiological process than any pathologic attribute (7). It is now well established that obesity needs to be controlled and suppressed. Exercise (8) and vegetarian diet (9) have been suggested to be the most ideal treatment for obesity. Further, modulation in life style strategies (10) have a role in suppressing obesity. Work has also been reported (11) on anorexigenic agents which are indicated to suppress uncontrolled eating habits in mammals leading to obesity. Suppression of obesity extends life in a variety of species (12) attributed to a decrease in reactive oxygen species (13). DR has also been shown to improve immunologic function, neuroendocrine system and glucose homeostasis all of which are due to a decrease in adipose cells and their products (12). A close link has been established between obesity and hypertension (14) and it has been shown that DR lowers blood pressure and improves response to antihypertensive medications (15). Moreover, there is a marked reduction in secretion of growth hormone in obese individuals, which is completely reversed by normalization of body weight by DR (16). Further, it is well established that obesity is the primary causative factor for various types of tumours (17). Thus it is clear that obesity is responsible for many health problems (18,19) and needs to be suppressed by DR taking care to avoid any deleterious effects on the general health of an individual.

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PLASMA ANTIOXIDANT VITAMINS AND LIPID PEROXIDATION PRODUCTS IN PREGNANCY INDUCED HYPERTENSION

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ABSTRACT

It has been suggested that antioxidant systems are impaired in pregnancy induced hypertension and hence patients are exposed to oxidative stress. In order to investigate the relationship between lipid peroxidation and certain antioxidant parameters in blood of pregnancy induced hypertension (PIH) cases, 25 normotensive and 23 PIH samples were studied. In the present study, thiobarbituric acid reactive substances showed a tendency to increase, however the increase remained statistically insignificant. Plasma ascorbic acid level remained unaltered and Vitamin E showed a tendency to increase in the study group. The findings implicate oxidative stress in the disease and cite the biochemical rationale for clinical trials of antioxidants to prevent and treat pregnancy induced hypertension.

KEYWORDS

Vitamin C, Vitamin E, Lipid peroxidation & PIH

INTRODUCTION

Damage From free radicals has been implicated in many pathological conditions. It is envisaged that increased free radical activity arises from increased production of free radicals or deficiency in protective antioxidant systems. Pregnancy induced hypertension (PIH) is associated with endothelial dysfunction (1). Such dysfunction could be caused by oxidative stress. The unsaturated lipids and thiol containing proteins in cell membranes are susceptible to free radical attack. There are reports about increased free radical activity in PIH(2). But little is known about the part played by changes in specific antioxidants. Several lines of evidence indicate that adverse changes in structure and Junction of maternal vascular endothelium accounts for the vascular activity, activation of coagulation cascade and multisystem damage in preeclampsia. Multiple circulating factors may provoke the spectrum of endothelial changes, including lipoproteins(3). Placental hypoxia or ischemia could result in release of products in to maternal circulation which then initiates the maternal pathological changes. Lipid peroxidation products are candidate factors that may mediate disturbances of other maternal vascular endothelium. Rodgers et al (4) reported that

preeclamptic sera contains cytotoxic factors that damage endothelial cells. The identity of these cytotoxic factors is not known, but lipid peroxides are likely candidates as suggested by Hubel et al (5).

Vitamin E is a lipid soluble and chain breaking antioxidant. Several studies found lower plasma Vitamin E in patients with PIH (6). Ascorbate is the water soluble antioxidant vitamin, reacts rapidly with superoxide and peroxyl radicals and even more rapidly with hydroxyl radicals to give semidehydroascorbate. Furthermore deficiency of Vitamin C causes impaired immune responses (7).

In this study, two extra cellular antioxidants Vitamin E and Vitamin C and RBC-Thiobarbituric acid reactive substances are assessed to reflect the oxidative stress across the cell membrane. RBC are selected because it is easily accessible and may be affected in PIH (hemolysis). It is rich in thiol functions, which are potentially involved in attack from and protection against free radicals.

MATERIALS AND METHODS

All chemicals used in the study were of Research Grade and purchased in India.

There were two study groups, healthy pregnant with normal blood pressure and pregnant with pregnancy-induced hypertension. Sample was collected from the subjects in the third trimester. No cases of chronic hypertension or superimposed preeclampsia were included in the study. None of the women had received antihypertensive medication until the samples were

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Comparison of iron status markers in iron deficiency anemia and anemia of chronic kidney diseases

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Abstract

Introduction: There are few studies on comparison of iron status markers between anemia due to iron deficiency and anemia due to chronic kidney disease.

Objective: To study iron status markers in iron deficiency anemia and anemia of chronic kidney diseases and compare them.

Materials and Methods: A Hospital based cross sectional comparative study was carried out among 60 study subjects over a period of one year. 30 of them were having anemia due to iron deficiency and 30 of them were having anemia due to chronic kidney disease. 5 ml venous blood was collected with all universal precautions from all cases and controls. Total iron binding capacity (TIBC), serum iron, and serum ferritin were assessed among cases of IDA and healthy controls using standard methods only.

Results: Hemoglobin percentage in IDA and anemia of CKD is not significant, where as serum iron, TIBC, serum ferritin and transferrin saturation percentage are significant in IDA group when compared to anemia in CKD group. But the severity of anemia as measured by hemoglobin level was more in patients with CKD.

Conclusion: The severity of anemia was more in patients with chronic kidney disease compared to patients with anemia due to iron deficiency.

Keywords: Iron status markers, Anemia, Comparison, Diagnosis, Severity.

Introduction

Anemia constitutes a common problem in clinical practice and hematological laboratories. Anemia is neither a diagnosis in itself nor a specific entity but a manifestation of an underlying disease process which is often related to the severity of the disease process.¹

If the CKD patient is kept on hemodialysis and develops anemia then IV iron is administered as per the guidelines. And a CKD patient with anemia not on hemodialysis should be given oral iron as per the guidelines. This iron administered intravenously may cause overload of the iron in the patients. Therefore it is necessary to monitor the iron status markers in all such patients so that in any abnormal case identified promptly and treated.²

Total iron binding capacity, serum ferritin and transferring saturation are the regular markers of the iron status. They are useful to decide whether treatment with iron is required or not and also what form of treatment should be given. Serum ferritin acts as a bone marrow iron store indicator. But in cases of functional iron deficiency the serum ferritin levels may be present in the absence of stores.³

Studies have shown that patients of chronic kidney disease from India can develop overload of iron and this finding was similar to studies from developed countries.⁴

There are two major forms of iron deficiency i.e. functional and absolute. They can occur in combination or can occur separately. As a result of this, there is erythropoiesis taking place in the deficient states of iron.⁵

Decrease in the content of the iron in the body is called absolute iron deficiency. The important reason is decreased

absorption of the iron from gut or improper intake of iron in the diet. This when becomes lesser than the actual body demand results in iron deficiency. In such cases the stores from the body in the form of ferritin stored in spleen and liver gets depleted.⁶

WHO estimates that half of all anemias are caused by ID & that the prevalence of ID in developing countries is ~2.5 times that of other anemia. According to UNICEF report, two billion people suffer from anemia worldwide & most of them have IDA, especially in underdeveloped, developing countries, where 40-50% of children under age 5 are iron deficient. Iron deficiency and anemia are linked to increased maternal morbidity and mortality & impaired functional capacity in women.⁷

There are few studies on comparison of iron status markers between anemia due to iron deficiency and anemia due to chronic kidney disease. Hence present study was undertaken to study iron status markers in iron deficiency anemia and anemia of chronic kidney diseases and compare them.

Materials and Methods

A Hospital based cross sectional comparative study was carried out at Department of Biochemistry, JJM Medical College, Davangere among 60 study subjects over a period of one year.

Institutional Ethics Committee permission was obtained before the study was initiated after presenting the study protocol to the Committee. Eligible participants as per the study criteria were explained the nature of the study and written informed consent was taken.

Original Research Article

Comparison of serum iron, TIBC, transferrin saturation and serum ferritin in anemia of chronic renal diseases

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ABSTRACT

Background: In patients with CKD and diabetes combined, anemia may be relative or absolute. If the serum ferritin is more than or equal to 100ng/ml associated with reduced iron saturation, then it is defined as functional iron deficiency anemia. This type of anemia is very common in patients with CKD. To compare serum iron, TIBC, transferrin saturation and serum ferritin in anemia of chronic renal diseases with healthy controls.

Methods: A hospital based comparative study was carried out among 30 known cases of chronic kidney disease with anemia. They were compared with 20 age and sex matched healthy control who were free from chronic kidney disease and anemia. The parameters like serum iron, TIBC, transferrin saturation and serum ferritin were compared between the two groups. Student's t test and a two tailed p value were calculated and if the p value was less than 0.05, it was taken as statistically significant.

Results: It was seen that the mean hemoglobin value was significantly less among CKD patients compared to healthy controls ($p < 0.05$). Serum iron was also significantly less among CKD patients compared to healthy controls ($p < 0.05$). TIBC as significantly high among CKD patients compared to healthy controls ($p < 0.05$). This is because of low hemoglobin and low serum iron in CKD patients but again the transferrin saturation was significantly low among CKD patients compared to healthy controls ($p < 0.05$).

Conclusions: Anemia prevalence was very high in CKD patients. Hemoglobin, serum iron and transferrin saturation were significantly low and TIBC was significantly high.

Keywords: Chronic kidney disease, Comparison, Control, Serum iron, Serum ferritin

INTRODUCTION

In the third The National Health and Nutrition Examination Survey (NHANES), the prevalence of anemia in stage 3 CKD (i.e. GFR of 30-59ml/min/1.73m²) was 5.2%, rising to 44.1% in stage 4 and becoming almost universal in stage 5.¹

Population survey data estimates that at least 6% of adult population in the United States has CKD at stage 1 and 2.

Most frequent cause of CKD is diabetic nephropathy and most often secondary to type 2 diabetes mellitus.²

Anemia prevalence among patients with CKD and diabetes combined is around 20%. As the CKD advances, the severity of anemia worsens.³

It is further aggravated if the vitamin deficiency is present. In patients with CKD and diabetes combined, anemia may be relative or absolute. If the serum ferritin is more than or equal to 100ng/ml associated with

Original Research Article

Effect of nicotine exposure during pregnancy on birth weight among beedi rolling women

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ABSTRACT

Background: Exposure to nicotine can lead to increased morbidity and mortality among fetus and mothers. The objective was to study the effect of nicotine exposure on the birth weight of the babies.

Methods: During the study period of one year, it was possible to recruit the total 144 subjects. 36 were women who were exposed to nicotine as they were bidi rollers. The exposure was confirmed by history. 36 women delivered during the study period and these newborns were included in the present study. Control group were 36 pregnant women who were not exposed to nicotine. They were asked about the exposure history, like anyone in their family is smoking inside the house any time and their occupation. Among these all (36) delivered during the study period and their newborns were included in the present study.

Results: Both the groups were comparable in terms of age, hemoglobin, body mass index, gestational age. The mean birth weight of babies in the control group (whose mothers were not exposed) was 3.01kg with a standard deviation of 0.56 compared to mean birth weight of babies in the study group (whose mothers were not exposed) of 2.73kg with a standard deviation of 0.40. This difference in the mean birth weight of babies in the study group and the control group was found to be statistically significant ($p < 0.05$). The mean serum cotinine value in study group mothers and babies was very high compared to zero value in mothers and babies of control group and statistically significant ($p < 0.05$).

Conclusions: Maternal nicotine exposure through beedi rolling is associated with reduced birth weight.

Keywords: BMI, Beedi rolling, Gestational age, Low birth weight, Nicotine exposure

INTRODUCTION

Exposure to cigarette smoke can lead to increased morbidity and mortality among fetus and mothers. Placental development is adversely affected by damage caused due to cigarette smoke. This leads to reduced supply of oxygen and nutrients to fetus. Thus, it results in premature delivery, head size becomes small and there is restriction of the growth of the fetus. It can lead to low birth weight and not only that the effects can be seen till adult life.¹

It has been said that there are more than 4000 chemical compounds in the smoke of the cigarette. Most commonly known are carbon monoxide and nicotine and aldehydes. They are well known to cause the perinatal damage. Nicotine is capable of crossing not only the blood brain barrier but also the placental barrier and affects the fetus and also the concentration increases in the fetus blood than the maternal blood. It has been estimated that about 161,000 deaths that occur during perinatal period and 4800 deaths that occur during infancy are attributed to exposure to smoke of the

Oxidative stress in beedi rolling pregnant women and their newborns

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Abstract

Introduction: Though it is known that tobacco consumption and exposure to environmental tobacco smoke causes health hazards there is no parameter that can predict the extent of damage in pregnant women. There is no parameter that measures the fetal exposure to toxic of cigarette smoke.

Objective: To study oxidative stress in beedi rolling pregnant women and their newborns.

Materials and Methods: The study group consists of 36 mothers, 36 newborns and the control group consists of 10 mothers and 10 newborns. The cases were the pregnant women who were exposed to nicotine. The controls were the pregnant women who were not exposed. Estimation of TBARS was done by oxidative lipid peroxidation and non-oxidative lipid peroxidation methods.

Results: In this study it was observed that the duration of tobacco free period before delivery showed significant negative correlation with the serum cotinine levels. The duration of beedi rolling showed negative correlation with the serum cotinine levels. There was no relation found between either the duration of beedi rolling or the tobacco free period and lipid peroxidation levels. The above findings may be due to the adaptive changes in the metabolism of nicotine.

Conclusion: From the study it appears that there may not be much role of oxidative stress in the causation of low birth weight through the increased production of lipid peroxides or oxidative stress, but it cannot be ruled out that tobacco exposure through beedi rolling is a causative factor.

Keywords: Oxidative stress, Adaptive changes, Pregnancy, Serum cotinine.

Introduction

India ranks third in the world in tobacco production.¹ It is well known by now that tobacco consumption is hazardous to health. In western countries smoking is most common addiction in women where as in India women chew tobacco more commonly than they do smoke.²

It is also known that tobacco smoking and use of smokeless tobacco by pregnant women are deleterious both to pregnancy and to perinatal outcome. Apart from their bad effect on causation of anemia pregnancy induced hypertension etc.²

The most consistent observation is reduction in the birth weight among infants of smokers.³ Current understanding of the effect of the maternal smoking on pregnancy and on the developing fetus and child is based on clinical physiological pathological, experimental and especially epidemiological studies.³

In the recent years many studies have shown the effect of tobacco smoke on lipid peroxidation which results from oxidative damage by free radicals⁴ the decreased levels of antioxidants in the blood of smoke explain the oxidative stress by tobacco simultaneously studies have also shown that many complications of pregnancies which are slightly more in smokers are associated with increased lipid peroxidation studies have suggested that maternal exposure to environmental oxidant can increase the risk of pregnancy complication through stimulation of formation of cell damaging lipid peroxides and from a decrease in maternal antioxidant reserves passive smoking as well as direct inhalation of cigarette smoke causes the oxidative

stress environmental tobacco smoke also increases the stress.

Beedi rolling is one of the major small scale industry in and nearby places of Dakshina Kannada district where 84 beedi rolling organizations are present according to the government register. There are 181,168 workers working in these beedi factories in Dakshina Kannada district itself and women contribute a major proportion to this number. These lady folk utilize this work often as a part time job as a mean of earning an additional income for their family.⁵

Beedi rolling is rolling of the finely crushed dried tobacco in beedi leaves. Beedi rolling is one of the occupational modes of exposure to tobacco. Most studies are conducted on tobacco smoking group. It appears that there are no studies done on oxidative stress in this occupational work. In a previous study⁶ increased incidences were found it was of interest to know the oxidative stress in the pregnant beedi rolling mother and hence the present study was undertaken.

Though it is known that tobacco consumption and exposure to environmental tobacco smoke causes health hazards there is no parameter that can predict the extent of damage in pregnant women. There is no parameter that measures the fetal exposure to toxic of cigarette smoke.

In the present study lipid peroxide levels with simultaneous serum cotinine levels were measured with the interest to know the effect of environmental exposure to tobacco dust in beedi rolling pregnant women. This information may give clue to pathogenesis prediction of the effect of beedi rolling on pregnancy and its outcome those populations.

Original Research Article

A comparative study of lipid profile in patients with and without infective hepatitis

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ABSTRACT

Background: Liver plays a central role in lipid metabolism. Liver carries out some important functions in lipid metabolism like liver facilitates the digestion and absorption of lipids by the production of bile, which contains cholesterol and bile salts synthesized within the liver de novo or from uptake of lipoprotein cholesterol, the liver has active enzyme system for synthesizing and oxidizing fatty acids and for synthesizing triacylglycerols and phospholipids, synthesis of the ketone bodies, it plays an integral part in the synthesis and metabolism of plasma lipoproteins. The objective was to compare lipid profile in patients with and without infective hepatitis.

Methods: Hospital based cross sectional comparative study was carried out among 112 cases. The patients were divided as having infective hepatitis (69) called cases and not having infective hepatitis (43) called controls. Concentration of serum total cholesterol was determined by Carr and Drecker method. Concentration of serum HDL cholesterol was determined by Carr and Drecker method. Concentration of serum triglyceride level was determined by enzymatic end point peroxidase coupled method.

Results: Total cholesterol, VLDL, LDL and triglycerides have been found to be significantly higher in cases of infective hepatitis compared to control. The HDL value was also significantly deranged i.e. significantly lower in cases compared to controls ($p < 0.05$). Thus, it was clear that infective hepatitis deranges the lipid profile of the patients.

Conclusions: Lipid profile can be used as sensitive indicators of hepatic function and may have diagnostic and prognostic importance in infective hepatitis.

Keywords: Comparison, Controls, Cases, Infective hepatitis, Lipid profile

INTRODUCTION

Liver plays a central role in the maintenance of metabolic homeostasis. The biochemical functions in which the liver plays a major role include the intermediate metabolism of amino acids and carbohydrates, synthesis and degradation of proteins and glycoproteins, regulation of lipid and cholesterol metabolism, metabolism of drugs and hormones and contribution to immune system

function through the hepatic immune response.¹ Viral hepatitis is a common and serious infectious disease caused by several viruses and marked by necrosis and inflammation of the liver. This disease was traditionally separated into two types: type A or infectious hepatitis caused by hepatitis A virus (HAV) and type B or serum hepatitis caused by hepatitis B virus (HBV). In last 25 years, it has become clear that there are many viruses that cause acute viral hepatitis. At present five hepatitis

Original Research Article

Effect of smoking on vitamin C and MDA: a cross sectional comparative study

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ABSTRACT

Background: Plasma gets exposed to the gases present in the smoke of the cigarette which leads to peroxidation. The ascorbic acid present in the body gets oxidized there is danger of derangement of lipid profile. The measure of malondialdehyde which is formed in lipid peroxidation reaction is indicative of oxidative stress. Oxidative stress seen among the smokers has been attributed to high MDA levels. Objective was to study the effect of smoking on vitamin C and MDA.

Methods: Present study was cross sectional study. Two groups of subjects were compared. Out of 100 study subjects, 25 were non smokers and were kept in one group. Remaining 75 were smokers. These two groups were compared to find out how the smoking habit affects the MDA as well as vitamin C levels among them.

Results: The levels of MDA were more in smokers compared to those who did not smoke and this difference was significant. The levels of vitamin C were less in smokers compared to those who did not smoke and this difference was significant ($p < 0.05$). It was found that the MDA levels were significantly more among all degrees of smokers. It was less in smokers with mild degree compared to smokers with heavy or moderate degree. Level of vitamin C was more in non smokers compared to smokers. Mild degree of smokers had better levels of vitamin C compared to moderate degree of smokers.

Conclusions: Smoking affects the vitamin C levels and MDA levels in the human body.

Keywords: MDA, Peroxidation effect, Smoking, Vitamin C

INTRODUCTION

Smoking is hazardous and not only it irritates others due to its smoke but also causes a lot of health problems. A Cigarette smoker not only affects himself but also is capable for affecting others those who come into the contact of his smoke. Various health problems have been reported as a result of active as well as passive smoking. There is 30% increased risk of death among passive smokers.^{1,2}

Oxidants are present in the cigarette smoke. Because of this, the free radicals are formed which are responsible "for peroxidation of the lipids in the body". Plasma also

gets exposed to the gases present in the smoke of the cigarette which leads to peroxidation. The ascorbic acid present in the body gets oxidized there is danger of derangement of lipid profile. The ascorbic acid present in the body is only one which maintains the lipids of the body. But cigarette smoke can alter lipid profile by damaging ascorbic acid.^{3,4}

Vitamin C is a strong reducing agent known to act as an anti-oxidant in vitro and in vivo. Vitamin C very effectively protects lipids in human plasma against peroxidative damage by scavenging oxygen derived free radicals. Imbalance between pro oxidants and anti oxidants within the vasculature also may be operative in

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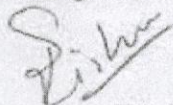
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Observation

LEAD TOXICITY IN A FAMILY AS A RESULT OF OCCUPATIONAL EXPOSURE

Aryapu RAVIRAJA, Gaja Narayanamurthy VISHAL BABU, Anita Raghuveer BIJOOR,
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This article describes an entire family manufacturing lead acid batteries who all suffered from lead poisoning. The family of five lived in a house, part of which had been used for various stages of battery production for 14 years. Open space was used for drying batteries. They all drank water from a well located on the premises. Evaluation of biomarkers of lead exposure and/or effect revealed alarming blood lead levels [$(3.92 \pm 0.94) \mu\text{mol L}^{-1}$], 50 % reduction in the activity of δ -aminolevulinic acid dehydratase [$(24.67 \pm 5.12) \text{ U L}^{-1}$] and an increase in zinc protoporphyrin [$(1228 \pm 480) \mu\text{g L}^{-1}$]. Liver function tests showed an increase in serum alkaline phosphatase [$(170.41 \pm 41.82) \text{ U L}^{-1}$]. All other liver function test parameters were normal. Renal function tests showed an increase in serum uric acid [$(515.81 \pm 86.29) \mu\text{mol L}^{-1}$] while urea and creatinine were normal. Serum calcium was low [$(1.90 \pm 0.42) \text{ mmol L}^{-1}$ in women and $(2.09 \pm 0.12) \text{ mmol L}^{-1}$ in men], while blood pressure was high in the head of the family and his wife and normal in children. Lead concentration in well water was estimated to $180 \mu\text{g L}^{-1}$. The family was referred to the National Referral Centre for Lead Poisoning in India, where they were received treatment and were informed about the hazards of lead poisoning. A follow up three months later showed a slight decrease in blood lead levels and a significant increase in haemoglobin. These findings can be attributed to behavioural changes adopted by the family, even though they continued producing lead batteries.

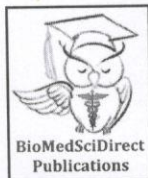
KEY WORDS: *blood lead, chelation therapy, lead acid battery, lead poisoning*

Lead is one of the earliest metals known to man and is a normal constituent of the earth's crust with trace amounts found naturally in soil, plants, and water (1,2). If left undisturbed, it is practically immobile; however, once mined and transformed into useful products, it gets dispersed throughout the environment and becomes highly toxic. It has been widely used by man during the last two thousand years for domestic, industrial, and therapeutic purposes (2, 3).

Lead poisoning was common in Roman times because of the use of lead in water pipes and in wine containers (3). In the 19th and 20th centuries lead poisoning was common in industrial workers. The

use of lead as antiknock agent for motor vehicles in gasoline at the beginning of the 20th century resulted in environmental pollution. Most of the paints used before 1978 and some of the Indian paints used even today are known to contain alarming levels of lead, which mainly affects the children due to their hand-to-mouth activities (4, 5).

Lead is not biodegradable, and is dispersed into the air, food, soil and water. Lead can enter the body through ingestion, inhalation and, when it comes to organic lead through skin. Most of the environmental exposure occurs by inhaling air containing lead dust, by drinking water supplied through leaded pipes, and by consuming lead contaminated food. Lead



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Review Article

Magnitude of lead poisoning among unorganized battery workers

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ABSTRACT

Aim-A comparative study of renal functions and blood pressure of controls, organized and unorganized sector of battery workers was conducted to study the magnitude of lead poisoning in unorganized battery workers. **Methods:**Ninety subjects were selected for the study of which: Group A had 30 Controls; Group B had 30 organized battery workers and Group C had 30 unorganized battery workers. They were evaluated for their Blood lead level(BLL), Zinc Protoporphyrin(ZPP) and renal functions along with measurement of blood pressure. **Results and Conclusion:**This study shows that there is statistical significance between Group B and Group C in Blood Lead level ($p<0.001$), Zinc Protoporphyrin ($p<0.001$), Urea ($p<0.001$) and Uric Acid ($p<0.001$). There was significant difference in Blood Lead level, Zinc protoporphyrin and renal parameters between the two sector though there was no significant difference between the two in terms of blood pressure. This magnitude in unorganized sector was mainly due to the absence of precautionary principles. More than this lack of awareness among the battery workers was significant.

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1. Introduction

The major source of lead is from occupations where lead and lead based components are used, resulting in high prevalence of lead toxicity in the population exposed to such activities[1]. Lead poisoning from occupational exposure was first reported in 370 BC[2]. The battery industry is by far the principle consumer of lead, using an estimated 76% of annual primary and secondary lead production.

Today occupational exposure to lead remains a big problem in developing country like India. Occupational lead exposure is very much unregulated in India with little monitoring of poisoning being done.

Organized sector of lead based battery workers are those workers who follow proper protective measures (includes full arm clothes, long boots, mask and gloves, proper handling of lead-contaminated work apparel, proper ventilators and showers).

Unorganized sector are those workers who do not follow these as they are unaware of all these measures (simple measures like-

separate clothing for work/home, taking showers before going home, not dining at the work place). This sector is of particular concern since the work is predominantly carried out at home or in unregulated workshops, often helped by women and children[2]. These are located in places where large number of people lives, especially children. They are of particular concern since these non-regulated businesses deliver the lead right into the homes or yards where children live or play. Children can also be exposed when the working parent brings the lead dust home as they wear the same clothes at home and at work[3].

A survey of recent literature in the medical publications database Pub Med has identified almost most studies of lead poisoning in workers manufacturing batteries as well as in workers, and their dependents, employed in battery salvaging in many countries. Yet lead poisoning in today's battery workers should not be seen as an unfortunate or inevitable product of the work process, rather it is the outcome of political and economic decisions made nearly three-quarters of a century ago, decisions that rejected the precautionary principle and ultimately failed to protect worker's health [4].

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CASE REPORT

LEAD TOXICITY AS A RESULT OF HERBAL MEDICATION

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ABSTRACT

Awareness about the toxic effects of non-essential metals is still lacking in developing countries. Lead is one among them, which ranks second in the Agency for Toxic Substances and Disease Registry's top 20 lists of toxic metals. Some of the herbal medicines prepared from certain roots and leaves are known to contain this toxic metal at alarming levels. We have a case of a person who suffered from the toxic effects of lead such as vomiting and colicky abdominal pain after consuming a herbal remedy for Jaundice treatment. This went unrecognized initially because of the presence of multiple problems like Malaria and Renal calculi. Lead poisoning as causative factor for anemia, vomiting and colic were confirmed only when blood lead concentration was estimated. A combination of chelation therapy and nutritional supplementation was found to be useful in reducing the body lead burden.

KEY WORDS

Lead Toxicity, Herbal medicine, Jaundice, Abdominal Pain

INTRODUCTION

Lead poisoning is an environmental disease and is also a well-known disease of lifestyle (1). Lead is a ubiquitous and versatile toxic heavy metal, which has been used by mankind for over 6500 years. As a result of human activities it is continuously contaminating the environment and is one of the most widely distributed toxins in the environment today (2). The combination of physical and chemical properties has made it a very useful metal (3).

Lead enters the body by routes such as inhalation, ingestion or by dermal contact, undergoes cumulative storage and it has no known biological functions (4). Major organs and systems like Nervous system, Hematopoietic system, Digestive system, Cardiovascular system, Reproductive system, Skeletal system, Immunological system and Renal system are effected by lead (5)

Humans are exposed to lead from different environmental sources such as air, soil, food, drinking water or from different occupational & recreational sources and also occasionally from sources like folk remedies, cosmetics, moonshine whisky and gasoline huffing. Folk and herbal remedies from the Indian subcontinent are a significant unrecognized source of lead toxicity (6).

A Case of Lead poisoning: A 39year old male patient from a village in Goa, India was referred to National Referral center for lead poisoning in India (NRCLPI), for the evaluation of Lead poisoning. History revealed his habitual consumption of herbal medicines-for any kind of illness. This time he had consulted a traditional practitioner for the treatment of jaundice in his village, who gave him a syrup called **Kadda** (in local language). After consuming 10 to15ml of Kadda everyday morning on empty stomach, for a period of 10 days, the patient experienced vomiting and severe abdominal pain. As the syrup did not cure jaundice he was admitted to Government Hospital for the treatment, twice- on two occasions within a short period of two weeks. All possible investigations including HbSAg & HIV were carried out. Results of Biochemical investigations showed all normal except for mild elevation of total serum bilirubin -1.6 mg/dl (normal-0.2 to 1.0mg/dl) and Unconjugated bilirubin -1.3mg/dl (normal-0.2 to 0.6 mg/dl) suggestive of

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Effect of occupational lead exposure on the family members of lead based industrial workers

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Abstract

Introduction: A comparative study of family members of persons working in lead based industries and non-lead based industries were undertaken to evaluate the effect of lead on family members of lead based industrial workers and its effect on their liver function tests. As lead can be brought home through the shoes and dresses of lead based industrial workers, this study was done to evaluate the extent of lead exposure and its ill effects on liver functions on their family members as there were very few studies available to show the ill effects of lead on family members of lead based industrial workers.

Materials and Methods: Subjects were classified as.

Group-A: Controls- individuals who were working in non-lead based industries.

Group B: Adult Family members of individuals who were working in lead based industries.

Biomarkers of lead exposure estimated were BLL, δ -ALAD, Hb and ZPP.

Liver function tests conducted were- estimation of serum enzymes like AST, ALT, ALP, GGT, serum bilirubin, serum total proteins and A/G ratio.

Results: The study showed statistically significant increase in BLL ($p < 0.001$) and ZPP ($p < 0.001$) between the group A and group B. There was also statistically significant difference in two groups in ALP ($p < 0.001$). There was no significant difference in other liver function tests.

Conclusions: This study shows that lead brought home through the shoes and dresses of lead based industrial workers affects their family members. This could be prevented by taking simple precautionary measures such as changing clothes and taking shower before reaching home.

Keywords: Occupational lead, Family members, Liver function tests, Preventive measures.

Introduction

Lead is the number one environmental pollutant.¹ Lead poisoning is an important environmental disease and is also a disease of life style that can have life-long adverse health effects. Lead is a toxic heavy metal, has no known biological functions in the human body and causes adverse health effects. For humans it is a cumulative poison and produces irreversible health effects once enters inside the body.

Today the major source of lead for adults is from occupation where lead and lead components are used, resulting in high prevalence of lead toxicity in the population exposed to such activity. Occupational exposure to lead remains a big problem in developing countries like India and occupational exposure is likely unregulated with little monitoring of the poisoning being done.² Occupational exposure is usually seen in lead based industries such as – Lead acid battery industries, cable and wire products industries, soldering activities, motor vehicle assembly and in the glass, plastic, rubber, printing, ceramics, and paint industries. Occupational exposures can also result from secondary exposure for worker's families if workers bring home lead contaminated dust on their skin, clothes or shoes.

Occupational exposure leads to its slow accumulation in the body and it exerts different toxic effects depending on the level of its accumulation.

Lead can enter the body through ingestion, inhalation and dermal absorption.³ In adults with occupational exposure inhalation is the predominant form of absorption while for children gastrointestinal absorption is primary. Cutaneous absorption is essentially nonexistent for inorganic lead but exists for organic lead (tetraethyl lead used in gasoline) because of its lipid solubility.⁴

Lead toxicity can affect every organ system. It is a complex toxin and exerts numerous pathophysiologic effects in many organ systems. The most deleterious effects of lead are on erythropoiesis, kidney function and the central nervous system. Children's are more vulnerable to lead exposure than adults because a proportionately greater amount of lead they ingest is absorbed, more circulating lead enters their brain and their developing nervous system is more vulnerable.⁵

In developing countries like India most of the lead based workers are unaware of the toxic effects of lead and they work without taking proper precautionary measures in the workplace and carry the lead in their

Occupational lead exposure and its effect on human liver functions

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Abstract

Introduction: A Comparative study of persons working in lead based industries and non-lead based industries were undertaken to evaluate the effect of lead on liver function tests. This study was done to evaluate the ill effects of lead on liver functions as there were very few studies available to show the ill effects of lead on human liver.

Materials and Methods: Subjects were classified as:

Group-A: Controls- individuals who were working in non-lead based industries.

Group B: individuals who were working in lead based industries.

Results: The study showed that there was statistical significance between the group A and group B in BLL (p<0.001), Hb (p<0.001), ALAD (p<0.001) and ZPP (p<0.001). There was also statistically significant difference in two groups in Total Bilirubin (p<0.001), Direct Bilirubin (p<0.001), Indirect Bilirubin (p<0.001) and Total Protein (p<0.001). There was no significant difference in liver enzymes between the two groups.

Conclusions: As lead being a toxic element affecting multiple organs, including liver as emphasized in this study shows the importance of regulation in lead based industries in a country like India.

Keywords: BLL, Lead, LFT, Lead based occupational workers, Non-lead based occupational workers, ZPP.

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Introduction

India being a developing country needs to emphasize the importance in tackling environmental toxicity as it has joined a league of big nations in industrial revolution. Of the present environmental toxins, Lead is now considered as number one environmental pollutant.^{1,2} Once enters inside the human body it has no known biological functions and causes adverse health effects.³

The major source of lead for adults is from occupation where lead and lead components are used- resulting in high prevalence of lead toxicity in the population exposed to such activity.

Different occupations where workers will experience the highest and most prolonged occupational exposure to lead were individuals working in paint industry, secondary smelting, Lead acid battery manufacturing units, battery recycle and repair units, automobile repair, printing, welding and computer waste management.^{4,5,6}

Exposure due to occupational usage of lead remains a big problem in developing countries like India and this is very much unregulated with little monitoring of the poisoning being done.⁷

Previous research provides a definite proof that exposure to lead causes significant adverse effects to multiple organ systems like Nervous, Haematological, Renal and Reproductive systems but very few human studies have been conducted to know the effect of lead on liver functions.⁸ There is no available data to know the ill-effects of lead on liver functions in Indian scenario. Since liver is the major organs of storage, biotransformation and detoxification of lead we wanted to evaluated the toxic effects of this metal on liver functions.

Materials and Methods

The study was carried out at the National Referral Centre for Lead Poisoning in India at St. John's Medical College Bangalore. Experiments were carried out by collecting blood samples from lead based industrial workers and the results were compared with controls.

Subjects studied were classified as:

Group-A: Controls- Comprised of individuals who were working in non-lead based industries.

Group B: Comprised of individuals who were working in lead based industries.

Methods: The subjects were evaluated for

Comparative calcium levels in high exposed and low exposed group of lead based battery workers

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Abstract

Introduction: A comparative study of calcium and phosphorus was conducted in high exposed and low exposed groups of lead battery workers to study the effect of lead exposure in these groups as there were very few systematic study reports available in the Indian scenario.

Materials and Method: Subjects were selected and classified as

Group A → controls;

Group B → high risk exposure

Group C → low risk exposure. They were evaluated for their blood lead level (BLL), zinc protoporphyrin (ZPP), Hb, Calcium, Phosphorus, Blood pressure, Total Proteins and albumin. Selections of subjects were in accordance to the protocol developed.

Results: This study showed that there is statistical significance between high risk and low risk in BLL ($p < 0.001$), ZPP ($p < 0.001$), Hb ($p < 0.001$) and Calcium ($p < 0.001$). There was no significant difference between the two groups in Phosphorus ($p = 0.280$). Other parameters included Blood pressure, Total protein, albumin and Phosphorus had no significant difference.

Conclusions: There was significant difference in BLL, ZPP and calcium between the high risk and low risk group. This difference was mainly due to the absence of precautionary principles, absence of proper disposal methods and lack of knowledge among workers about the ill effects of lead. Thus study reveals the need for self-regulation and a government policy.

Keywords: Lead, BLL ZPP, Calcium, High risk group, Low risk group

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Introduction

Lead was one of the first metals known and used by man. It is a normal constituent of the earth's crust.⁽¹⁾ Lead occurs naturally as a sulfide in galena. It is soft, bluish-white, silvery gray, malleable metal with a melting point of 327.5 °C². Its easy workability, low melting point, ability to form carbon metal compounds, hold pigments well, very easily recycled, stands up well to the outside weather elements, a high degree of corrosion resistance, it is inexpensive makes it most widely used metal. Lead intoxication was recognized as early as 2000 BC and now it is the number one environmental pollutant all over the world causing health hazards.^(3,4,5)

The battery industry is by far the principle consumer of lead, using an estimated 76% of annual primary and secondary lead production.⁽⁶⁾

Today occupational exposure to lead remains a big problem in developing country like India. Occupational lead exposure is likely unregulated in these countries with little monitoring of poisoning being done.

1. Low risk sector of lead based battery workers are those workers who are required by law to follow proper protective measures and proper disposal methods as per environmental guidelines.
2. High risk sector are those workers are those who do not follow any of these.

The high risk sector is of particular concern since the work is predominantly carried out at home or in unregulated workshops, often helped by women and children.⁽⁷⁾ These are located in places where large number of people lives, especially children. They are particular concern since these non-regulated businesses deliver the lead right into the homes or yards where children live or play. Children can also be exposed when the working parent brings the lead dust home from work.⁽¹⁾

There are very few systematic studies available which is done on importance of these precautionary principles or need for educating the workers in developing countries.⁽⁸⁾ This could be done only when the workers were selected based on high risk and low risk sector of battery workers along with controls.

The high risk sector, which often operated at or near home, is usually described as "backyard" or "cottage"-Lead industry. Lead poisoning from household members from lead dust brought home on work clothes has also been reported from these unorganized workplaces.

Toxic Manifestations of Lead: Lead acts on multiple enzyme systems of different organs by expressing its toxicity by several mechanisms.⁽⁹⁾ Their toxic manifestations are being considered primarily due to the imbalance between pro-oxidant and antioxidant

Three Cases of Lead Toxicity Associated with Consumption of Ayurvedic Medicines

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Abstract Ayurveda is a traditional form of medicine used by majority of the Indians. Here we report three cases of lead toxicity, following intake of Ayurvedic medicines. Three patients presented with blood lead levels (BLLs) of 122.4, 115 and 42.8 µg/dl respectively at the time of hospitalization. The first case was chelated with D- penicillamine, the second with calcium disodium ethylene diamino tetra acetate (EDTA) and the third with environmental intervention and education. Associated Ayurvedic products were collected from patients and analyzed for metallic concentration. Cessation of Ayurvedic medication along with chelation, nutritional intervention and education, reduced the BLL to 27.4 µg/dl in the first case after 1 year, 21.1 µg/dl after 9 months in the second and 18.2 µg/dl after 6 months in the third case.

Keywords Lead toxicity · Ayurvedic medicine · Abdominal pain · Chelation · Blood lead level

Introduction

Ayurveda is a traditional Indian medical system used by a majority of the Indian population [1]. Ayurvedic medicines are primarily composed of herbs, minerals, metals and/or animal products [2]. These all are included in either purely herbal or Rasa shastra products. Rasa shastra is an ancient practice where metals like lead, mercury, iron and zinc etc. are processed and added to herbs. Heavy metals are commonly incorporated into Ayurvedic preparations as ashes or bhasmas. Experts in this field claim that Rasa shastra products if adequately prepared are safe for administration [3]. Further they claim that the role of bhasmas is to enhance the herbal products potency to act as a catalyst and an adjuvant to enter into the relevant cells. However in 2004 Saper et al. [4] found that 20% of Ayurvedic medicines sold in the Boston area contained high concentrations of lead, arsenic and mercury above daily permissible limits. Further analysis indicated that 21% of both American and Indian manufactured Ayurvedic medicines sold via the internet contained detectable levels of lead, arsenic or mercury. Rasa shastra products were more than twice as likely to contain heavy metals when compared to non Rasa shastra products. All metal containing products exceeded one or more standards for acceptable daily metal intake [3]. Case reports indicative of severe adverse effects due to consumption of traditional Indian medicines have been reported in the past [5, 6]. However the vast majority of these cases have been identified in patients outside the Indian subcontinent.

Here we present three cases of lead poisoning in India associated with consumption of Ayurvedic medicines. Initial blood lead levels (BLLs) before treatment and after discontinuation of Ayurvedic medicines were estimated by ESA-3010B lead analyzer at National Referral Centre for Lead Poisoning in India (NRCLPI).

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Comparison of iron status markers in iron deficiency anemia and anemia of chronic kidney diseases

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Abstract

Introduction: There are few studies on comparison of iron status markers between anemia due to iron deficiency and anemia due to chronic kidney disease.

Objective: To study iron status markers in iron deficiency anemia and anemia of chronic kidney diseases and compare them.

Materials and Methods: A Hospital based cross sectional comparative study was carried out among 60 study subjects over a period of one year. 30 of them were having anemia due to iron deficiency and 30 of them were having anemia due to chronic kidney disease. 5 ml venous blood was collected with all universal precautions from all cases and controls. Total iron binding capacity (TIBC), serum iron, and serum ferritin were assessed among cases of IDA and healthy controls using standard methods only.

Results: Hemoglobin percentage in IDA and anemia of CKD is not significant, where as serum iron, TIBC, serum ferritin and transferrin saturation percentage are significant in IDA group when compared to anemia in CKD group. But the severity of anemia as measured by hemoglobin level was more in patients with CKD.

Conclusion: The severity of anemia was more in patients with chronic kidney disease compared to patients with anemia due to iron deficiency.

Keywords: Iron status markers, Anemia, Comparison, Diagnosis, Severity.

Introduction

Anemia constitutes a common problem in clinical practice and hematological laboratories. Anemia is neither a diagnosis in itself nor a specific entity but a manifestation of an underlying disease process which is often related to the severity of the disease process.¹

If the CKD patient is kept on hemodialysis and develops anemia then IV iron is administered as per the guidelines. And a CKD patient with anemia not on hemodialysis should be given oral iron as per the guidelines. This iron administered intravenously may cause overload of the iron in the patients. Therefore it is necessary to monitor the iron status markers in all such patients so that in any abnormal case identified promptly and treated.²

Total iron binding capacity, serum ferritin and transferrin saturation are the regular markers of the iron status. They are useful to decide whether treatment with iron is required or not and also what form of treatment should be given. Serum ferritin acts as a bone marrow iron store indicator. But in cases of functional iron deficiency the serum ferritin levels may be present in the absence of stores.³

Studies have shown that patients of chronic kidney disease from India can develop overload of iron and this finding was similar to studies from developed countries.⁴

There are two major forms of iron deficiency i.e. functional and absolute. They can occur in combination or can occur separately. As a result of this, there is erythropoiesis taking place in the deficient states of iron.⁵

Decrease in the content of the iron in the body is called absolute iron deficiency. The important reason is decreased

absorption of the iron from gut or improper intake of iron in the diet. This when becomes lesser than the actual body demand results in iron deficiency. In such cases the stores from the body in the form of ferritin stored in spleen and liver gets depleted.⁶

WHO estimates that half of all anemias are caused by ID & that the prevalence of ID in developing countries is ~2.5 times that of other anemia. According to UNICEF report, two billion people suffer from anemia worldwide & most of them have IDA, especially in underdeveloped, developing countries, where 40-50% of children under age 5 are iron deficient. Iron deficiency and anemia are linked to increased maternal morbidity and mortality & impaired functional capacity in women.⁷

There are few studies on comparison of iron status markers between anemia due to iron deficiency and anemia due to chronic kidney disease. Hence present study was undertaken to study iron status markers in iron deficiency anemia and anemia of chronic kidney diseases and compare them.

Materials and Methods

A Hospital based cross sectional comparative study was carried out at Department of Biochemistry, JJM Medical College, Davangere among 60 study subjects over a period of one year.

Institutional Ethics Committee permission was obtained before the study was initiated after presenting the study protocol to the Committee. Eligible participants as per the study criteria were explained the nature of the study and written informed consent was taken.

Original Research Article

Comparison of serum iron, TIBC, transferrin saturation and serum ferritin in anemia of chronic renal diseases

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ABSTRACT

Background: In patients with CKD and diabetes combined, anemia may be relative or absolute. If the serum ferritin is more than or equal to 100ng/ml associated with reduced iron saturation, then it is defined as functional iron deficiency anemia. This type of anemia is very common in patients with CKD. To compare serum iron, TIBC, transferrin saturation and serum ferritin in anemia of chronic renal diseases with healthy controls.

Methods: A hospital based comparative study was carried out among 30 known cases of chronic kidney disease with anemia. They were compared with 20 age and sex matched healthy control who were free from chronic kidney disease and anemia. The parameters like serum iron, TIBC, transferrin saturation and serum ferritin were compared between the two groups. Student's t test and a two tailed p value were calculated and if the p value was less than 0.05, it was taken as statistically significant.

Results: It was seen that the mean hemoglobin value was significantly less among CKD patients compared to healthy controls ($p < 0.05$). Serum iron was also significantly less among CKD patients compared to healthy controls ($p < 0.05$). TIBC as significantly high among CKD patients compared to healthy controls ($p < 0.05$). This is because of low hemoglobin and low serum iron in CKD patients but again the transferrin saturation was significantly low among CKD patients compared to healthy controls ($p < 0.05$).

Conclusions: Anemia prevalence was very high in CKD patients. Hemoglobin, serum iron and transferrin saturation were significantly low and TIBC was significantly high.

Keywords: Chronic kidney disease, Comparison, Control, Serum iron, Serum ferritin

INTRODUCTION

In the third The National Health and Nutrition Examination Survey (NHANES), the prevalence of anemia in stage 3 CKD (i.e. GFR of 30-59ml/min/1.73m²) was 5.2%, rising to 44.1% in stage 4 and becoming almost universal in stage 5.¹

Population survey data estimates that at least 6% of adult population in the United States has CKD at stage 1 and 2.

Most frequent cause of CKD is diabetic nephropathy and most often secondary to type 2 diabetes mellitus.²

Anemia prevalence among patients with CKD and diabetes combined is around 20%. As the CKD advances, the severity of anemia worsens.³

It is further aggravated if the vitamin deficiency is present. In patients with CKD and diabetes combined, anemia may be relative or absolute. If the serum ferritin is more than or equal to 100ng/ml associated with

Original Research Article

Effect of nicotine exposure during pregnancy on birth weight among beedi rolling women

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ABSTRACT

Background: Exposure to nicotine can lead to increased morbidity and mortality among fetus and mothers. The objective was to study the effect of nicotine exposure on the birth weight of the babies.

Methods: During the study period of one year, it was possible to recruit the total 144 subjects. 36 were women who were exposed to nicotine as they were bidi rollers. The exposure was confirmed by history. 36 women delivered during the study period and these newborns were included in the present study. Control group were 36 pregnant women who were not exposed to nicotine. They were asked about the exposure history, like anyone in their family is smoking inside the house any time and their occupation. Among these all (36) delivered during the study period and their newborns were included in the present study.

Results: Both the groups were comparable in terms of age, hemoglobin, body mass index, gestational age. The mean birth weight of babies in the control group (whose mothers were not exposed) was 3.01kg with a standard deviation of 0.56 compared to mean birth weight of babies in the study group (whose mothers were not exposed) of 2.73kg with a standard deviation of 0.40. This difference in the mean birth weight of babies in the study group and the control group was found to be statistically significant ($p < 0.05$). The mean serum cotinine value in study group mothers and babies was very high compared to zero value in mothers and babies of control group and statistically significant ($p < 0.05$).

Conclusions: Maternal nicotine exposure through beedi rolling is associated with reduced birth weight.

Keywords: BMI, Beedi rolling, Gestational age, Low birth weight, Nicotine exposure

INTRODUCTION

Exposure to cigarette smoke can lead to increased morbidity and mortality among fetus and mothers. Placental development is adversely affected by damage caused due to cigarette smoke. This leads to reduced supply of oxygen and nutrients to fetus. Thus, it results in premature delivery, head size becomes small and there is restriction of the growth of the fetus. It can lead to low birth weight and not only that the effects can be seen till adult life.¹

It has been said that there are more than 4000 chemical compounds in the smoke of the cigarette. Most commonly known are carbon monoxide and nicotine and aldehydes. They are well known to cause the perinatal damage. Nicotine is capable of crossing not only the blood brain barrier but also the placental barrier and affects the fetus and also the concentration increases in the fetus blood than the maternal blood. It has been estimated that about 161,000 deaths that occur during perinatal period and 4800 deaths that occur during infancy are attributed to exposure to smoke of the

Oxidative stress in beedi rolling pregnant women and their newborns

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Abstract

Introduction: Though it is known that tobacco consumption and exposure to environmental tobacco smoke causes health hazards there is no parameter that can predict the extent of damage in pregnant women. There is no parameter that measures the fetal exposure to toxic of cigarette smoke.

Objective: To study oxidative stress in beedi rolling pregnant women and their newborns.

Materials and Methods: The study group consists of 36 mothers, 36 newborns and the control group consists of 10 mothers and 10 newborns. The cases were the pregnant women who were exposed to nicotine. The controls were the pregnant women who were not exposed. Estimation of TBARS was done by oxidative lipid peroxidation and non-oxidative lipid peroxidation methods.

Results: In this study it was observed that the duration of tobacco free period before delivery showed significant negative correlation with the serum cotinine levels. The duration of beedi rolling showed negative correlation with the serum cotinine levels. There was no relation found between either the duration of beedi rolling or the tobacco free period and lipid peroxidation levels. The above findings may be due to the adaptive changes in the metabolism of nicotine.

Conclusion: From the study it appears that there may not be much role of oxidative stress in the causation of low birth weight through the increased production of lipid peroxides or oxidative stress, but it cannot be ruled out that tobacco exposure through beedi rolling is a causative factor.

Keywords: Oxidative stress, Adaptive changes, Pregnancy, Serum cotinine.

Introduction

India ranks third in the world in tobacco production.¹ It is well known by now that tobacco consumption is hazardous to health. In western countries smoking is most common addiction in women whereas in India women chew tobacco more commonly than they do smoke.²

It is also known that tobacco smoking and use of smokeless tobacco by pregnant women are deleterious both to pregnancy and to perinatal outcome. Apart from their bad effect on causation of anemia, pregnancy induced hypertension etc.²

The most consistent observation is reduction in the birth weight among infants of smokers.³ Current understanding of the effect of the maternal smoking on pregnancy and on the developing fetus and child is based on clinical physiological, pathological, experimental and especially epidemiological studies.³

In the recent years many studies have shown the effect of tobacco smoke on lipid peroxidation which results from oxidative damage by free radicals.⁴ The decreased levels of antioxidants in the blood of smokers explain the oxidative stress by tobacco. Simultaneously, studies have also shown that many complications of pregnancies which are slightly more in smokers are associated with increased lipid peroxidation. Studies have suggested that maternal exposure to environmental oxidant can increase the risk of pregnancy complication through stimulation of formation of cell-damaging lipid peroxides and from a decrease in maternal antioxidant reserves. Passive smoking as well as direct inhalation of cigarette smoke causes oxidative

stress. Environmental tobacco smoke also increases the stress.

Beedi rolling is one of the major small scale industries in and nearby places of Dakshina Kannada district where 84 beedi rolling organizations are present according to the government register. There are 181,168 workers working in these beedi factories in Dakshina Kannada district itself and women contribute a major proportion to this number. These lady folk utilize this work often as a part time job as a means of earning an additional income for their family.⁵

Beedi rolling is rolling of the finely crushed dried tobacco in beedi leaves. Beedi rolling is one of the occupational modes of exposure to tobacco. Most studies are conducted on tobacco smoking group. It appears that there are no studies done on oxidative stress in this occupational work. In a previous study⁶ increased incidences were found. It was of interest to know the oxidative stress in the pregnant beedi rolling mother and hence the present study was undertaken.

Though it is known that tobacco consumption and exposure to environmental tobacco smoke causes health hazards there is no parameter that can predict the extent of damage in pregnant women. There is no parameter that measures the fetal exposure to toxic of cigarette smoke.

In the present study lipid peroxide levels with simultaneous serum cotinine levels were measured with the interest to know the effect of environmental exposure to tobacco dust in beedi rolling pregnant women. This information may give a clue to pathogenesis, prediction of the effect of beedi rolling on pregnancy and its outcome in those populations.

NO – 6

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Annexure I

DEPARTMENT OF ENT, KIMS. HUBLI.

Publications – 2019-2022.

Sl.No.	Faculty Name	Publication in Vancouver referencing style
01	Dr.Raveendra P Gadag	<p>1)Inferior turbinate reduction:Diode laser or conventional partialturbinectomy? Venkatesh Doreyaware, MS; Raveendra P. Gadag, MS; Dandi Narasaiah Manjunath, MS; Shivalingappa B. Javali, MPhil, PhD; Nagaraj Maradi, MBBS; Deekshit Shetty, MBBS</p> <p>2) “Clinical study to compare the effect of intratympanic injection of lidocaine and dexamethasone in tinnitus of cochlear origin” (Cite this article as: Surabhiraj, Megalamani SB,Gadag RP. Clinical study to compare the effect of intratympanic injection of lidocaine and dexamethasone in tinnitus of cochlear origin. Int J Otorhinolaryngol Head Neck Surg 2020;6:xxx-xx.) (Received: 30 September 2020 Accepted: 14 October 2020)</p> <p>3) “A study to compare the outcomes of laser myringotomy and convensional incision myringotomy” (Cite this article as: Pudukulangara S, Megalamani SB, Gadag RP. A study to compare the outcomes of laser myringotomy and convensional incision myringotomy. Int J Otorhinolaryngol Head Neck Surg. 2020;6:xxx-xx) (Received: 30 September 2020 Accepted: 14 October 2020)</p> <p>4) “A clinical study on laryngotracheal injuries following endotracheal intubation” Raveendra P. Gadag, Nidhi Mohan Sreedevi, Nikhila Kizhakkilott, Vijayalakshmi Muthuraj, Prajwal S. Dange, Manjunath Dandinarasaiah</p> <p>5) “Clinical Assessment of Sensorineural Hearing Loss among Diabetes Mellitus Patients” https://doi.org/10.47210/bjohns.2020.v28i2.297 Raveendra P Gadag,1 Puneeth S Nayak,1 Tejaswini J S1</p> <p>6) “Prevalence, distribution and correlates of pain in patients with mucormycosisA crossectional study” How to cite this article: Mitragotri MV, Sachidananda R, Kurugodiyavar MD, Gadag RP, Thirunavukarasu VM, Suhas CM Prevalence, distribution and correlates of pain in patients with mucormycosisA crossectional study. Saudi J Anaesth 2021;XX:XX-XX.</p>
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03	Dr.Somanath B Megalamani	<p>1) Surabhiraj1, Somanath B. Megalamani2*, Raveendra P. Gadag3 Clinical study to compare the effect of intratympanic injection of lidocaine and dexamethasone in tinnitus of cochlear origin International Journal of Otorhinolaryngology and Head and Neck Surgery /November 2020 / Vol 6 / Issue 11.</p> <p>2) Shruthi Pudukulangara, Somanath B. Megalamani*, Ravindra P. Gadag A study to compare the outcomes of laser myringotomy and conventional incision myringotomy International Journal of Otorhinolaryngology and Head and Neck Surgery /November 2020/ Vol 6/Issue 11</p> <p>3) “Clinical study to compare the effect of intratympanic injection of lidocaine and dexamethasone in tinnitus of cochlear origin” (Cite this article as: Surabhiraj, Megalamani SB, Gadag RP. Clinical study to compare the effect of intratympanic injection of lidocaine and dexamethasone in tinnitus of cochlear origin. Int J Otorhinolaryngol Head Neck Surg 2020;6:xxx-xx.)(Received: 30 September 2020 Accepted: 14 October 2020)</p>

		<p>4) "A study to compare the outcomes of laser myringotomy and konvensional incision myringotomy" (Cite this article as: Pudukulangara S, Megalamani SB, Gadag RP. A study to compare the outcomes of laser myringotomy and konvensional incision myringotomy. Int J Otorhinolaryngol Head Neck Surg. 2020;6:xxx-xx) (Received: 30 September 2020 Accepted: 14 October 2020)</p>
04	Dr.Manjunath D	<p>1) "Myiasis in Neglected Cutaneous Squamous Cell Carcinoma of the Head and Neck: Review of Management and Current Protocol Recommendations" Golda Grinblat, MD; Yulia Frenkel, MD; Itzhak Shochat, MD; Andro Košec, MD, PhD, FEBORL-HNS; Ayelet Midbari, MD; Roman Rysin, MD; Manjunath Dandinarasaiah, MD; Itzhak Braverman, MD; and Yoram Wolf, MD</p> <p>2) "A large malignant oncocytoma of parotid gland: a case report" Nidhi Mohan Sreedevi¹, Sunita S. Vernekar², Mohammed M. AbdusSamee², Manjunath Dandinarasaiah¹</p> <p>3) "A clinical study on laryngotracheal injuries following endotracheal intubation" Raveendra P. Gadag, Nidhi Mohan Sreedevi, Nikhila Kizhakkilott, Vijayalakshmi Muthuraj, Prajwal S. Dange, Manjunath Dandinarasaiah</p>
05	Dr.Kiran R Bongale	<p>1) The Effect of Epidermal Growth Factor on the Outcomes of Myringoplasty Dr.Kiran Ravindranath Bongale¹ Vikram Kemmannu Bhat¹ Mona Yadav¹ 2020 Indian Society of Otology</p> <p>2) Bongale KR, Bhat VK, Shetty AM. "The effect of fascia and free skin graft on the healing of mastoid cavity after canal wall down mastoidectomy" J Laryngol Otol. 2021; 6:1-6.</p> <p>3) Bongale KR, Bhat VK, Yadav M. "Effect of epidermal growth factor on the outcomes of tympanoplasty" Annals of Otology and Neurotology" 2020; 3: 23-26. Doi: 10.1055/s-0040-1715290</p>
06	Dr.Venkatesh Doreyawar	<p>3) Inferior turbinate reduction:Diode laser or conventional partialturbinectomy? Venkatesh Doreyawar, MS; Raveendra P. Gadag, MS; Dandi Narasaiah Manjunath, MS; Shivalingappa B. Javali, MPhil, PhD; Nagaraj Maradi, MBBS; Deekshit Shetty, MBBS</p>

Department wise list of FacultyMembers

[illegible]

PUBLICATION:

Sr. No	Faculty Name	Publication	Pubmed Indexed Yes/No	Scopes
1	Dr. Gajanan H Nayak Faculty Name	<ol style="list-style-type: none"> Sunilkumar S Biradar, Umesh Babu R, Gajanan H Nayak, Smitha M. "Age estimation by eruption and apical foramina closure of second premolar teeth"; Medico-legal Up-date, Volume 12 No. 1. Jan-June 2012,120-22. Dr.Gajanan H Nayak,"Autopsy findings in mass disaster", Journal of Medical Research and Practice, 2014, Vol:3, Issue:3, 78-82. Smitha M, Sunilkumar S Biradar, Gajanan H Nayak, Mallikarjun K Biradar, Shivakumar J. "A Study on Pattern of Lip Prints in Central Karnataka Region."; International Journal Of Health Sciences and Research, Vol:5; Issue:1; Jan 2015. 140-145. Dr.Gajanan H Nayak, Dr.Sunilkumar S Biradar, "Pattern of natural deaths and the frequency of occurrence of disease that cause them", International Journal Of Health sciences and research, Vol:5; Issue:6; June 2015. Dr.Gajanan H Nayak, Dr.Sunilkumar S Biradar, "Pattern of deaths attributable to poisoning in North Karnataka", International Journal Of Health sciences and research, Vol:5; Issue:9; September 2015, 34-37. Dr.A.A.Nadaf, Dr.Gajanan H Nayak, "Embolisation of lost guide wire: mishap or blunder?", Medicolegal Update, July-December-2015, Vol:15, No:2, 811-814. Dr.MahalaxmiKarlwad, Dr. Aadamali. A. Nadaf, Dr.Gajanan H Nayak, "Snake bite at an unusual site- a case report" Journal Karnataka Medico-Legal Society Jan-June 2016, Vol 25, No 1, 56-59. Dr.Gajanan H Nayak, Study of hanging cases in and around Hubballi, Journal of South India Medicolegal Association", 22-26. Gajanan H Nayak, Mahalaxmi Karlwad,"A Medicolegal Examination of Drowning Deaths- a retrospective study", J.International Journal of Science and Research, January 2017, Vol:6, Issue:1, 142-145. Gajanan H Nayak, Madhu Sudhan S, Sunilkumar S Biradar, Ravindra KumarC N, Hemanth Raj M N, "Study of trends of death due to burns cases at Hubballi region of Karnataka" Journal Medicolegal Update, Jan-June 2017, Vol:17, No.1,. Dr. Gajanan H Nayak, Dr. MuthamizhSelvan P, J. "Pattern of Craniocerebral injuries among Homicidal deaths in Hubli-Dharwad Region", MedicoLegal Update., Vol:17, Issue:2, July-December 2017. Dr.Gajanan H Nayak, Dr. Ravindra Kumar C N, Dr. SunilKumar S Biradar, Dr. MadhuSudhan S, J "Study of Pattern of Suicides Among Adolescent and Youth Among Autopsies Conducted at KIMS, Hospital Hubballi",MedicoLegal Update, Vol:17, Issue:2, Jul-Dec 2017, 22-26. Gajanan H Nayak, SunilkumarBiradar, Mahalaxmi Karlwad. "A Medicolegal study of unnatural female deaths- A retrospective study", J. MedicoLegal Update., Vol:17, Issue:2, July-December 2017, 142-145. Dr. Ravindra KumarC N, Dr. Gajanan H Nayak Sunilkumar S Biradar, Dr. MadhuSudhan S, J. Dr. Mahalaxmi Karlwad, Muthamizh Selvan. "Profile of deaths Due to Poisoning at a Tertiary care center in North Karnataka" Vol 18, No 2, July-December 2018, 123-127. 	<p>No</p> <p>No</p> <p>No</p> <p>No</p> <p>No</p> <p>No</p> <p>No</p> <p>No</p> <p>No</p> <p>No</p> <p>No</p> <p>No</p> <p>No</p>	<p>Scopus</p> <p>Copernicus</p> <p>Copernicus</p> <p>Copernicus</p> <p>Copernicus</p> <p>Scopes</p> <p>Copernicus</p> <p>Copernicus</p> <p>Copernicus</p> <p>Copernicus</p> <p>Scopus</p> <p>Scopus</p> <p>Copernicus</p>

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5	Dr. Santosh Kumar. P.	<p>1. Dr. Santosh Kumar P Dr. Mahalaxmi Karlawad, Dr. Gajanan H Nayak "A study on pattern of adolescent deaths- A retrospective study"J.MedicoLegal Update., Vol:19, Issue:1, January-July 2019, 52-56.</p> <p>2. Dr. Santosh Kumar P, Dr. Mahalaxmi Karlawad, Dr. Gajanan H Nayak "Profile of Electrocution deaths", Indian Journal of Forensic Medicine and Toxicology, Vol:13, Issue:1, January- March 2019, 83-86.</p> <p>3. Dr. Santosh Kumar P , Dr. Santosh Shilavant, "Accuracy and practical applicability of hand print dimensions in estimation of stature of an individual in North Karnataka region", Journal of Indian academy of Forensic Medicine, Vol:41, Issue:2, April-June 2019, 93-97.</p>	No	Scopes
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20. Neck Circumference and Leg Length as Surrogate Markers of Coronary Artery Disease- Simplifying Cardiac Risk Stratification? Kaulgud RS, Arun BS, Vijayalaxmi PB. Accepted for publication in Journal of Clinical and Diagnostic Research. J Clin Diagn Res. 2017; 11(5): OC17–OC19.
21. Koppad AK, Patil GS, Baligar BD, Renukappa VB. Evaluation of Serum Vitamin B12 levels in Type 2 Diabetes patients on Metformin therapy attending a tertiary care hospital. J. Evid. Basedmed. Healthc.2017; 4(90): 5399-5404.
22. Koppad AK, Kaulgud RS, Arun BS. A study of correlation of neck circumference with framingham's risk score as a predictor of coronary artery disease. J Clin Diagn Res. 2017; 11(9): OC17-OC20
23. Kaulgud R. and Medini S. Study of variations in clinical and hematological profile of dengue patients over time. International Journal of Biomedical Research 2021; 12(11): e5545. DOI: 10.7439/ijbr.v12i11.5545

2. PLANS FOR RESEARCH

4. Details of Academic Activities

1. KAPICON 2014 conducted from May 16- 18, 2014.
2. CMF titled 'Diabetes Update' conducted on 13-12-2014.
3. Post Graduate teaching are held every week- **Annexure 1**

4. Details of Achievements

1. Dr Ram S Kaulgud received ICMR funding for Extramural Research Project "Genetics of Myocardial Infarction in Young."
2. Dr Ram S Kaulgud received RGUHS, Bangalore funding for research project "salivary nuclear biomarkers –a novel screening strategy for oral cancer and premalignant lesions."
3. Research paper presentation by Dr Ram Kaulgud at APICON 2016.
4. Research paper presentation by Dr Ram Kaulgud at CSICON 2015 titled "Early prognosis of Unstable angina patients and H.Pylori IgG values."

Platform Presentations during KAPICON 2014

- a. Updates on Ricketsial Disorders by Dr Vasantha Kamat
- a. Clinical Challenges in Renal Disorders by Dr V. Moger
- b. New Frontiers in Management of Obesity by Dr.Uday Bande.
- c. Artificial Pancreas by Dr. D.M.Kabade (KAPICON 2014)
1. Emerging Trends in managing Asthma by Dr. Shylendra D.S.
- d. Novel Biomarkers for Risk Stratification of Acute Coronary Syndromes by Dr. Ram S Kaulgud
- b. Panel Discussion on CVT ; Dr Amrut was one of the Panelist.

Co-ordinators for Free Paper presentations during KAPICON 2014 :

1. Dr H.M.Swamy
2. Dr Chandrashekhar K
3. Dr Praveen Kusabi
4. Dr Santosh Vastrad

Following Faculty Members Co-ordinated for conducting Workshops during KAPICON 2014

1. Assessment and Interpretation of the Pulmonary Function Tests.
Co-ordinator : Dr. Shylendra D.S.
2. Airway Management in critically ill patients. Co-ordinator : Dr Chandrashekhhar K.
3. Echocardiography Workshop. Co-ordinator : Dr R.K.Hiremath

Research paper& poster presentation by Post Graduate students:

1. Research paper presentation by Dr Arun B.S at KAPICON 2015 titled “A rare case of paraquat poisoning developing pneumothorax”.
2. Research paper presentation by Dr Nagaraj A.R at KAPICON 2015 titled “Study of right liver lobe/albumin ratio; non invasive technique to predict esophageal varices in patients with cirrhosis of liver”.
3. Research paper presentation by Dr Vishwajeeth Pai at KAPICON 2015 titled “hypokalemic paralysis as the presenting feature in 2 patients with sjogren syndrome”.
4. Research paper presentation by Dr Triveni A at KAPICON 2015 titled “Study of serum uric acid level as a prognostic indicator in acute myocardial infraction”.
5. Research paper presentation by Dr Lokanath M at KAPICON 2015 titled “A study of hemotologic manifestations in patients with HIV infection”.
6. Research paper presentation by Dr Subhash NB at KAPICON 2015 titled “A case of reflex eating/ a case of eating induced seizures”.
7. Research paper presentation by Dr Annish T at KAPICON 2015 titled “Spectrum of liver disease in patients with type 2 diabetes mellitus”.
8. Research paper presentation by Dr Abhilash V.C at KAPICON 2015 titled “A rare case of phenytoin induced cerebellar atrophy in a young epileptic female”.
9. Research paper presentation by Dr Anand Chavan at KAPICON 2015 titled “Neck circumference and leg length as a independent predictors of coronary artery disease”.
10. Poster presentation by Dr Anand Chavan at KAPICON 2015 titled “Corrilation between body fat components and coronary heart disease risk scores”.
11. Research paper presentation by Dr Gavisiddanagowda Patil at KAPICON 2016 titled “Clinical profile of coronary artery disease in women attending a tertiary care hospital: an observational study”.

12. Poster presentation by Gavisiddanagowda Patil at KAPICON 2016 titled “Evaluation of serum B12 levels in type 2 diabetes mellitus on metformin therapy attending a tertiary care hospitals: a cross sectional study”.
13. Research paper presentation by Dr Anush Babu at KAPICON 2016 titled “A Prospective Study of Predicting the Need for Ventilatory Support and Outcome In Organophosphorus compound Poisoning”.
14. Research paper presentation by Dr Afaq Ahmed at KAPICON 2016 titled “Study of adverse drug reactions in MDR-TB therapy in patients at KIMS Hubli”.
15. Research paper presentation by Dr Basith Lateef Kardkal at KAPICON 2016 titled “Study of the Rates and Predictors of Failure of First Line Anti Retroviral Therapy And Switch to Second Line Anti Retroviral Therapy in HIV Patients in KIMS Hubli”.
16. Research paper presentation by Dr Sudhindra Babu at KAPICON 2016 titled “Study of Clinical Profile of Cerebral Venous Thrombosis In KIMS Hubli”
17. Research paper presentation by Dr Anup Hanchinal at KAPICON 2016 titled “A Study of Myocardial Dysfunction in Newly Dectedected HIV Patients”
18. Research paper presentation by Dr Sagar Reddy at KAPICON 2016 titled “Cardiorenal Syndrome Type 4: A study of Cardiovascular Disease in Chronic Kidney Disease”.
19. Poster presentation by Dr Brijesh K at KAPICON 2016 titled “study of dyspnea in patients with CKD”.
20. Poster presentation by Dr Anup hanchinal at KAPICON 2016 titled “study of clinical profile and risk factors of stroke in women”.
21. Poster presentation by Dr Mahabaleshwar at KAPICON 2016 titled “a cross sectional study of metabolic syndrome in patients undergoing coronary angiography at kims hospital”.
22. Poster presentation by Dr Basith lateef at KAPICON 2016 titled “nitrobenzene poisoning with severe methhemoglobinemia: a case report”.

DEPARTMENT OF MICROBIOLOGY KIMS HUBLI

Annexure 7

PUBLICATIONS

- 1) Prevalence of HIV infection among blood donors in North Karnataka.
S.S. Tallur, A.P.Shahapurkar, B.V.S. Krishna.
IJMM. 1997; 15 (3) : 123-125.
- 2) Multidrug resistant *Salmonella typhi* in Hubli
Shobha Nadagir, Krishna, Halesh, S.S.Tallur.
IJMM 1998;16 (4):185.
- 3) IgM estimation & CRP detection in Neonatal septicemia
Kriashna, Shobha Nadagir, S.S.Tallur.
IJPM.2000; 43 (1): 35-40.
- 4) Clinico bacteriological study of Neonatal septicemia in Hubli.
S.S.Tallur, A.V.Kasturi, Shobha Nadgir, Krishna.
Indian Journal of Padiatrics. 2000; 67 (3) : 169-174.
- 5) Subconjunctival dirofilariasis in India.
Shobha Nadagir, S.S.Tallur, Halesh, Krishna
Southeast Asian J.Trop Med. Public Health.2001; 32 (2): 244-246.
- 6) Incidence of *V.cholerae* serogroup 0139 infection with low virulence in Hubli.
Krishna, Asha Patil, Shobha Nadagir, M.R. Chandrasekhar.
IJPM 2003; 46:142-146.
- 7) False positive widal test in Malaria.
Shobha Nadagir, V Nambiar, Halesh.
Indian practitioner. 2004; 57(8):507-510
- 8) CA- MRSA infection in a South Indian city
Krishna, Asha Patil, M.R. Chandrasekhar.
Southeast Asian J.Trop Med. Public Health 2004; 35(2): 371-374
- 9) Bacteriological profile of CSOM with *Pseudomonas* as the prime pathogen.
M.R .Chandrasekhar, Krishna, Asha Patil Ind. Jr. of Otology. 2004;10-13.
- 10) Fluoroquinolone resistant *V. cholerae* isolated during a cholera outbreak in India.
Krishna, Asha Patil, M.R.Chandrasekhar.
Transactions of the Royal Society of Tropical medicine. 2006;100(3):224-6

- 11) Neonatal sepsis by *Salmonella enterica* serovar *weltevreden*
Asha Patil, Krishna, M.R.Chandrasekhar.
Southeast Asian J.Trop Med. Public Health 2006; 37(6) : 1175-1178
- 12) MRSA infections – Implications In Hospital infection control
Krishna, Asha Patil, M.R.Chandrasekhar.
Indian Journal of public health . 2007;1: 43-46
- 13) ESBL producing *K. pneumoniae* in NICU
Krishna, Asha Patil, M.R.Chandrasekhar.
Indian Journal of Pediatrics . 2007; 74: 627-630
- 14) *Listeria Monocytogenes* meningitis an uncommon opportunistic infection in HIV
Asha Patil, Shobha Nadagir, M.R. Chandrasekhar, Halesh, Mahesh.
IJPM 2007; 3:671-673.
- 15) Significance of isolation & drug susceptibility testing of Non *Candida albicans* species causing oropharyngeal candidiasis in HIV patients
Shobha Nadagir, Sneha, Halesh, Yasmeen, M.R.Chandrasekhar.
Southeast Asian J.Trop Med. Public Health 2008; 39(3):492-495.
- 16) Changing characteristics of *V.cholerae*
Emergence of multidrug resistance & Non-01, Non-0139 serogroups
M.R.Chandrasekhar, Krishna, Asha Patil.
Southeast Asian J.Trop Med. Public Health. 2008; 39(6): 1092-1097
- 17) Virulence factors, Serotypes and Antimicrobial Susceptibility
Pattern of *Escherichia coli* in Urinary Tract Infections.
Yasmeen Kausar, Shobha D Nadagir, Sneha K Chunchanur,.
Al Ameen J Med Sci . 2009; 2(1):47-5
- 18) Multidrug Resistant pathogens causing Neonatal septicaemia in a Tertiary care Hospital in India
Asha patil, BVSKrishna, MRChandrasekhar
The Ind. Pract. 2009; 62 (4) : 233-238.
- 19) Detection & antifungal susceptibility testing of oral *C. dubliniensis* from HIV infected patients
Sneha, Shobha Nadagir, Halesh.
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- 20) Chromoblastomycosis due to *Cladosporium Carrionii*
Namratha. N, Shobha Nadagir, Mamatha Kale, Ravi Rathod
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- 21) *Corynebacterium mucifaciens* causing peritonsillitis.
Mahesh kumar S, Shobha D Nadagir, Madhusudhan N.S, Syeda Fasiha Mohammadi
The Journal of the Academy of Clinical Microbiologists 2010; 12 (1): 34-36.
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Jnaneshwara K.B.
Biomedical Research 2010; 21 (4): 457-460
- 23) Prevalence of Extended Spectrum Beta Lactamase producing Enterobacteriaceae in
Clinical specimens.
G.S. Ravi, B.V.S. Krishna, Namratha W. Nandihal, Asha B. Patil and
M.R. Chandrasekhar Biomedicine;2011;31 (1):78-83
- 24) Comparison of Disc Diffusion Methods for the Detection of Extended-Spectrum
Beta Lactamase Producing Enterobacteriaceae .
Ravi S Giriyaapur, Namratha W Nandihal, Krishna B V S Asha B Patil, Chandrasekhar MR..
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Shobha D. Nadagir. Abdul Kaleem Bahadur Tipperudra Anantappa Shepur
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- 26) Correlation of Cefoxitin Disc Diffusion test and oxacillin disc diffusion test for
detecting mec A mediated oxacilli, resistant *Staphylococcus aureus*.
Madhusudhan NS, Deepa S, Shobha DN.
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antibiotics among klebsiella and *Escherichia coli*
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Maheshkumar S, Seethalaxmi K.D., Shobha Nadagir, Subramanya G.K.
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- 31). Prevalence of Inducible Clindamycin Resistance among
Community and Hospital acquired Staphylococci Isolates.
S.A. Lakshminarayana, Shobha Nadagir, S. Maheshkumar
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- 32) Microbiological quality of water and dialysate at a haemodialysis unit in India.
M R Chcnarasekhar, Asha Patil, B V S Krishna. Journal of Belgaum Ins
of Med Scie 2012;1(1):1-4
- 33) Rhizomucor variabilis: A rare causative agent of primary cutaneous zygomycosis.
Asha B Patil, K Chandramohan, M R Shivaprakash, Shobha D Nadagir,
S A Lakshminarayana. Ind J of Med Microbiology 2013;31(3):302-305
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Syeda Fasiha M, Asha B Patil, Shobah D Nadagir, Namrata Nandihal,
S A Lakshminarayana
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S A Lakshminarayana , Namrata Nandihal.
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reference to metallo-B-Lactamase producers
Dr. Mahesh kumar. S.
International Journal of Health Sciences and Research. March 2015; 5 (3): 137-142.
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and *Klebsiella* species isolates
Dr. Namratha W. N.
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and Dental Sciences.
Dr. Mythri B. A.
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R Eshwar Singh, K B Jnaneshwar, G Vishwanath, and B V Murlimanju.
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Dr. Mythri B. A.;Dr. Arathi K.
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- 47) Cephalosporin resistance:challenges in providing appropriate and effective treatment protocols.
Asha B Patil, Shobha D nadgir, Shyamala S, laksminarayana SA, Syeda Fasiha M.
Ind J of Microbiology research.
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- 48) Association of host characters and uropathogens in community and Hospital acquired UTI.
Santosh G, asha B Patil, Namrata N.
Int J of current and Microbiology and applied sciences.
2015;4(12):352-357
- 49) Antimicrobial Resistance profile of *Pseudomonas aeruginosa* Isolates with special reference to metallo-B-Lactamase producers
Dr. Mahesh kumar. S.
International Journal of Health Sciences and Research. March 2015; 5 (3): 137-142.
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N Pramod Sambrani, B Asha Patil, A Divya.
International Journal of Current Microbiology and applied sciences 2016; 5(2): 707-710.

- 52) A Study on prevalence of Brucellosis in veterinarians and slaughter house workers in North Karnataka region, India
N Pramod Sambrani, B Asha Patil, A Divya
International Journal of Current Microbiology and applied sciences 2016; 5(3): 513-519.
- 53) Aerobic Bacteriological profile from wound site infections in Road Traffic Accident (RTA) Patients. Mythri B. A., Asha B. Patil, Arati. K, Sharon V.A: Indian Journal of Microbiology Research, Volume 3, Issue I, 2016, Pg 37-39.
- 54) Bacteriological profile and antibiogram of neonatal septicemia in a tertiary care hospital
Mythri B. A, Asha B. Patil, Divya A Pooja M, Sharon VA; Indian Journal of Microbiology Research, Volume 3, Issue II, April –June 2016, Pg 134-138
- 55) Incidence of infections with extended spectrum beta Lactamase (ESBL) – producing gram- negative bacteria among patients admitted in medical intensive care unit of tertiary care Hospital Perumal P.G., Jnaneshwara K. B., Patil A.B., Akshay R.
Tropical Journal of Pathology & Microbiology April - June 2017, Vol. 3 issued 2
- 56) Prevalence of multidrug-resistant tuberculosis among category II treatment failures in North Karnataka. Mohammed Ashraf Ali S Namaji, Shobha D. Nadagir, Jnaneshwara K. B., Shylendra D.S., Maheshkumar S., Yashwanth A. M.
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- 57) Edwardsiella tarda: An Uncommon Causative Agent of Cellulitis
K.B Jnaneshwara, Asha B Patil, Arati Kalkutakar, Aftab Ahmed & Sheethal
International Journal of current Microbiology & applied sciences 2016, 5 (6):xx-xx
- 58) Urinary tract infection: A very rare presentation of Geotrichum candidum infection
Rupali Shinde, Walvekar R R: Jnaneshwara K. B, Mantur B.G.,
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Shobha Medegar K. R., Pooja Mansabdar, Asha B. Patil, Harshika Y.K., Ganesh Perumal Neeta P.N.
- 60) Detection of extended spectrum Betalactamases(ESBLs) Producing Enterobacteriaceae from clinical samples of Pus. Shobha Medegar K R , Y.K. Harshika and Asha B.Patil. International Journal of Current Microbiology and Applied Sciences(2019) 8(1):1369-1376.
- 61) Study of Cardiac Manifestations in Dengue Fever Volume 8 Number 07 (2019)
Int. J. curr. Microbiol. App. Sci (2-19)8(7): 636-644Arati Kalakutakar,
H Suresh and G, Ashok
- 62) Aerobic bacteriological profile of acute exacerbations of chronic pulmonary disease in a tertiary care Hospital Mythri B.A., Asha B. Patil, Gana P. Prathibha J. Indian Journal of Microbiology Research 2020, 7 (3) Pg: 293-298.
- 63) A Study of aerobic bacteriological profile of surgical site infections in a tertiary care hospital .
Mythri B.A. Maheshkumar S. Asha B. Patil, Gana P. Akshata U. International Journal of Medical Microbiology and Tropical diseases 2020, 6(1): Pg: 42-47
- 64) A study of rotavirus infection in acute diarrhea in children less than 5 years of age. Pooja Mansabdar, Pramod N. Sambrani, Mahesh Kumar. S. Indian Journal of Microbiology Research 021, 8 (4)::321- 326 67) Study of Cardiac Manifestations in Dengue fever
- 65) An evaluation of three different biofilm detection methods in Orthopaedic implant associated infections and its implication in health care system. International Journal of Medical Microbiology and Tropical diseases 2022, 8(1):63-68. Pooja Mansabdar, Shobha Medegar K R , and Asha B.Patil.

DEPARTMENT OF MICROBIOLOGY , KIMS, HUBLI

Annexure 8

List of Publication (Last 3 years)

- 1) Study of prevalence of community acquired *Mycoplasma pneumoniae* infections at KIMS Hospital, Hubballi, India
N Pramod Sambrani, B Asha Patil, A Divya.
International Journal of Current Microbiology and applied sciences 2016; 5(2): 707-710.
- 2) A Study on prevalence of Brucellosis in veterinarians and slaughter house workers in North Karnataka region, India
N Pramod Sambrani, B Asha Patil, A Divya
International Journal of Current Microbiology and applied sciences 2016; 5(3): 513-519.
- 3) Aerobic Bacteriological profile from wound site infections in Road Traffic Accident (RTA) Patients. Mythri B. A., Asha B. Patil, Arati. K, Sharon V.A: Indian Journal of Microbiology Research, Volume 3, Issue I, 2016, Pg 37-39.
- 4) Bacteriological profile and antibiogram of neonatal septicemia in a tertiary care hospital
Mythri B. A, Asha B. Patil, Divya A Pooja M, Sharon VA; Indian Journal of Microbiology Research, Volume 3, Issue II, April –June 2016, Pg 134-138
- 5) Incidence of infections with extended spectrum beta Lactamase (ESBL) – producing gram- negative bacteria among patients admitted in medical intensive care unit of tertiary care Hospital Perumal P.G., Jnaneshwara K. B., Patil A.B., Akshay R.
Tropical Journal of Pathology & Microbiology April - June 2017, Vol. 3 issued 2
- 6) A Clinico- Bacterial profile of Pyoderma
Dr. Namratha W. Nandihal, Dr. G.S. Ravi
International Journal of current Microbiology applied Sciences.
2017;6 (3): 1575-1580
- 7) *Edwardsiella tarda*: An Uncommon Causative Agent of Cellulitis
K.B Jnaneshwara, Asha B Patil, Arati Kalkutakar, Aftab Ahmed & Sheethal
International Journal of current Microbiology & applied sciences 2016, 5 (6):
- 8) A Study of Biofilm producers and Its Correlation to Antimicrobial Resistance Among Orthopaedic Implant Associated Infections in a Tertiary Care Centre.
Shobha Medegar K. R., Pooja Mansabdar, Asha B. Patil, Harshika Y.K.,
Ganesh Perumal, Neeta P.N.
- 9) Detection of extended spectrum Betalactamases(ESBLs) Producing Enterobacteriaceae from clinical samples of Pus. Dr Shobha Medegar K R , Y.K. Harshika and Asha B.Patil. International Journal of Current Microbiology and Applied Sciences(2019) 8(1):1369-1376.
- 10) A Study of aerobic bacteriological profile of surgical site infections in a tertiary care hospital.
Mythri B.A, Mahesh Kumar S,Asha B. Patil,Gana P, Akshata U. International Journal of Medical Microbiology and Tropical diseases 2020, 6(1): Pg 42-47.
- 11) Aerobic bacteriological profile of acute exacerbations of chronic pulmonary disease in a tertiary care hospital. Mythri B.A, Asha B. Patil,Gana P,Prathibha J. Indian Journal of Microbiology Research 2020, 7(3): Pg 293-298.
- 12) Study of Cardiac Manifestations in Dengue Fever
Volume 8 Number 07 (2019)
Int. J. curr. Microbiol. App. Sci (2-19)8(7): 636-644
Arati Kalakutakar, H Suresh and G, Ashok

- 18) A study of rotavirus infection in acute diarrhea in children less than 5 years of age. Pooja Mansabdar, Pramod N. Sambrani, Mahesh Kumar. S. Indian Journal of Microbiology Research 2021, 8 (4)::321- 326 67) Study of Canrdiac Manifestations in Dengue fever
- 19) An evaluation of three different biofilm detection methods in Orthopeadic implant associated infections and its implication in health care system. International Journal of Medical Microbiology and Tropical diseases 2022, 8(1):63-68. Pooja Mansabdar, Shobha Medegar K R , and Asha B.Patil.

Annexure- 9

DEPARTMENT OF MICROBIOLOGY KIMS, HUBLI

Research Projects in Progress

1. Comparative analysis of non structural protein 1 antigen detection by immunochromatography and Enzyme Linked Immunosorbent Assay for the diagnosis of acute dengue infection.
Dr. Sheethal S, Dr. Maheshkumar. S.
2. Aerobic Bacteriological Profile of Burn Wound Infections and their Antibigram In a Tertiary Care Hospital-KIMS Hubli.
Dr.Sharon V.A., Dr. Mythri B.A.
3. “Identification, Speciation of Coagulase Negative Staphylococci and Prevalence of Methicilline Resistance Among Them”
Dr. Uma Chikkaraddi. Dr. Namratha Nandihal
4. Microbiological profile of Orthopaedic implant associated Infections with special reference to ESBL, AMP C,MRSA and Metallo beta Lactamase.
Dr.Ganesh Perumal P. Dr.Asha B Patil
5. Prevalance of HIV infection among antenatal women attending ICTC at KIMS, Hubli.
Dr. Mythri B. A.
6. A Study of post – operative wound infections with special reference to Detection of MRSA and Extended spectrum B-lactamases and AMP^C
Dr. Pramod N. Sambrani
7. Declining trends in the prevalence of Human Immunodeficiency Virus; Role of ICTC.
Dr. Pramod N. Sambrani
8. A Study of Post operative wound infections with special reference to detection of MRSA and Extended spectrum B-lactamases and AMPC
Dr. Pramod N. Sambrani Dr. Divya A
9. A Study of Microbial aetiology of acute diarrhea in children less than 5 years of age with special reference to hospital infection Dr. Mahesh Kumar S. Dr. Pooja M.
10. Seroprevalance of Herpes simply virus – 1 in clinically suspected cases.
Dr. Asha B. Patil, Dr. Akshat Vij
11. Detection of Mycobacterium tuberculosis and its multidrug resistance using line probe assay in pulmonary tuberculosis
Dr. Jnaneshwar K. B. Dr. Smitha N. R.
12. A Study of MDR-TB in pediatric Patients with special reference to HIV positive cases in a tertiary care institute Dr. Ganesh
13. Molecular detection of Rifampicin and Isoniazid Resistance and mutations in Mycobacterium tuberculosis complex using Line probe Assay. Dr. Uma
14. Utility of CBNAAT /Gene Xpert as a rapid diagnostic tool for the detection of Mycobacterium tuberculosis and its drug resistance (Oral presentation Dr. Sharon V. A) State Conf.Feb 16.
15. Evaluation of different methods of biofilm and its correlation to antimicrobial resistance pattern among bacterial isolates of Orthopaedic implants at KIMS, Hubli.
Dr. Shobha M, Dr. Pooja, Mansabdar, Dr. Asha B. Patil, dr. Harshika, Dr. Ganesh
Dr. Abhishek Mansabdar

Department of OBG, KIMS Hubballi

List of publications by the members of the staff in the preceeding 3 years:

1. Study of gestational trophoblastic diseases at tertiary care hospital in India Antaratanirc et all international journal of reproduction and contraception obstretic & gynecology 2018 apr:7(4):1622-1627.
2. Paracervical clamps for treatment of uncontrolled postpartum haemorrhage: all international journal of reproduction and contraception obstretic & gynecology 2018 aug :7(8):3362-3368.
3. A clinical study on prophylactic iv oxytocin infusion at the time of incision in casarean section and its out come in a tertiary care hospital kasturidonimath, vinayraju. Mar 26 2018. Valum no 07/issue 13/march 26/2018 pg6808-6810
4. Comparision of foley's catheter with pge2 gel and foley's catheter with amniotic saline infusion for labour induction 2018 may 7(5):1782-1785 Shobha bembalagi , lavanya, vinutha m b
5. Randomized clinical trial of active induction versus expectant mgt. In premature rupture of the membranes at term 2/2/2021/2021;8(2):1-4 Shobha bembalagi, tejashree m, preetha f naykar
6. Comparative study of mifepristone and misoprostol versus misoprostol alone in induction of labour in late intrauterine fetal death Hemalatha k. R.*, qutejatulkubramulla international journal of reproduction, contraception, obstetrics and gynecologyhemalathakr et al. Int j reprod contracept obstet gynecol. 2018 mar;7(3):987-990
7. Serum lactate dehydrogenase as a prognostic marker in preeclampsia and eclampsia Hemalatha. K .r1, sahaja.kittur2,*indian journal of obstetrics and gynecology research, january-march, 2018;5(1):31-36 .

8. Maternal and perinatal outcome in placenta previa with scarred and unscarred uterus : a comparative study in tertiary care centre and medical college. dr.sahajakittur, dr.Hemalatha k r dr. Deepti g n, 4thjune 2020 (issn 2454-2334/2454-2342)
9. “ Retrospective Study on peripartum cardiomyopathy at tertiary care hospital in KIMS Hubli” European journal of pharmaceutical and medical research; aug 2018 2018; feb ;5[3]
10. “Retrospective analysis of perinatal outcome of breech delivery by vaginal route in multiparous women”.journal of medical science & clinical reseach; feb 2018 ;vol 6 ; issue 02;
11. “ Domicilliary use of mifepristone and misoprostol in first trimester medical abortion”. I O S R journal of dental & medical sciences ; march 2017 ; vol 16; issue 3; version 3 ;
12. “ mifeprisone with misoprostol for midtrimester abortion – a prospective study.”international journal of medical science and innovative research[ijmsir] ;2018 ; Vol-3 ;issue 1; feb; page no 182-186
13. “Retrospective analysis of pap smear screening for detection of cervical carcinoma” European journal of pharmaceutical and medical research; 2018; aug;
14. “The misgavladach lower segment cesarean section ;experience at a tertiary hospital”.
15. Outcomes of ultrasound-guided percutaneous nephrostomy in carcinoma cervix with upper tract obstruction. Indian journal of gynecologic oncology. December. 2020;18(4). Doi:10.1007/s40944-020-00470-z

16. Prasanna n, akthargw, mahadevappa k. Laparoscopic sterilization: Is it a safer option for women. The New Indian Journal of Obgyn. 5 th january 2021.

17. Evaluation of postpartum intrauterine contraceptive devices (iucd) insertion:5 years study ramlingappa c international journal of reproduction, contraception, obstetrics and gynecology s et al. Int j reprod contracept obstet gynecol. 2019mar;8(3):1133-1138

18. Evaluation of postpartum intrauterine contraceptive devices (iucd) insertion:5 years study ramlingappa c international journal of reproduction, contraception, obstetrics and gynecology s et al. Int j reprod contracept obstet gynecol. 2019mar;8(3):1133-1138

19. Mahadevappa k, kanwal p, prasanna n. Nondescent vaginal hysterectomy: can it be a better alternative to abdominal hysterectomy. The new indian journal of obgyn. 2021; 7(2): 181-85.

20. Elective induction of labour at 39 weeks versus expectant management up to 41 weeks in a tertiary care centreyogindra m. Kabadi, sanjanakumar* international journal of reproduction, contraception, obstetrics and gynecologykabadiym et al. Int j reprod contracept obstet gynecol. 2020 feb;9(2):794-798 www.ijrcog.org

21. Risk factors and outcome analysis of post-partum haemorrhage in a tertiary care centre roopavarind k., priyashankar* international journal of reproduction, contraception,obstetrics and gynecologyaravindr k et al. Int j reprod contracept obstet gynecol. 2019 feb;8(2):377-379

22. study of maternal and fetal outcome in HIV positive women on HAART therapy in a tertiary hospital priyashankar, madhu j.* international journal of reproduction, contraception,obstetrics and gynecologyshankar p et al. Int j reprod contracept obstet gynecol. 2019 feb;8(2):717-720

23. roopa a k karavind prevalence and clinical study of pregnant women with hepatitis b infection an institutional experience jemds.com

24. B jajupurushottam, patilroopa the journal of obstetrics and gynecology of india; prophylactic intramuscular pgf2a versus intravenous methyl ergometrine for prevention of atonic PPH in high risk women.

25. Risk factors and outcome analysis of post-partum haemorrhage in a tertiary care centreRoopa aravind k., priyashankar* international journal of reproduction, Contraception, obstetrics and gynecologyaravindr k et al. Int j reprod contracept Obstet gynecol. 2019 feb;8(2):377

26. Maternal and perinatal outcome in placenta previa with scarred and Unscarred uterus : a comparative study in tertiary care centre and medicalCollege. 4thjune 2020 (issn 2454-2334/2454-2342) dr Sahaja k , dr deepti, dr Hemalatha k

27. A clinical study on the analysis of caesarean section rates using robson's ten group classification in a tertiary care hospital priyashankar, madhu j.*, vinayraju international journal of reproduction, contraception, obstetrics and gynecologyshankar p et al. Int j reprod contracept obstet gynecol. 2019 feb;8(2):1to4

28. Clinical study on postpartum eclampsia madhu j., priyashankar* international journal of reproduction, contraception, obstetrics and gynecologymadhu j et al. Int j reprod contracept obstet gynecol. 2019 feb;8(2):1to4

29. Study of maternal and fetal outcome in hiv positive women on haart therapy in a tertiary hospital priyashankar, madhu j.* international journal of reproduction, contraception, obstetrics and gynecologyshankar p et al. Int j reprod contracept obstet gynecol. 2019 feb;8(2):717

30. A clinical study of tramadol as an analgesic in labourshyamsundar b.*, vinutha m. B.International journal of reproduction, contraception, obstetrics and gynecology shyamsundar b et al. Int j reprod contracept obstet gynecol. 2018 jan;7(1):312-317 www.ijrcog.org pissn 2320-1770 | eissn 2320-1789

31. Carboprost versus oxytocin for active management of third stage of labor: a prospective randomized control study k. S. Sunil kumar1• sundar shyam1• pavitrabatakurki

32. A clinical study on maternal heart diseases complicating pregnancy at tertiary care hospital, drvinayaraju, dr.seetagarag 12thjuly 2020

33. Obstetric and new born outcome in HIV infected pregnant women: a prospective cohort study in Bangalore medical college hospitals, India. International journal of reproduction, contraception, obstetrics and gynecology. Desai R et al. Int J Reprod Contracept Obstet Gynecol. 2018 Nov;7(11):4445-4450
34. Comparison of efficiency between RMI1 and RMI2 in diagnosing ovarian malignancy. Rashmi R, Shalgar, Narayan Y, Kabad2i. International journal of reproduction, contraception, obstetrics and gynaecology. Int J Reprod Contraception Obstetric Gynecol. 2019 Aug;8(8):2991-2996
35. Study of maternal and Perinatal outcome in placenta previa at a tertiary care centre. International journal of clinical obstetrics and gynecology. Dr Hemalatha kr, Dr Sahaja, Dr Deepti.
36. Randomized clinical trial of active induction versus expectant management in premature rupture of the membranes at term. Shobha Bembalagi et al Indian journal of obstetrics and gynecology research 2021; 8(2):1-4
37. Maternal and Perinatal outcome in placenta previa with scarred and unscarred uterus: a comparative study in a tertiary care centre and medical college. Sahaja Kittur et al The New Indian Journal of OBGYN. 2021 (Jan to Jun) :7(2)
38. Corpus luteum haemorrhage in patients on oral anticoagulants in a tertiary care centre North Karnataka: a case series. Dr. Puneeta et al The New Indian Journal of OBGYN. 2021 (ISSN 2454-2334/2454-2342)
39. "Kabadis Stitch": A novel reversible conservative method of treating uterovaginal prolapse by cervicovaginal fixation to immobilise the prolapse in elderly surgically unfit women. 2021 Oct;71(5):550-553. doi: 10.1007/s13224-021-01480-3. Epub 2021 Apr 15

KARNATAKA INSTITUTE OF MEDICAL SCIENCES, HUBBALLI
DEPARTMENT OF OPHTHALMOLOGY

Sl. No	Name Of Staff	Designation
1	Dr. Savitha Kanakpur	Professor & HOD
2	Dr. Uday Mulgund	Professor
2	Dr. Seetalaksmi D.K	Associate Professor
3	Dr. Rajashekhar Dyaberi	Associate Professor
4	Dr. Vivekanand Jivangi	Associate Professor
5	Dr. Satish Shet	Associate Professor
6	Dr. Venkatram Katti	Assistant Professor
7	Dr. Varsha Huralikoppi	Assistant Professor
8	Dr. Shobha Goudar	Assistant Professor
9	Dr. Lakshmi B R	Assistant Professor
10	Dr. Pooja Kini	Senior Resident
11	Dr. Supriya D K	Senior Resident
12	Dr. Sowmya Patil	Senior Resident

Sl. No	Faculty Name	Publication
01	Savitha Kanakpur	<p>1. Savita kanakpur, seethe lakshmi DK, Archana A Comparative study of sub- tenon's versus peribulbar anesthesia for small incision cataract surgery MRIMS J Health Sciences 2017 ; 5(4):153-156.</p> <p>2. prevalence and risk factors of corneal ulcers among patients in a tertiary care hospital MRIMS Journal of Helath Sciences 2017;5(3)</p> <p>3. Savitha Kanakpur', Rupeshkumar Rakhonde', Jyothikala Pattar', Roshan H.S' Prevalence of ocular morbidity among children in orphanages around Hubli, North Karnataka Ophthalmology and allied Sciences Voloume 4 November 1, January – April 2018.</p> <p>4. Kanakpur S, Jivangi V, Sungar M, Akanth K R. Orbital Myiasis Delhi journal of ophthalmology 2017; 28 ;60-1; P-155 N 0972-0200</p> <p>5. A study to determne visual outcome and complications following ND–YAG laser therapy in posterior capsular opacification Seetalakshmi ,Dr.Savita kanakpur.Perspective in medical research 2017.</p>
02	Dr. Uday Mulgund	<p>1.mulgund U, Dyaberi R mahalingappa R Analysis of ocular manifestations of blunt trauma to the eye.J. Evolution Med, Dent, Sci 2017;6(93):6755-6760,</p> <p>2.Udaysridhar Mulgund; Rakhesh chandran Assessment of diabetic retinopathy by fluorescein angiography</p> <p>3. Mulgund US, Shankar MR, Kumar CSS, Patterns of presentation of fungal keratitis in tertiary care hospital. J. Evid Based Med. Healthc. 2017; 4(83), 4906-4911</p>
03	Dr. Seethalakshmi D K	<p>1.Seethalakshmi DK Jayashree MP. Clinical study of lenes induced glaucoma MRIMS J Health Scienes 2016 ;(2):118.121.</p> <p>2. Clinical study and management of bacterial corneal ulcer ophthalmology and allied sciences</p> <p>3. A comparative study of subtenons versus peribulbar anesthesia for small incision cataract surgery.</p> <p>4. MRIMS Journal of health science – 2017</p>

		<p>Evaluation and comparative analysis of post operative surgical astigmatism and visual outcome in superior versus superotemporal sclera incision in manual small incision cataract surgery</p> <p>5. Role of ultrasound in ocular and orbital diseases - 2015</p>
04	Dr. Rajashekhar D	<p>1. Analysis of Retinopathy of prematurity in a Tertiary care hospital Rajashekhar Dyaberi, Ophthalmology Research ; Udasridhar Mulgund' and Rupesh Rakhonde. 7(4); 1-7, 2017;</p> <p>2. keratoconous family profile Rajashekhar Dyaberi & Y.B Banjathri vol. 1. Issue 2, Dec 2016, 7-12</p> <p>3. Dyaberi R, Bajantri Y BKhatib ZI, smartphone indirect Ophthalmoscopy; for screening, evaluation, and documentation of the ocular fundus. J Vis Sci 2015;1(1):13-16.</p> <p>4. sciencedomain international , Rajashekhar Dyaberi 1, Udaysridhar Mulgund 1* and Rupesh Rakhonde 1. 21st November 2017.</p>
05	Dr. Vivekanad J	<p>1. Hittalamani SB, Jivangi VS. Prevalence of myopia among school going children. Int J Res Med Sci 2015;3:2786-90.</p> <p>2. Kanakpur S, Jivangi V, Sungar M, Akanth K R. Orbital Myiasis Delhi journal of ophthalmology 2017; 28 ;60-1; P-155 N 0972-0200</p> <p>3. Jivangi VS, Raikar HA, Khatib ZI, Abhilasha MN, Suhana A. Clinical profile of patients with vernal keratoconjunctivitis. Int J Res Med Sci 2015;3:2831-4.</p> <p>4. Prevalence and risk factors in primary openangle glaucoma of patients attending ophthalmology opd at KIMS Hubli. (September – decemeber 2018)</p>
06	Dr. Satish Shet	<p>1. Shet SD, Gupta P, Bajantri YB, Sahana S. Cut and paste: No suture, no glue conjunctival autograft technique for pterygium surgery - Our experience. J Vis Sci 2015;1(2):3-8.</p> <p>2. Shet Sd, Shankar Mr. A Clinical Study And Management Of Paediatric Cataract, Our Experience. J. Evid. Based Med. Healthc. 2017; 4(62), 0000</p>
07	Dr. Lakshmi B R	<p>1. Katti V, Ramamurthy LB, Kanakpur S, Shet SD, Dhoot M. Neuro-ophthalmic presentation of COVID-19 disease: A case report. Indian J ophthalmol 2021; 69 ;992-4.</p> <p>2. Comparison of effective phacotime and ultrasound time among 2.8mm and 2.2mm phacoemulsification in various grade of cataract; Lakshmi B R amamurthy, Kavitha C V, Pavana Acharya, sahana Manipur; journal of clinical ophthalmology and research ; vol6, issue 1, jan-</p>

		<p>apr2018</p> <p>3. Evaluation of posterior segment manifestations following typhoid fever :a clinical study;Pavana Acharya ,Lakshmi B Ramamurthy,Kavitha C V , Sahana Manipur;Indian journal of clinical and experimental ophthalmology;jily-sept2017;vol4(issue3);421-25</p> <p>4. Severity of thyroid eye disease and type2 diabetes mellitus :Is there a correlation?Lakshmi B Ramamurthy, Viji Rangarajan,neha srirao, Bindu Malini:Indian journal of Ophthalmology; june2020;68/1127-31</p> <p>5.Transcutaneous retrobulbar injection of amphotericin B in post-COVID-19 mucormycosis: Our experience;Lakshmi B Ramamurthy , Ridhi Bhandari, Savitha kanakpur , Tejaswini P :Indian jopurnal of ophthalmology: accepted Dec 2021</p>
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DEPARTMENT OF ORTHOPAEDICS, KIMS, HUBLI

PUBLICATIONS

Sl.No.	Doctor Name	Publications
1.	Dr. Suryakanth.K.	<p>1) A PROSPECTIVE STUDY ON FUNCTIONAL OUTCOME OF HUMERUS SHAFT FRACTURES TREATED WITH OPEN REDUCTION AND INTERNAL FIXATION WITH DYNAMIC COMPRESSION PLATE AND SCREWS</p> <p>2) OUTCOME OF ZANCOLLI'S LASSO PROCEDURE FOR PARALYTIC CLAW HAND DUE TO LEPROSY IN IMPROVEMENT OF DEFORMITY, GRIP STRENGTH AND RANGE OF MOTIONS</p> <p>3) SURGICAL MANAGEMENT OF DISTAL HUMERUS FRACTURES WITH INTERCONDYLAR EXTENSION BY USING PLATES</p> <p>4) COMPARISON OF TREATMENT OF UNSTABLE INTRA ARTICULAR FRACTURES OF DISTAL RADIUS WITH LOCKING PLATE VERSUS NON-LOCKING PLATE FIXATION</p>
2.	Dr. S. F. Kammar	<p>1) SURGICAL MANAGEMENT OF DISTAL HUMERUS FRACTURES WITH INTERCONDYLAR EXTENSION BY USING PLATES</p> <p>2) Functional Outcome of Proximal Femur Fracture Managed Surgically using Proximal Femoral Nail (PFN)</p> <p>3) STUDY OF CLINICAL AND FUNCTIONAL OUTCOME OF TOTAL HIP REPLACEMENT IN ADVANCED STAGES [FICAT AND ARLET STAGE-3 AND 4] OF AVASCULAR NECROSIS OF FEMORAL HEAD (INDIAN SCENARIO)</p> <p>4) A STUDY OF FUNCTIONAL OUTCOME OF SURGICAL MANAGEMENT OF FLOATING KNEE AMONG ADULTS</p>
3.	Dr. Venkatesh Mulimani	<p>1) OUTCOME OF ZANCOLLI'S LASSO PROCEDURE FOR PARALYTIC CLAW HAND DUE TO LEPROSY IN IMPROVEMENT OF DEFORMITY, GRIP STRENGTH AND RANGE OF MOTIONS</p>

		<p>2) A CLINICAL STUDY OF DISPLACED CLAVICLE FRACTURES TREATED WITH ANATOMICALLY PRECONTOURED LOCKING COMPRESSION PLATE</p> <p>3) CLINICAL AND FUNCTIONAL OUTCOME OF INTRA ARTICULAR AND EXTRA ARTICULAR PROXIMAL TIBIAL FRACTURES TREATED BY MINIMALLY INVASIVE PERCUTANEOUS PLATE OSTEOSYNTHESIS (MIPPO)</p>
4.	Dr. C.V. Mudgal	<p>1) SURGICAL MANAGEMENT OF UNSTABLE SUPRACONDYLAR FRACTURE OF HUMERUS IN CHILDREN BY CLOSED REDUCTION AND PERCUTANEOUS K WIRE FIXATION BY CROSSED VERSUS TRIPLE PIN CONFIGURATION: A COMPARATIVE STUDY: IJOS</p> <p>2) A PROSPECTIVE STUDY OF CLINICAL OUTCOME AFTER USING LIGAMENTOTAXIS IN MANAGEMENT OF DISTAL RADIUS FRACTURES: JEBMH</p> <p>3) MANAGEMENT OF INTERTROCHANTERIS FRACTURE WITH DYNAMIC HIP SCREW-A GOLD STANDARD DEVICE: JEBMH</p> <p>4) OUTCOME OF DISTAL TIBIA FRACTURE BY NAIL OR PLATE (MIPPO) A COMPARATIVE STUDY ; JEBMH</p>
5.	Dr. A. A. Hosangadi	<p>1) CLINICAL OUTCOME OF DISTAL END RADIUS FRACTURES</p> <p>2) STUDY OF CLINICAL AND FUNCTIONAL OUTCOME OF TOTAL HIP REPLACEMENT IN ADVANCED STAGES</p> <p>3) CORRECTION OF CALCANEUS FOOT BY JESS APPLICATION</p> <p>4) LOWER EXTREMITY SOFT TISSUE SURGERY IN SPASTIC CEREBRAL PALSY: EXPERIENCE FROM A GOVERNMENT REHABILITATION UNIT</p>

6.	Dr. Madhuchandra. R.	1) MANAGEMENT OF DISTAL FEMORAL SUPRACONDYLAR FRACTURES- A COMPARATIVE STUDY BETWEEN NAIL AND DISTAL FEMORAL LOCKING PLATE 2) MANAGEMENT OF INTERTROCHANTERIC FRACTURE WITH DYNAMIC HIP SCREW-A GOLD STANDARD DEVICE
7.	Dr. Manikya. R.	1) CLINICAL STUDY OF DISPLACED CLAVICLE FRACTURES TREATED WITH ANATOMICALLY LOCKING COMPRESSION PLATE
8.	Dr. V. K. Bhasme	1) OUTCOME OF ZANCOLLI'S LASSO PROCEDURE FOR PARALYTIC CLAW HAND DUE TO LEPROSY IN IMPROVEMENT OF DEFORMITY, GRIP STRENGTH AND RANGE OF MOTIONS 2) Functional Outcome of Proximal Femur Fracture Managed Surgically using Proximal Femoral Nail (PFN) 3) STUDY OF CLINICAL AND FUNCTIONAL OUTCOME OF TOTAL HIP REPLACEMENT IN ADVANCED STAGES [FICAT AND ARLET STAGE-3 AND 4] OF AVASCULAR NECROSIS OF FEMORAL HEAD (INDIAN SCENARIO)
9.	Dr. Gururaj Murgod	1) PROSPECTIVE STUDY AT 2 YEARS OUTCOME FOR CEMENTED AMP 2) CASE REPORT- OSTEOLASTOMA LOWER END FEMUR & UPPER END OF TIBIA 3) VAC-PROSPECTIVE STUDY OF MANAGEMENT OF OPEN WOUND IN COMPOUND FRACTURES 4) EWING'S SARCOMA OF PROXIMAL PHALANX OF THE HAND WITH SKIP METACARPALS
10.	Dr. Ashok Bangarshettar	1) INTERTROCHANTERIC FRACTURE MANAGEMENT PROXIMAL FEMORAL NAILING VS DYNAMIC HIP SCREW 2) COMPARISON OF TREATMENT OF UNSTABLE INTRA ARTICULAR FRACTURES OF DISTAL RADIUS WITH LOCKING PLATE VERSUS NON-LOCKING PLATE FIXATION

Dept of Pediatrics

List of publications by the members of the staff ONLY during the preceding 3years?

1. Siddappa F D, H K, Ratageri V H, Wari P K. Cardiac Manifestations of Dengue Fever in Children. *Pediatric Oncall J.* 2017; 14: 82-84. doi: 10.7199/ped.oncall.2017.55.
2. Prediction of Neonatal Hyperbilirubinemia Using 1st Day Serum Bilirubin Levels *Pediatr.* 2018 Feb 15. doi: 10.1007/s12098-018-2633-0.S. M. Spoorthi, 2 &Siddappa F. Dandinavar1 &Vinod H. Ratageri1 &Prakash K. Wari1.
3. Clinical profile of snake bites with special reference to acute kidney injury in children *Medical Innovatica* Jan-Jun 2019, Volume -8 Issue-1Siddappa F. D., Shivananda I., KadeejathThasneem, Prakash K. Wari Department of Paediatrics, Karnataka Institute of Medical Sciences, Hubballi, Karnataka, India.
4. Prevalence of hypomagnesemia in children admitted to pediatric intensive care unit and its correlation with patient outcome, Siddappa F. Dandinavar, Suma D.*, Vinod H. Ratageri, Prakash K. Wari *International Journal of Contemporary Pediatrics | March-April 2019 | Vol 6 | Issue 2*
5. Urunikklavan HS, Ratageri VH, Fattepur SR, Nadagir S, MadinkarYA.Drug Resistant Tuberculosis in Children in a Tertiary Care Hospital.*Indian J Pediatr.* 2017 Sep 11. doi: 10.1007/s12098-017-2464-4. [Epub ahead of print] No abstract available.PMID:28891031
6. B. SR, Patel AK, Kabra SK, Lodha R, Ratageri VH, Ray P (2019) .Virus load and clinical features during the acute phase of Chikungunya infection in children. *PLoS ONE* 14(2): e0211036. <https://doi.org/10.1371/journal.pone.0211036>
7. Illalu S, KumarNP, RatageriVH, WariPK.Prevalence and risk factors associated with severe acute malnutrition (SAM) in ICDS block of rural Hubli, Karnataka, India. *Int J Contemp Pediatr*2019;6:xxx-xx.
8. A J, Ratageri VH, Illalu S, Fattepur SR, Wari PK. The Utility of CSF Xpert MTB/RIF in Diagnosis of Tubercular Meningitis in Children. *Indian J Pediatr.* 2019;86(12):1089–1093. doi:10.1007/s12098-019-03032-0
9. Shruthi S, Ratageri VH, Shivananda I, Shilpa C, Wari PK. Pulmonary Tuberculosis in Children with Severe Acute Malnutrition: A Prospective Hospital-based Study. *Pediatric Inf Dis* 2019;1(1):1-3.10.5005/jp-journals-10081-1101
10. Study of Spectrum of Histopathological Findings in Childhood Nephrotic Syndrome In Tertiary care Hospital. Raghavendra H. Desai, ShivanandIllalu, Rajendra Naidu, Ajay S. K. *MedicaInnovatica* Jan – Jul 2017, Vol 6 – Issue 1.
11. Study of the Incidence of Hearing Impairment among Neonates with Hyperbilirubinemia - *Indian Journal of Maternal-Fetal and Neonatal Medicine*, Vol.6 No.1 Jan - Jun 2019
12. Pawar R., Illalu S., Fattepur S.R. A study on prevalence of hearing impairment in newborns with birth asphyxia admitted to neonatal intensive care unit. *Int J Pediatr Res.* 2019;6 (01):42-49.doi:10.17511/ijpr.2019.i01.07.
13. Siddappa F D, VarshaLakshman, Madhu P.K. Prevalence of hepatic dysfunction in children with dengue fever. *Int J Pediatric Res.* 2019;6(01): 8-16.doi:10.17511/ijpr.2019.i01.02
14. IllaluShivanand, FattepurSudhindrashayana R, Amaresh MH. Study of the Incidence of Hearing Impairment among Neonates with Hyperbilirubinemia. *Indian Journal of Maternal-Fetal & Neonatal Medicine.* Volume 6 Number 1, January - June 2019. DOI:
15. IllauShivanand, FattepurSudhindrashayana R. To study the time of separation of umbilical cord. *Indian Journal of Maternal-Fetal & Neonatal Medicine.* Vol 6 Number 1, January - June 2019.
16. Illalu S, Venkatareddy VS, Fattepur SR. Study of prevalence of vitamin D deficiency in nephritic syndrome. *Int J ContempPediatr* 2019; 6:288-94.
17. Madhu PK, Bhagwan B. Biochemical indices and radiological examination to evaluate bone health in children with β -thalassemia major. *Int J ContempPediatr* 2019;6:549-55.
18. Madhu PK, Krithika R. Convulsive status epilepticus in children: clinical profile and outcome in a tertiary care hospital. *Int J ContempPediatr* 2019;6:280-7.
19. Chandrashekaraiiah S, Ratageri VH, Kamat L. Thyroid status in children with severe acute malnutrition. *Karnataka Paediatr J* 2021;36:165-8.

20. Handattu T, Ratageri VH, Patil VB. Unusual manifestation of the central hypothyroidism. *Karnataka Paediatr J* 2021;36:174-6.
21. Sahana BK, Ratageri VH, Reddy P. Kikuchi – Fujimoto disease presenting as FUO in an adolescent girl. *Karnataka Paediatr J* 2021;36:169-70.

DEPT OF PATHOLOGY, KIMS HUBBALLI

- a) List of publications by the members of the staff ONLY during the preceding 3years as per MCI/NMC requirements:

LIST OF PUBLICATIONS

1. Evaluation of fine needle aspiration cytology of Thyroid lesions Based on Bethesda System Of Reporting Cytopathology.
Rajesh.H.Chandan, Arathi.S, Parvathi.S.Jigalur, Sujata.S.Giriyani.
Pathology Update: Tropical Journal of Pathology and Microbiology. Vol5 No 01(2019)
2. Histopathology of stromal changes in tumor & tumor like lesion of breast using special stains .
Reddy.P., Sinduja.M
Pathology update: Journal of Pathology & Microbiology , Sept 2019/Vol 05/issue page No.663-672.
3. Pattern analysis of granulomatous inflammatory lesions.
Dr.Chandrashekar T.N, Dr.Sateesh Chavan.S
Indian Journal of Pathology, Oncology, 2019;6(3);357-364.
4. A new pattern of tubercular lymphadenitis on fine needle aspiration cytology , Posulating an inclusion in the existing scheme .
Chandan.Rajesh.H, Agrawal.Akanksha, Giriyani Sujata
Medpulse International Journal of Pathology, Issue 2;August 2019,PP71-76, Print ISSN 2550-7605
5. The diagnostic utility of serum IGE and Absolute eosinophil count in cases of allergic Rhinitis.
Dr.Agrawal.A; Chandan.R.H
Pathology update: Tropical Journal of Pathology & Microbiology.
January 2020/Vol 6/issue 01, Print ISSN:2456-9887, PP 58-62
6. A clinic-pathological study of lichenoid tissue reactions in /interface dermatitis.
Deepti Dixit, Sunita S.Vernekar, Sujata.S.Giriyani
Dixit D et al.Int.J.Res Med Sci.2019 April;7(4);1002-1008, pISSN 2320-6012
7. Hematological Patterns of Anemia in Geriatric Patients
Choukimath SM¹, Adithyan P² and Sujata S Giriyani³
Annals of Pathology and Laboratory Medicine, Vol. 6, Issue 10, October 2019, eISSN;2394-6466
8. Reddy.P., Mika Devi.S., Correlation of ER, PR, Herznex and Ki67 with other prognostic factors in Breast carcinoma.
Pathology update: Tropical Journal of Pathology & Microbiology, 2020;6(5):349-361.
9. Congenital Central Nervous System and Associated Sysytemic Anomalies in Fetal And perinatal Autopsy: A Retrospective study.
Rajesh H Chandan, U T Kanchana, Choukimath SM, Purushottam Reddy, Shweta Sherikar.
Journal Of Clinical and diagnostic research. 2022 Feb Vol-16(2). EC06-09.

a) Current areas of Research:

RESEARCH WORK

Sl.No	Topic	Name
1	Histopathology of prostatic lesions	Dr Parvati s jigalur / Dr Abhisha R S
2	Histopathological study of skin tumors	Dr. Arathi S / Dr. Nishath P V
3	Comparative study of frozen section diagnosis with routine histopathological diagnosis	Dr Rukmini S / Dr Sunita Pawar
4	Comparision of Agar and paraffin double embedding of minute biopsies with only paraffin embedding	Dr.S.M.Chowkimath / Dr.Unnatha B Shetty
5	USG guided FNAC of intraabdominal and pelvic lesions	Dr Purushotham reddy / Dr Pallavi
6	Immunohistochemical detection of axillary lymph nodes micrometastasis in node negative breast cancer patients using cytokeratin and epithelial membrane antigen.	Dr Sunita Vernekar / Dr Nayantara M Nirgude
7	Histomorphological patterns of liver in autopsy cases	Dr Bharathi MB / Dr Darshitha
8	Spectrum of histopathological changes in fibroadenoma of the breast	Dr Kavitha yevoor / Dr Sneha P
9	fine needle aspiration cytology of salivary gland lesions using milan system and correlation with histopathology wherever possible	Dr Sateesh S Chavan / Dr Smitha Priya
10	A Correlative Study On Tumor Budding In Colorectal Carcinoma And Lymph Node Status	Dr S M Choukimath / Dr Anjali Balu
11	Hematological parameters in preeclampsia.	Dr. Kamkeri / Dr. Nima N P
12	Hematological study in children with Severe acute malnutrition	Dr Kamkeri / Dr Anne Mary L
13	Fungal rhinosinusitis - a clinicopathological study	Dr Rajesh Chandan / Dr Nayana L

14	Haematological and immunological parameters in aids patients before and after initiation of ART	Dr Satish Chavan / Dr Renuka T.B
15	Still birth and IUD - Cause of death at autopsy	Dr. Purushotham Reddy / Dr Ankita G M
16	A one year study of "BRAIN PATHOLOGY" findings in Traumatic Brain Injury.	Dr Purushottam Reddy / Dr Prem S Kalagi
17	comparitive study of expanded masood cytology index and modified bloom Richardson histological grading for breast carcinoma and it's validity	Dr Rajesh Chandan / Dr Arpitha S A
18	Histopathological profile of Ovarian lesions	Dr. Arati / Dr Mahalakshmi S
19	Clinico histopathological study of granulomatous lesions of skin	Dr Sunitha Vernekar / Dr Lavanya M K
20	Clinico-Histopathological correlation of Hansen's Disease.	Dr Bharati MB/Dr Prabhashree.C
21	Hematological parameters in Leukemia	Dr .Kamakeri / Dr Vidhyasini M
22	Histopathological study of placenta in IUGR	Dr Sunitha Vernekar / Dr Gladis T Joy
23	A Rare case of ectopic adrenocortical rest in the mesentery	Dr.Purushotham Reddy /Dr.Bharati.M.B/Dr.Pallavi.H
24	A Nine year histopathological study of retroperitoneal masses.	Dr.Bharati Bhavikatti/Dr.Kanchana.U.T/Dr.Purush otham Reddy
25	Adenomyoepithelioma of the breast: A case series.	Dr.Sunita Vernekar/Dr.Bharati.M.B/Dr.Kanchana. U.T/Dr.Nishath.P.V
26	Cytological spectrum of salivary gland lesions in a tertiary care centre-A one year compilation.	Dr.Kanchana U.T/ Dr.Bharati.M.B/Dr.Priyadharshini Bargunam

DEPARTMENT OF PHARMACOLOGY, KIMS HUBBALLI

APPENDIX - IV

LIST OF PUBLICATIONS:

- 1) Yaraguppi AF, Ramesh H, Jadav R. A comparative study of efficacy and safety of tamsulosin and silodosin in treatment of lower urinary tract symptoms associated with benign prostatic hyperplasia. J. Evolution Med. Dent. Sci. 2019;8(02):146-151.
- 2) Hugar L, Ramesh H. A comparative study of efficacy and safety of topical calcitriol and topical calcipotriol in stable chronic plaque type psoriasis. Int J Basic Clin Pharmacol. 2019;8(3): 402-408.
- 3) Hugar L, Ramesh H. Evaluation of antiulcerogenic activity of combination of *Aloe vera* and *Aegle marmelos* in indomethacin induced gastric ulcers. Int J Basic Clin Pharmacol. 2019;8(3): 453-456.
- 4) Ramesh H, Nadaf R. Evaluation of antihistaminic activity of quercetin by using histamine induced bronchospasm and clonidine induced catalepsy models. Int J Basic Clin Pharmacol 2019;8:647-51.
- 5) Ramesh H, Jyothi CH. An experimental study to test the haemostatic effect of *Aloe vera*. Int J Basic Clin Pharmacol. 2019;8:717-9.
- 6) Ramachandra K, Jayalakshmi MD. Evaluation of antidepressant activity of tramadol in albino mice using forced swim model. Int J Basic Clin Pharmacol. 2019;8:415-9.
- 7) Kusubi P, Niranjana M, Salimath S. A comparative study to evaluate the effect of hemodialysis on maximum corrected QT interval (QT_CMAX) and QT dispersion in chronic kidney disease. European J Biomed Pharm Sci. 2019; 6(5):359-62.
- 8) Ankita L, Ramesh H. A retrospective study of adverse drug reactions in a tertiary care center. Int J Basic Clin. Pharmacol. 2020;9(4):611-15.
- 9) Qureshi MF, Dattatri AN. DRESS syndrome due to clobazam: a case report. Int J Basic Clin Pharmacol 2020;9:xxx-xx.
- 10) Mogali SM, Kotinatot BC. Drug utilization study of antipsychotics among schizophrenia patients in a tertiary care teaching hospital: a retrospective observational study. Int J Basic Clin Pharmacol 2020;9:971-4.
- 11) Mogali SM, Bhushan A, Md. Ajmat Khan. Study of adverse drug reactions profile in a tertiary care hospital: a retrospective observational study. ejpmr 2020;7(3):352-355.
- 12) Jyothi CH, Latha S, Ramesh H, Sushma HK. Evaluation of anxiolytic activity of *Trachyspermum ammi* (ajwain oil) in Swiss albino mice. Natl J Physiol Pharm Pharmacol 2021;11(04):389-392.

APPENDIX - V

CURRENT PROJECTS:

1. A study on the efficacy and safety of oxytocin made by public company in preventing postpartum hemorrhage and its retrospective comparison with oxytocin made by private company.

Dr. A N Dattatri
Dr. Soumya P K

2. A comparative study of paracetamol and tramadol for postoperative analgesia in pediatric patients at a tertiary care hospital.

Dr. A N Dattatri
Dr. Rashmi Sajjanshetty

KARNATAKA INSTITUTE OF MEDICAL SCIENCES, HUBLI-21

LIST OF PUBLICATIONS DURING LAST 3 YEARS

(2018-2022)

1	Role of Diet on Autonomic function as determined by the Hand grip test. Vijatalakshmi C, Shivkumar J. <i>National Journal of Physiology, Pharmacy and Pharmacology</i> 2022.
2	A Prospective Comparative Study between Super- oxidized solution and Providone-iodine solution in the management of Diabetic Ulcers at KIMS, Hubli, Karnataka, Central India. Usharani S Devan, Seema Shridhar Sankeshwari, Vasant V T, Abhijith Hiregoudar; IJSS Journal Of Surgery; Volume 8, Issue 1, Jan- Feb 2022.
3	Exercise causes oxygen desaturation and hypercapnia in stable chronic obstructive pulmonary disease patients. Swapna Kanyadari,Shakthiprasad Hiremath, Khararashah Kammar. <i>National Journal of Physiology, Pharmacy and Pharmacology</i> 2022; 9(12)
4	Study on electrolytes variation in middle aged type 2 diabetic and hypertensive diabetics in comparison with normal individuals. Swapna Kanyadari, Nagaraja Puranik. <i>National Journal of Physiology, Pharmacy and Pharmacology</i> 2021; 5(12)
5	Study of changes in certain cardiorespiratory parameters in response to breath holding in swimmers. Madhunandan, Shakthiprasad Hiremath, Khararashah Kammar. <i>National Journal of Physiology, Pharmacy and Pharmacology</i> 2021.9(11).
6	Effect of vegetarian versus non- vegetarian diet on resting cardiovascular parameters and their response to mental stress. Vijatalakshmi C, Shivkumar J. <i>National Journal of Physiology, Pharmacy and Pharmacology</i> 2021.
7	PHYSIOLOGICAL BASIS OF LOVE- This is Our Brain on Love (review article). Nagaraja Puranik, Seema Sankeshwari, Aparna Mulgund; International Journal of Current Research in Physiology and Pharmacology2020; vol 4, issue 10
8	Swetha A G, <u>Nagaraja Puranik</u> , Kammar K F. A comparative study on coagulation profile and neutrophil-lymphocyte ratio in pregnancy-induced hypertension. <i>National Journal of Physiology, Pharmacy and</i>

	Pharmacology 2018; 8(3): 400-405.
9	Latha G S, Chandrashekar D M, Nagaraja Puranik . Altered taste threshold in chronic Type 2 diabetes mellitus. National Journal of Physiology, Pharmacy and Pharmacology 2018; 8(4): 569-574.
10	Stephy Sebastian, Nagaraja Puranik . Dysautonomia in heavy drinkers for more than 5 years of alcoholic consumption with intact liver function. National Journal of Physiology, Pharmacy and Pharmacology 2018; 8(8): 1-5.
11	Insulin Resistance and blood lipid level during fasting: Shilpa Kamble, Shaktiprasad Hiremath; National Journal of Physiology, Pharmacy, Pharmacology; 2018; vol.8, Issue 8.
12	Alterations of Lipid profile in subclinical hypothyroidism; Vishalaxi Jadhav, Shaktiprasad Hiremath, National Journal of Physiology, Pharmacy, Pharmacology; 2018; vol.8, Issue 8.
13	Effect of 2-5 years of tobacco chewing on pulmonary function tests. A.L.Bajentri, Vineet S. Baljoshi, N. Veeranna; Journal of the Indian Medical Association, Vol.116, No.4, April 2018 23,25.

DEPARTMENT OF COMMUNITY MEDICINE, K.I.M.S. HUBLI.

ANNEXURE-I

SL.NO	NAME OF FACULTY	PAPER PUBLISHED	PUBMED INDEXED	SCOPUS INDEXED
1	Dr D DBant Professor and Head Dept of Community Medicine	1. Bant D D, Mahesh V, Bathija V G, Lokare L, Godbole M, Manjunath NS. Health and psychosocial profile among children HIV affected school children- A Case Control study. IJRRMS vol .no3(2) Apr-Jun' 2013	NO	NO
		2. Bant DD, Mahesh V, Bathija V G, .Health and psychosocial profile among children with or without HIV affected children- A Cross sectional study. IJRRMS vol .no3(2) Apr-Jun' 2013	NO	NO
		3. Bant.Dattatreya.D.-A Comparative study of infant feeding practices in ICDS and Non ICDS Areas Management Journal of Health, jhm.sagepub.com/cgi/reprint/1/1/161.	NO	NO
		4. Dr.Mahesh.v, Dattatreya D Bant, Geeta V Bathija. Clinical and psychological profile of HIV Orphans in North Karnataka – A longitudinal study. Global Journal of Medicine and Public Health ,vol 2,No 3,2013	NO	NO
		5. Kaul V, Bant D.D, Bendigeri.N.D, Bathija G. A Brief Medico –Socio-Demographic Profile of Non Fatal Road Traffic Accident Cases Admitted To Karnataka Institute Of Medical Sciences. Scholars Research Journal, Volume 1,Issue 1 Page 32-36, 2011.	NO	NO
		6. Geeta V Bathija, D DBant, S R Itagimath. Study on Usage Of Woman Hygiene Kit Among Menstruating Age Group in Field Practice Area Of KIMS, Hubli. IJBR (2013)04(02)94-98.	NO	NO
		7. Geeta V Bathija, D DBant, S R Itagimath. Study On Prevalence Of Needle Stick Injuries Among Junior Doctors And Nursing Students in KIMS ,Hubli. IJPHRD VOL 15 NO2 April-June 2013.84-88.	NO	NO

		8. Umesh V Dixit, Geeta V Bathija, Mahesh V, D DBant, L Lokare, S R Itagimath. A study on assessment of health status of patients of diabetic mellitus attending KIMS, HUBLI Karnataka journal of community health . vol 20(2008-2009)40-49	NO	NO
		9. Mahesh V, D DBant, GeetaBathija, Umesh R Dixit, L Lokare ,SR Itagimath. Study on Awareness of Immunization of Children Among the Mothers in Slums of Field Practice Area of Urban Health Training Centre, KIMS, Hubli. Karnataka Journal of Community Health Vol 20(2008-2009)62-66.	NO	NO
		10. BharteshBasti, D DBant, Geeta V Bathija, L Lokare , SR Itagimath, Umesh R Dixit, Mahesh V. A Brief Epidemiological Study on Road Traffic Accident Cases Admitted in KimsHubli..Karnataka journal of community health vol 20(2008-2009)10-21	NO	NO
		11. Mahesh Venkatesh, D DBant, Geeta V Bathija. Psycho Social and Nutritional Profile among Children with and without HIV in Northern Karnataka. IJHSR Vol.4. Issue 9 September-2014.		
		12. MadhaviGajula, Geeta V Bathija, Dattatraya D Bant, L Lokare, M Godbole. et al. Protein energy Mal Nutrition: Knowledge of the Mother a Significant Associate on Childs Nourishment status. A Study 1-6 Years Childrens and their Mothers in Urban Slums of Hubli. JCMds. Vol.3 Issue 69. December 11 2014. 14194-14203.	NO	NO
		13. Geeta V Bathija, S R Itagimath, D DBant, L Lokare. Study on Socio-Demographic and Associated risk factors for Oesophageal Cancer in Karnataka Institute of Medical Sciences, Hospital, Hubli. (Karnataka) SJAMS.2014:2(C)706-710	NO	NO
		14. Anjana P, D DBant. Assessment of Infant and Young Child Feeding Practices Among under-3 Years Children in Urban Slums Of Hubballi City. Int J Med Res Health Sci. 2015:4(4):763 767	NO	NO
		15. Anjana P D DBant. A Community Based cross-sectional study to identify individuals at high risk for diabetes in Urban Slums of Hubballi. International Journal of Community Medicine and Public Health/January-2016/Vol.3/issue.1		NO
		16. Jahagirdar, S.S., Bant, D.D. and Bathija, G.V., 2016. Study of prevalence of diabetes mellitus in the rural areas of Hubballi, Karnataka, India. <i>International Journal Of Community Medicine And Public Health</i> , 4(1), pp.104-109.	NO	NO
		17. Ananthesh, B.G., Bathija, G.V. and Bant, D.D., 2016. A community based cross-sectional study to assess malnutrition among elderly population residing in urban and rural areas of a district in Karnataka, India. <i>International Journal Of Community Medicine And Public Health</i> , 4(1), pp.51-58.	NO	NO

		18. Sarvar R, Bant DD. Clinical assessment of micronutrient deficiencies among children (1-5 years) enrolled in anganawadis of old Hubli slums, Karnataka, India. International Journal Of Community Medicine And Public Health. 2017 Jan 25;4(2):598-602	NO	NO
		19. Bant DD, Sushma HR, Jabeen B. A Cross-sectional Study to Assess Knowledge, Attitude, and Practice Regarding COVID-19 and Its Socioeconomic Impact among the General Population of Hubli, Karnataka. Ann Community Health 2021;9(2):292-297	NO	NO
		20. Bant DD, A cross sectional study on the prevalence of abuse and self defence among female medical students in Hubli Indian Journal of Public Health Research & Development, October-December 2021, Vol. 12, No. 4	NO	NO
		21. Bant D D, Jabeen B, H R Sushma H R, Subramanian A A. A Cross-Sectional Study on Psychosocial Impact of Covid19 among Suspects. Indian Journal of Public Health Research & Development. 2021;12(3):26-31	NO	NO
		22. Bant D D, Gokhale S A, Subramanian A A. A Cross Sectional Study to Assess the Socio Demographic Profile and the Challenges Faced by the Disabled Patients Attending Kims OPD. Indian Journal of Public Health Research & Development. 2021;12(2):84-88	NO	NO
		23. Jahagirdar S, Lokare L, Bant DD, Bathija GV, Godbole M, Nekar MS, Mahesh VK. Knowledge, Awareness and Attitude Towards Mental Illness among Adult Population of Dharwad District--A Cross Sectional Study. Indian Journal of Public Health Research & Development. 2017 Jul 1;8(3).	NO	YES
		24. Bant DD, Lokare L, Kapfo TU. Assessment of Safety Practices of Pesticide Use among the Farmers in Adargunchi and Noolvi, Karnataka-A Cross Sectional Study. Indian Journal of Public Health Research & Development. 2020 Jul 1;11(7)..	NO	YES
		25. Andanigoudar KB, Lokare L, Bant DD. Assessment of Awareness and Practices in Management of Childhood Diarrhoea among Caregivers of Under Five Children in Urban Field Practice Area of KIMS, Hubballi. Indian Journal of Public Health Research & Development. 2020 Jun 1;11(6).	NO	YES
2	DrLaxmikantLokare Professor Dept of Community Medicine	1. Bant D D, Mahesh V, Bathija V G, Lokare L, Godbole M, Manjunath NS. Health and psychosocial profile among children HIV affected school children- A Case Control study. IJRRMS vol .no3(2) Apr-Jun' 2013	NO	NO
		2. Umesh V Dixit, Geeta V Bathija, Mahesh V, D DBant, L Lokare, S R Itagimath. A study on assessment of health status of patients of diabetic mellitus attending KIMS,		

		HUBLI Karnataka journal of community health . vol 20(2008-2009)40-49		
		3. Mahesh V, D DBant, GeetaBathija, Umesh R Dixit, L Lokare ,SR Itagimath. Study on Awareness of Immunization of Children Among the Mothers in Slums of Field Practice Area of Urban Health Training Centre, KIMS, Hubli. Karnataka Journal of Community Health Vol 20(2008-2009)62-66.	NO	NO
		4. BharteshBasti, D DBant, Geeta V Bathija, L Lokare , SR Itagimath, Umesh R Dixit, Mahesh V. A Brief Epidemiological Study on Road Traffic Accident Cases Admitted in KimsHubli..Karnataka journal of community health vol 20(2008-2009)10-21	NO	NO
		5. LaxmikantLokare, M S Nekar, V Mahesh. Quality Of Life and Restricted Activity Days Among the Old Aged. Int J Bio Med Res.2011; 2(4): 1162-1164.	NO	NO
		6. LaxmikantLokare, M S Nekar, S Y Mulkipatil , Mahesh Venktesh. Metabolic Equivalent Task Score and Risk Factors Of Coronary Heart Disease In Bank Employees. Int J Bio Med Res.2012; 3(2): 1627-1630	NO	NO
		7. Manjunath S Nekar, LaxmikantLokare, Sunil A Gokhale, ManeeshaGodbole, S Y Mulkipatil, Mahesh V. Awareness of Eye Donation Among College Students Of Hubli City, Karnataka. IJBR 3[04] [2012]201-204	NO	NO
		8. MadhaviGajula, Geeta V Bathija, Dattatraya D Bant, L Lokare, M Godbole. et al. Protein energy Mal Nutrition: Knowledge of the Mother a Significant Associate on Childs Nourishment status. A Study 1-6 Years Childrens and their Mothers in Urban Slums of Hubli. JCMds. Vol.3 Issue 69. December 11 2014. 14194-14203.	NO	NO
		9. Geeta V Bathija, S R Itagimath, D DBant, L Lokare. Study on Socio-Demographic and Associated risk factors for Oesophageal Cancer in Karnataka Institute of Medical Sciences, Hospital, Hubli. (Karnataka) SJAMS.2014;2(C)706-710	NO	NO
		10. Madhuri S Kurdi, AshwiniHalebidRamaswamy, LaxmikantLokare. Current views and Practice of Faculty Members and Consultants regarding 'Publications in India'. © 2015 Indian Journal of Anaesthesia Published by Wolters Kluwer – Medknow.	YES	YES

		11. Prasanna N, Mahadevappa K, Antaratani RC, Lokare L. Cause of death and associated conditions of stillbirths. International Journal of Reproduction, Contraception, Obstetrics and Gynecology. 2017 Feb 19;4(6):1970-4.	NO	YES
		12. Kurugodiyavar MD, Bant DD, Raghavendra D, Lokare L, Godbole M, Nekar MS, Kantesh S. Seasonal Variation in Admissions of Bacterial Meningitis at a Tertiary Care Hospital: A Time Series Study using Wavelet Analysis. Ann Community Health 2021;9(2):192-197.	NO	NO
		13. Kurgodiyavar MD, Bant DD, Andanigoudar KB, Lokare L, Godbole M, NekarM.Determinants of low birth weight and effect of indoor air pollution on birth weight: A Case Control study in a tertiary care centre of Hubballi,Karnataka.Annals of Community Health.2021;9(3)	NO	NO
		14. Lokare L, Hippargi AC. Breast Feeding Practices: A Qualitative Exploration by Focused Group Discussion. Indian Journal of Public Health Research & Development. 2016;7(2):128-32.	NO	YES
		15. . Lokare L, Hippargi AC. Weaning Practices among Mothers: A Focused Group Discussion. Indian Journal of Public Health Research & Development. 2016 Jul 1;7(3).	NO	YES
		16. Lokare L, Hippargi A. Qualitative exploration of bottle feeding practices among mothers of Dharwad district, Karnataka: a focus group discussion study. International Journal of Community Medicine and Public Health. 2016 Jan;3(1):90-3.	NO	NO
		17. Lokare L, Hippargi A. Qualitative exploration of bottle feeding practices among mothers of Dharwad district, Karnataka: a focus group discussion study. Int J Community Med Public Heal. 2016 Jan;3(1):90-3.	NO	NO
		18. Jahagirdar S, Lokare L, Bant DD, Bathija GV, Godbole M, Nekar MS, Mahesh VK. Knowledge, Awareness and Attitude Towards Mental Illness among Adult Population of Dharwad District--A Cross Sectional Study. Indian Journal of Public Health Research & Development. 2017 Jul 1;8(3).	NO	YES
		19. Bant DD, Lokare L, Kapfo TU. Assessment of Safety Practices of Pesticide Use among the Farmers in Adargunchi and Noolvi, Karnataka-A Cross Sectional Study. Indian Journal of Public Health Research & Development. 2020 Jul 1;11(7)..	NO	YES
		20. Andanigoudar KB, Lokare L, Bant DD. Assessment of Awareness and Practices in Management of Childhood Diarrhoea among Caregivers of Under Five Children in Urban Field Practice Area of KIMS, Hubballi. Indian Journal of Public Health	NO	YES

		Research & Development. 2020 Jun 1;11(6).		
		21. Yogeshkumar S, Anderson J, Lu E, Kenyi E, Mensa M, Thaler K, Antartani R, Donimath K, Patil B, Chikaraddi S, Bidri S. Safety and efficacy of the new CryoPop® cryotherapy device for cervical dysplasia in low-and middle-income countries: study protocol for a multicenter open-label non-inferiority clinical trial with historical controls. Trials. 2021 Dec;22(1):1-9.	YES	YES
3.	DrManeeshaGodbole Associate Professor Dept of Community Medicine	1. Dr.ManeeshaGodbole, Dr.Sulochana Abraham, Dr.Jasmine Prasad. Feasibility of training Female Health Workers to diagnose and treat reproductive tract infections of the females at the community level – a study done at Christian Medical College, Vellore. International Journal of Scientific Research and Publications , volume 3, Issue 1, January 2013.	NO	NO
		2. Dr.ManeeshaGodbole, Dr.Sulochana Abraham, Dr.Jasmine Prasad. Developing A Training Module For Female Health Workers For The Diagnosis Of Female Reproductive Tract Infection- An Experience In South India. (Accepted for publication by Indian Journal of Public Health Research and Development on 25/07/2013).	NO	YES
		3. ManeeshaGodbole, AnjanaRamachandra Joshi, Dattatreya D Bant. A cross sectional study to assess the knowledge and response to dog bite among the urban and rural population of Hubballitaluk. International Journal of Community Medicine and Public Health. 2019 Feb;6(2):539-544.	NO	NO
		4. ManeeshaGodbole, N.P.Kavya, Manjunath S Nekar, D.D.Bant. A cross sectional study to assess prevalence and pattern of ocular morbidity among pre-school children attending anganwadicentres of Hubballitaluk in South India.International Journal of Community Medicine and Public Health. 2019 Feb;6(2):545-549	NO	NO
		5. Godbole M, Sarvar R, Bant DD. Maternal knowledge on dietary diversity, child feeding and sanitation practices – A cross-sectional study in north Karnataka. Indian J Forensic Community Med 2020;7(2):149-154.	NO	NO
		6. Godbole M, D Bant D, A Subramanian A. A Cross Sectional Study to Assess the Prevalence of Anxiety and Perception of E-Learning among School Teachers. Indian Journal of Public Health Research & Development. 2021;12(2):204-208	NO	YES
		7. MadhaviGajula, Geeta V Bathija, Dattatraya D Bant, L Lokare, M Godbole. et al. Protein energy Mal Nutrition: Knowledge of the Mother a Significant Associate on Childs Nourishment status. A Study 1-6 Years Childrens and their Mothers in Urban Slums of Hubli. JCMds. Vol.3 Issue 69. December 11 2014. 14194-14203.	NO	NO
		8. Manjunath S Nekar, LaxmikantLokare*, Sunil A Gokhale, ManeeshaGodbole, S Y Mulkipatil,Mahesh V. Awareness of eye donation among college students of	NO	NO

		hubliCity, Karnataka. IJBR 3(4)(2012)201-204.		
		9. Bant DD, Mahesh V, Bathija V G, Lokare L, Godbole M, Manjunath NS. Health and psychosocial profile among HIV affected children- a case control study. IJRRMS VOL-3 No.2 APR - JUN 2013	NO	NO
		10. Geeta V. Bathija*, Dattatraya D Bant, S. R. Itagimath, L. Lokare, M. Godbole, M.S. Nekar, Mahesh D. K and KanteshReddi. A study on stress among government city bus drivers in Hubli. IJBR (2014) 05 (02) 102-104.	NO	NO
		11. Mahesh D. Kurugodiyavar*, Sushma H. R., ManeeshaGodbole, Manjunath S. Nekar. Impact of smartphone use on quality of sleep among medical students. International Journal of Community Medicine and Public Health January 2018 Vol 5 Issue 1 Page 101-109.	NO	NO
		12. Kurugodiyavar MD, Bant DD, Raghavendra D, Lokare L, Godbole M, Nekar MS, Kantesh S. Seasonal Variation in Admissions of Bacterial Meningitis at a Tertiary Care Hospital: A Time Series Study using Wavelet Analysis. Ann Community Health 2021;9(2):192-197	NO	NO
		13. Kurgodiyavar MD, Bant DD, Andanigoudar KB, Lokare L, Godbole M, NekarM.Determinants of low birth weight and effect of indoor air pollution on birth weight: A Case Control study in a tertiary care centre of Hubballi,Karnataka.Annals of Community Health.2021;9(3)	NO	NO
4.	DrManjunath S Nekar Associate Professor Dept of Community Medicine	1. Bant D D, Mahesh V, Bathija V G, Lokare L, Godbole M, Manjunath NS. Health and psychosocial profile among children HIV affected school children- A Case Control study. IJRRMS vol .no3(2) Apr-Jun' 2013	NO	NO
		2. LaxmikantLokare, M S Nekar, V Mahesh. Quality Of Life and Restricted Activity Days Among the Old Aged. Int J Bio Med Res.2011; 2(4): 1162-1164.	NO	NO
		3. LaxmikantLokare, M S Nekar, S Y Mulkipatil , Mahesh Venktesh. Metabolic Equivalent Task Score and Risk Factors Of Coronary Heart Disease In Bank Employees. Int J Bio Med Res.2012; 3(2): 1627-1630	NO	NO
		4. Manjunath S Nekar, LaxmikantLokare, Sunil A Gokhale, ManeeshaGodbole, S Y Mulkipatil, Mahesh V. Awareness of Eye Donation Among College Students Of Hubli City, Karnataka. IJBR 3[04] [2012]201-204	NO	NO

		5. Girish N, Manjunath S N, HCSCR Reddy, NIMHANS, Bangalore, 2011 ISBN -81-86435-00-X. Alzheimer's & Related Disorders Society of India. The Dementia India Report: Prevalence, Impact, Costs and Services for Dementia- Executive Summary	NO	NO
		6. Ram Kaulgud, Manjunath S Nekar, Sumanth K J, Rajeev R Joshi, bole, Vijayalakshmi K P, Sagar Desai, AppuPatil. Study of depression in patients with diabetes compared to non diabetics among elderly population and its association with blood sugar, HbA1c values. IJBAR [2013] 04 [01]	NO	NO
		7. AnandRampureVittalRaoSantosh C Gudimani, Anand Kumar SantoshPatilMithun V V and Manjunath S Nekar . Effect of prophylactic supplementation of allopurinol,magnesium and statin on the incidence of atrial fibrillation in off pump and on pumpcoronary artery surgery. IJBR (2014) 05 (01)	NO	NO
		8. SatishPatil, KanchanMahale, Praveen Shetty, Manjunath S Nekar. Antibiotic susceptibility pattern of urinary isolates from a tertiary care hospital with special reference to Gram negative bacteria. IOSR Journal of Dental and Medical Sciences (IOSR-JDMS) e-ISSN: 2279-0853, p-ISSN: 2279-0861. Volume 12, Issue 1 (Nov.- Dec. 2013.	NO	NO
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Pediatric Leprosy in a Tertiary Care Hospital in Hubballi – Are We Walking on a Thin Ice?

Abstract

Context: Leprosy is a major public health problem in developing countries where districts and blocks are reporting high prevalence indicating ongoing transmission. According to the National Leprosy Elimination Program Report of March 2017, there were about 0.13 million cases of leprosy in India, 8.7% of which were children. This study offers insight into the current status of the pediatric leprosy. **Aims:** The aim of the study is to assess the current scenario and clinical profile and to describe the clinico-epidemiological features of childhood leprosy at our tertiary care hospital in Hubballi. **Settings and Design:** This study was a 13-year retrospective analysis of hospital data from April 2005 to March 2018. **Subjects and Methods:** A retrospective, record-based study was carried out on patients diagnosed and registered in urban leprosy center of our tertiary care hospital in Hubballi (April 2005–March 2018). Data regarding demographic details, clinical features, treatment started, and complications were noted and analyzed. **Results:** Of total 1305 patients, 189 (14.48%) pediatric patients were seen. Age group of 12–18 years constituted 64.02% of patients. Male: female ratio was 1.3:1. Family history was present in 22 (11.6%). 142 had lesions ranging from 1 to 5 (75.13%), among them single lesion was common. Skin lesions are most often seen on the upper limb (52.38%). Borderline tuberculoid leprosy was common (72%). Majority had ulnar nerve involvement. Deformity was present in 21 patients. Majority received multidrug therapy. **Conclusions:** This study showed a prevalence of 15.6% of pediatric leprosy cases. Pediatric leprosy reflects that there are active infectious cases in the community, which needs active intervention including vigilant and rigorous screening for early diagnosis and treatment initiation, which are essential components for leprosy elimination and disability prevention.

Keywords: Borderline tuberculoid, childhood leprosy, pediatric leprosy

Introduction

Leprosy is one of the oldest diseases known to human. Despite advances in all spheres of medical science, leprosy continues to be a public health challenge in developing countries such as India.^[1] Leprosy is a chronic granulomatous disease caused by *Mycobacterium leprae*, affecting all age groups, primarily affecting the nerves and skin and secondarily other organs.^[2] Introduction of multidrug therapy (MDT) in 1981, on the recommendation of the World Health Organization (WHO), has led to a sharp decline in the prevalence rate (PR) of leprosy, from 57.60 in 1981 to 0.66 per 10,000 population in 2017.^[3] Leprosy continues to be an important public health problem, and leprosy in pediatric age group is a useful indicator of recent disease and active foci of transmission of the disease in a country, reflecting the failure of the

health system and local control programs to control the disease.

The PRs of leprosy in the pediatric age group in various studies vary from 5.1% to 11.43% among Indian population.^[4,5] The usual source of contact was the family members, neighbors, or contact from fellow students in the schools where they are studying.^[2]

Due to immature immune system in pediatric age group, pediatric leprosy differs from adult leprosy – where tuberculoid type is more common than lepromatous type and lepra reactions and deformities are rare.^[2] Deformities in children are worrying and unacceptable as they reflect a long delay in diagnosis and treatment which highlights the failure in the health service system and gaps to approach to control the disease.^[6]

We often do see pediatric leprosy cases in our leprosy care center of our institute,

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and hence, we decided to conduct this study with the aim to study clinico-epidemiological features, complications, treatment compliance, and prevalence of childhood leprosy patients presenting to our tertiary level center.

Subjects and Methods

This is a retrospective descriptive analysis of all leprosy cases less than or equal to 18 years of age, registered at the urban leprosy center, Hubballi, Karnataka, from April 2005 till March 2018.

This center is a tertiary care teaching hospital catering to a large population of Dharwad district of Karnataka. The hospital caters for a mixed population of both rural and urban background with many migrated families. Patients who come to the hospital with symptoms suggestive of leprosy and those referred from other departments of the same hospital or other nearby hospitals and private practitioners are registered in the leprosy clinic attached to the department of dermatology rather than active case finding or surveys.

A case of leprosy was defined as an individual with one or more of the three cardinal signs; hypopigmented or erythematous skin lesions with definite loss or impairment of sensation, definite thickening of peripheral nerve with sensory impairment, and skin smear-positive for acid-fast bacilli (AFB).

Details of age, sex, state of origin, duration of symptoms, possible source of contact, and clinical findings extracted from predesigned pro forma were analyzed. A “household” or “intrafamilial” contact was defined as any person in the immediate family (parents, siblings, and grandparents) living in the same house and partaking in meals from a common kitchen with a current or past history of leprosy. Known cases from immediate neighborhood of the patient’s house were considered as “extrafamilial” contacts. Clinical details included number and distribution of lesions, pattern of nerve involvement, and complications including lepra reactions, neuritis, and deformities. Slit skin smears results were collected which were prepared from three sites – eyebrow, ear lobule, and a characteristic skin lesion. The bacillary index (BI) was calculated as the mean of separate BIs from the three sites and ranged from 0 to 6 μ . The classification was based upon Ridley–Jopling classification^[3] and as per the criteria laid down under National Leprosy Elimination Program (NLEP). As per NLEP (in collaboration with Global Alliance for Leprosy Elimination and WHO), the 260 A. Singal *et al.* disease is classified as multibacillary (MB) if there are six or more lesions and/or more than one nerve involvement and/or a positive skin smear from any site.^[4] Treatment given, compliance, and number of defaulters and relapses were also assessed. Although many definitions have been proposed for relapse in leprosy, the one suggested by the WHO (1988) states – “A patient who successfully completes an adequate

course of MDT, but who subsequently develops new signs and symptoms of the disease, either during the surveillance period (2 years for paucibacillary [PB] and 5 years for MB leprosy) or thereafter” was considered to define relapse in our study.

Data collected were entered in MS EXCEL and analyzed. Frequency and percentage were calculated for descriptive study.

Permission to conduct this study was forwarded to the Institutional Review Board of this institute, who recommended that since this is a retrospective case records-based study with no direct patient interaction, permission was not required.

Results

A total of 1305 leprosy cases attended the urban leprosy center of our institute in the 13-year study period, of which there were 189 cases of pediatric leprosy ($n = 189$), and the average child proportion over 13 years was 14.48% [Table 1]. There were 108 males (57%) and 81 females (43%). The male-to-female ratio was 1.3:1 [Table 2]. The age group distribution is given in Table 2.

The mean age was 12.58 ± 3.8 years. The age group of 12–18 years accounted for the maximum number of cases (64.02%). The youngest was 4 years of age and the oldest 18 years. History of familial contact was present in 23 cases (12%), and multiple members were affected in only one family.

The distribution of the skin lesions is given in Chart 1. 142 patients had lesions ranging from 1 to 5 (75.13%), majority of whom had single lesion. The most common site of skin lesion was upper limb (51.3%).

Peripheral nerve thickening was present in 100 cases (52.9%) [Chart 2]. Multiple nerve thickening was present in 75 cases (39.68%). Ulnar nerve was the most common nerve to be involved in 81 cases (42.85%),

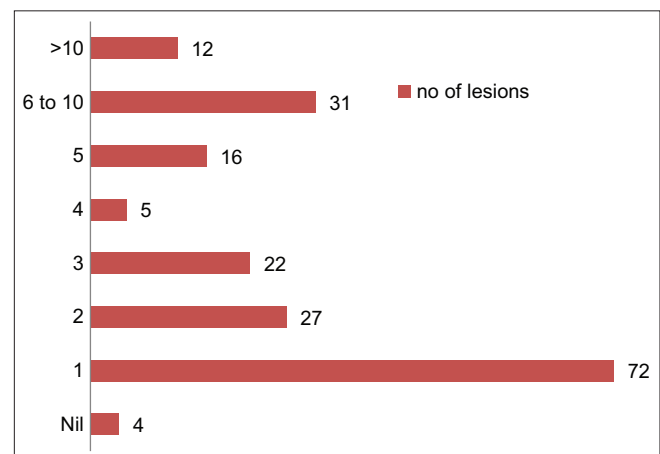


Chart 1: Number of hypopigmented patches in leprosy patient

Table 1: Year-wise distribution of childhood leprosy cases

Year	Total number of new leprosy cases	Number of child cases <18 years	Child proportion (%)
April 2005-March 2006	109	18	16.51
April 2006-March 2007	120	23	19.16
April 2007-March 2008	134	19	14.17
April 2008-March 2009	90	14	15.55
April 2009-March 2010	110	16	14.54
April 2010-March 2011	109	15	13.76
April 2011-March 2012	103	16	15.53
April 2012-March 2013	96	13	13.54
April 2013-March 2014	86	15	17.44
April 2014-March 2015	81	10	12.34
April 2015-March 2016	92	13	14.13
April 2016-March 2017	89	11	12.35
April 2017-March 2018	86	6	6.97
Total	1305	189	

Table 2: Age and sex distribution

	Age frequency	Male			Female		
		PB	MB	Total	PB	MB	Total
0-5	9	3	-	3	6	-	6
6-11	59	11	22	33	15	11	26
12-18	121	20	52	72	19	30	49
Total	<i>n</i> =189	34	74	108 (57.1)	40	41	81 (42.9)

PB - Paucibacillary; MB - Multibacillary

followed by common peroneal nerve in 56 cases (29.62%), radial cutaneous nerve in 30 cases (15.87%), and greater auricular nerve in 22 cases (11.11%).

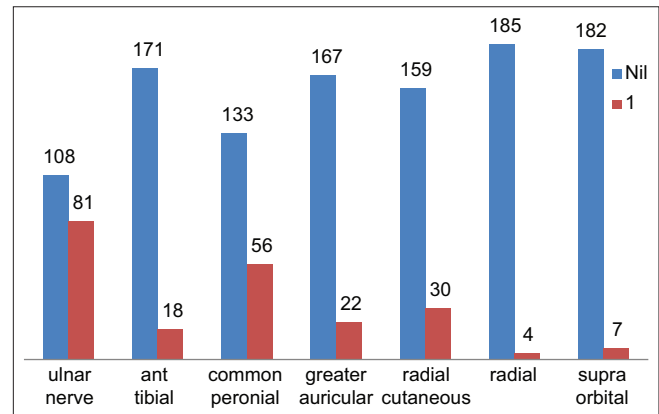
Borderline tuberculoid (BT) was the most common type of leprosy seen in 136 cases (72%) followed by tuberculoid (TT) in 12 cases (12.69%), borderline lepromatous (BL) and lepromatous (L) in 9 cases (4.76%) each, and indeterminate in 7 (3.70%) and 4 cases (2.11%) of pure neural leprosy registered during this period [Table 3].

Slit skin smear was done from three sites – eyebrow, ear lobule, and a characteristic skin lesion. A positive smear for AFB was found in 8 (4.23%) cases.

Seventy-four cases (39%) were given PB therapy while 115 cases (61%) were given MB therapy. Leprea reactions were present in 15 cases (5%), constituting 13 cases of Type 1 lepra reaction and two cases of Type 2 lepra reaction. Deformity was present in 21 (11.11%) patients [Chart 3]: claw hand - 10, trophic ulcers - 8, wrist drop - 1, foot drop - 1, and saddle nose - 1.

Discussion

Leprosy is one of the major public health problems, and India accounts for over one-half of the global burden of leprosy cases.^[7] According to a recent report by the NLEP, there were a total of approximately 1.27 lakh new cases of leprosy in India, of which 8.94% were among children.^[3] In our 13-year retrospective study, the prevalence of pediatric

**Chart 2: Spectrum of nerve involvement**

leprosy was 14.48%. A high proportion of new cases of pediatric leprosy reflect a high level of transmission of the disease in a given population. Only if the transmission of leprosy reduces in an area, we can expect the proportion of children affected will also decrease.^[8] Pediatric leprosy also determines the efficiency of ongoing disease control programs; therefore, WHO, Regional Office for South-East Asia (WHO SEARO) has declared leprosy as a Flagship Program that intends to achieve zero child cases and Grade 2 disability by 2020.^[9]

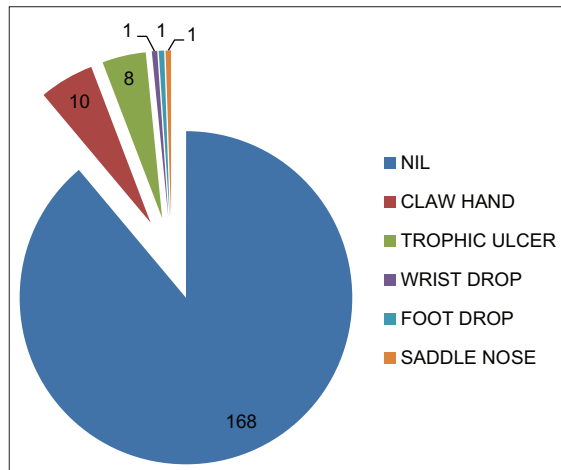
Majority of pediatric leprosy cases in our study were observed in the older age group that is above 12 years. Previous studies also reported a lesser occurrence in children <5 years.^[10-14] This may be due to the relatively long incubation period of leprosy, chances of misdiagnosing indeterminate skin patches as pityriasis alba and tinea versicolor in the initial stages which may lead to delayed detection in these cases.

Male cases outnumbered female cases in a ratio of 1.3:1, which is in accordance with previous Indian Studies ranged from 1.25:1 to 3:1.^[15] May be due to their greater mobility and increased opportunities for contact. However, in the study by

Table 3: Clinical spectrum of childhood leprosy cases in the study

Age	Clinical spectrum							Total
	TT	BT	BB	BL	LL	PN	I	
0-5	1	6	0	0	0	0	2	9
6-11	6	46	2	1	1	0	3	59
12-18	15	84	0	8	8	4	2	121
Total	22 (11.64)	136 (71.95)	2 (1)	9 (4.76)	9 (4.76)	4 (2.11)	7 (3.70)	189

BT - Borderline tuberculoid; BB - Borderline; BL - Borderline leprosy; LL - Lepromatous leprosy; PN - Pure Neural leprosy; TT - Tuberculoid

**Chart 3: Types of deformities**

Horo *et al.*, females predominated.^[4] Detection in girls may be lower than boys due to the neglect of the female child.

The mean duration of illness in this study was <1 year. This is in contrast to adult leprosy cases where the usual duration of illness is in years. This may be due to early healthcare-seeking attitudes in parents when their children develop skin lesions, especially hypopigmented lesions, as seen in cases of leprosy.^[2]

In the present study, family history of leprosy was present in 12%. This is similar to other studies where familial contact ranged from 6.06% to 47%.^[15-17] All the positive contacts were interfamilial, father being the most common source of contact, and no extrafamilial contact history was available which may be due to stigmatic lack of disclosure of the disease in the neighborhood if any. The risk of a person developing leprosy is four times higher when there is neighborhood contact and up to 9 times higher when the contact is interfamilial.^[18]

In the present study, single skin patch was the most common symptom or sign of leprosy in children, which is similar to the observation from previous studies.^[10,19] Upper limb (52.38%) followed by face (49.20%) was the most common site to be involved in our study. A possibility of leprosy should arise if a child presents with skin patch even if the sensation is intact, and such cases should be observed for early detection.

Peripheral nerve thickening was present in 100 cases (52.9%), and 75 cases (39.68%) had multiple

nerve thickening. This is consistent with other studies done in India which ranged from 4.54% to 59.38%.^[15] BT leprosy was the most common type of leprosy seen in 136 cases (71.95%), which is same in most of the studies done in India^[15] followed by TT type in 22 (11.64%). Indeterminate leprosy also accounted for seven cases (3.70%) which is consistent with other studies done in India – 3.48%–10.1%.^[15] However, a study done by Nair reported that indeterminate leprosy accounted for 33%,^[2] and the reduced prevalence in our study may be due to missed cases as they present with macules with or without sensory impairment and also due to misdiagnosing them as postinflammatory hypopigmentation and pityriasis alba. BL and LL types of leprosy are rare in the pediatric age group due to the immature immune system, but our study accounted for nine cases each in BL and TT types.

Smear-positive leprosy is considered uncommon in childhood and has been reported in <10% cases in many previous studies,^[10,12,14] which is similar to our study where 8 cases (4.23%) recorded were smear-positive. Only a few studies have reported higher smear-positivity rates ranging from 17.4% to 30%.^[10-12] High smear positives have got grave epidemiological consequences as they are the “open” cases who can be a source of infection to many because they harbor live bacilli in their nasal mucosa, and this disease predominantly spread through nasal droplets.

Based on the NLEP criteria, we observed MB leprosy to be more common than PB in children. This was consistent with a study done in Delhi.^[10] This is in contrast to most of the previous studies where PB was common type in pediatric leprosy.^[11,12] This difference is most likely due to the use of a different set of criteria for disease classification by previous workers such as the 1988 or 1998 WHO classification. While 1998 WHO classification included the number of lesions as a criterion (not present in the 1988 classification), neither considered the number of involved nerves as a differentiating factor. However, the inclusion of the number of involved nerves as a criterion increases the sensitivity of this classification and prevents under treatment of many patients deserving MB-MDT.^[10] In our series too, a significant number of patients with BT leprosy qualified for MB disease due to more than one nerve trunk involvement. This stresses on a thorough examination of peripheral nerves at the time of diagnosis to avoid under treatment.

The incidence of lepra reaction in children was low in our study (15 cases, 5%) in comparison with Jain *et al.*, who reported a high incidence of neuritis and reaction (29.7%);^[12] in other studies, it ranged from 1.36% to 29.7%.^[15] The occurrence of deformities in children is truly unfortunate. Grade 2 deformities were low in our study (11%) compared to other studies ranging from 0% to 24%.^[15] Factors that may contribute to deformities in children are the older age, multiple skin and nerve lesions, MB disease, presence of reaction, smear positivity, and delayed diagnosis.^[20] Rehabilitative measures such as physiotherapy and corrective surgeries should also be offered to selected patients.

Limitations

This is a retrospective study, data analysis was based on departmental records, and hence, bias in reporting cannot be totally ruled out. We could include only the cases presenting to our own center which happens to be tertiary care referral center. It could be safely assumed that more complicated cases were being recorded. Community-based surveys covering the district population could help clarify this issue.

Conclusions

Leprosy continues to be a communicable disease of concern in this postelimination era, and from the analysis of trends of childhood leprosy, in our study, we could offer an insight into the current status of disease and which is an indicator of active transmission of leprosy in a community. High PR and high MB disease patients in our study alarm us the need to restart active screening of schoolchildren for hypopigmented patches and also to intensify the process of contact screening, early case detection, conduct more and regular effective health education campaign, ensuring regular and complete treatment with MDT, and referral activities in the pediatric population to reduce the burden of leprosy and sustain elimination.

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Nil.

Conflicts of interest

There are no conflicts of interest.

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