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‘Hard as Lightning, Soft as Candle Light’

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The Students’ Scientific Society at the Armed Forces Medical College was set up to inculcate a scientific temper among medical students. For many years the main focus of the society was on conducting medical symposia.It was only in 2005 that under-graduate medical research received a fillip when the Young Researchers Forum was started. This was an annual event to showcase the students’ research work. Over the years, this forum has metamorphosed into one of India’s largest under-graduate medical conferences, namely, Illuminati. Since the college has been in the forefront of promoting UG medical research, there was a thought that we should take it a step further. A scientific journal to showcase their research was considered to be the next logical venture. “Praxis”is the result.

This term has its origin from the Greek word “prassein” for ‘to do’. The dictionary meaning of praxis is ‘exercise or practice of an art, science or skill’ or as ‘practise as distin-guished from theory’. The Roget’s thesaurus describes it as ‘effectuation’ or implementing an idea into action or a hard theory into practise. All definitions have two terms in common and they are knowledge and practise. The two are sequential and the latter cannot come without the former. Today, praxis is required for both acquiring knowledge and practical skills.

Technology has changed the process of knowledge acquisition. It is now available at the click of a button, and on your palmtop. This being so, the quantum of information ac-cessed and assimilated has also become byte-sized. The answer to a query posed is available by just accessing the appropriate search engine on the internet and typing the right key-words. The information is available in a jiffy and everywhere and whenever you want it. Trips to the library, and rifling through musty journals and ponderous note-takings are things of the past. This democratisation of knowledge has had one big fallout. The praxis of reading a full book or article has fallen by the wayside. The joy of doing so was in discovering how a scien-tist put forth his theory, presented facts and argued logically to prove his point. The apprecia-tion of the thought process is still critical for scientific reasoning. So the first challenge that teachers of medicine face today, is to get students back to reading books and monographs and not rely solely on wikipedia for medical information. Truncated attention spans and multi-ple distractions posed by information overdose on the internet will be barriers to this change. Medical textbooks will have to be rewritten to make them more readable and engaging. I was reading a retelling of the Mahabharatha a few years ago and was amused to note that the author had thoughtfully provided bulleted points at the end of each chapter. This may be the writing on the wall for us to follow.

The other challenge in medical education today is making our graduates ‘skilled and competent’. Bedside clinics should not be the only means for practical training. Simulator-based training has a great potential and will appeal to a generation of youth addicted to Playstations and online gaming. Making students an integral part of the ‘medical team’ will give them a sense of belonging and will allow them to learn the practical aspects of dealing with patients. So many aspects of medical training like communicating with patients and breaking bad news can be seamlessly integrated into ward rounds. A shift to a syndromic approach based on practical reasoning rather than learning esoteric syndromes by rote is another strategy.

The Medical Council of India wants medical education to be recalibrated to produce medical scientists rather than just doctors. Getting students involved in research early is a good idea. But research too requires practice. Practise in designing studies that will stand scientific scrutiny and in meticulous data recording. In short, medicine is like music or any art form requiring constant reiteration and revisions.

Aficionados of contemporary jazz will be familiar with the song ’Music of the night’ from the famous musical Phantom of the Opera. The phantom refers to his music as ‘hard as lightning, soft as candle light’. Our education should be such that our doctors are hard with facts and practical skills which they can marshal at the speed of lightning and execute with a softness that the art of medicine demands.

The editorial team of “Praxis” has tried to incorporate all these three aspects of medical education into this journal. Review articles, clinical approaches presented as flash cards, and original research work by students have all been incorporated in this journal. It is hoped that just like the Young Researchers Forum, Praxis too will evolve into something substantial with gravitas and momentum.

Gadgets, Sleep and Obesity

To go miles, you got to sleep

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REVIEW ARTICLE

Sleep is an essential, although often neglected, component of healthy lifestyle. Poor sleep is associated with obesity and its adverse metabolic effects[1,2]. Screen-based media like phone, tablets and laptops have invaded the lives of the adolescents and young adults and contribute to the lack of age-appropriate sleep in them[3,4]. Improving sleep quality and architecture is shown to prevent obesity and improve these metabolic derangements.

Sleep and health

Lack of sleep is associated with a wide range of adverse outcomes, including obesity, type 2 Diabetes Mellitus (DM), cardiovascular disease, depression, poor academic achievement and reduced quality of life[5,6,7]. A recent systematic review and meta-analysis showed that the risk of developing DM associated with insufficient sleep was comparable to that of the traditional risk factors, such as excess weight, family history of DM and physical inactivity[2].

The adolescents and young adults are particularly vulnerable to experience insufficient sleep and this age group has seen maximum decline in sleep duration over the past decade. Interestingly, this age group has also shown an alarming rise in prevalence of obesity and DM. Approximately 30% of preschoolers and 50% to 90% of school-age children and adolescents do not get adequate sleep[5]. Intervening at an early stage in this subset of population can be effective in preventing long-term health consequences and ensuring a healthy future.

Gadgets and sleep

Screen based media are an integral part of the lives of children and young adults, and are present all around for most part of their wakeful hours. In a survey of young respondents, more than 60% kept their mobile phones with them when they went to bed and more than 45% used their phone as an alarm which shows a high proximity of such devices in the sleep space in this age group[8]. The use of these gadgets affects sleep due to various reasons like delayed bedtimes, reduced sleep duration, psychological stimulation and the effects of light emitted by them.

The light emitted by electronic devices may be a strong contributor to hyperarousal and decreased sleepiness at bedtime. This exposure also causes suppression of melatonin, the sleep-promoting hormone, and causes a delay in its circadian rhythm[9,10,11,12].

Current literature on gadget use and sleep is fraught with limitations. These are mostly observational studies and therefore only association, and not causation can be inferred from them. These studies do not explain if it is the media time that displaces and affects sleep, or is it that poor sleepers fill up their wake time with gadget use. Determining the specific mechanisms by which they affect sleep will also require appropriately designed experimental studies.

Sleep and Diabetes Mellitus

There is a rapid rise in the prevalence of DM in children and adolescents. This recent rise cannot be explained solely by genetic risk and other conventional modifiable risk factors. It is also widely known that sleep duration, quality and architecture in adolescents and young adults is sub-optimal and this change has occurred mostly over the past decade.

Several meta-analyses have confirmed the independent association between sleep duration and the risk of developing DM in adults. A U-shaped dose–response relationship is observed between sleep duration and the risk of DM with the lowest risk observed at a sleep duration of 7–8h per day[13,14,15].

Sleep quality is also a good indicator along with the duration of sleep to evaluate if the number of hours is indeed sufficient for each individual. Sleep requirement and its adequacy may be very individual and hence, how tired a person feels after a night of sleep helps determine if the duration of sleep is sufficient[16].

Despite the numerous studies with results showing no association between sleep duration and glucose homeostasis, a few studies have shown a significant association between short sleep duration and higher insulin resistance, independent of age and sex. Flint et al reported that short sleep duration (<6h per night) in obese children was associated with higher peak insulin, higher fasting insulin and lower whole-body insulin sensitivity, independent of the level of obesity and age[17]. The likely mechanism by which lack of sleep affects insulin dynamics are complex and involve both neural and hormonal mechanisms. Sleep is a refractory period for the stress hormones cortisol, norepinephrine and epinephrine. During the night, these stress hormones levels down regulate. Due to disordered sleep, cortisol levels are inappropriately higher during the day which leads to their catabolic effects and its detrimental impact, which includes insulin resistance, weight gain and hyperglycemia.

Definitive evidence that improving sleep helps in resolving this defect in weight and glucose homeostasis is lacking. There are a few studies which indicate a beneficial effect. Arora and Taheri recently reviewed the evidence on the efficacy of sleep improvement programs and their potential influence upon addressing obesity and metabolic disturbances[18,20,21]. A randomized crossover trial in 37 children aged 8–11 years showed that, compared with decreasing sleep duration by 1.5h per night, increasing sleep duration by 1.5h per night over a week resulted in lower food intake and lower body weight[22].

The evidence in this field is scarce and appropriately designed studies need to be carried out on effect of improving sleep habits of children and adolescents on weight and insulin sensitivity, and whether such improvements translate into better outcomes in glucose homeostasis.

Recommendation and future prospects for research

Although evidence related to a clear causative relation between sleep and glucose homeostasis is not yet available, Sleep is undoubtedly a vital component of overall health and well-being. Assessment of sleep quantity, quality and healthy sleeping habits should be made an integral part of the evaluation of a young individual, especially those with obesity and associated metabolic derangements. Clinicians should recommend children and adolescents to improve their sleeping habits. Sleep duration guidelines are available to help evaluate and recommend proper sleep duration. the National Sleep Foundation in the United States recommends that children aged 6–13 years sleep between 9 and 11 h per night and adolescents aged 14–17 years sleep between 8 and 10 h per night to maximize overall health and well-being. it is important to encourage a good night's sleep as an adjunct to other health-promotion measures[23].

There is a need to encourage a healthy bedtime routine that includes calming activities and avoids electronic media use[24]. Families should be encouraged to exclude electronic media from their child's bedroom. Insufficient sleep as a contributing factor for poor health, mood disturbances and behavioral problems should be highlighted and made an important aspect of primordial and primary prevention of obesity and DM. There is scope for future research in areas where a knowledge gap exists. A definitive cause-effect relation between use of gadgets and sleep deficit needs to be established. Mechanisms by which this occurs needs to be defined so that corrective measures can be taken. Recommendations regarding upgradation of hardware in electronic devices, to make them metabolically friendly, can then be made.

Conclusion

The sudden surge in obesity and its adverse metabolic impact on our adolescents and young adults is likely to have a hidden modifiable risk factor. Usage of electronic gadgets and screen-based media has exploded into our lives, considering their ever-expanding applications and necessity. The possible link between these two epidemics needs further exploration. Till things regarding causative link between them becomes clearer, a healthy middle path needs to be taken. Till a healthier and scientifically sound alternative is found, restricting usage of media, taking frequent "switch-off log-off" breaks, and a clear off-screen period before bedtime will lower the adverse metabolic impact of these technological advancements. Getting adequate effective sleep should be given its due importance if we really want to move ahead to a healthier life and go the distance.

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Fingerprint Pattern used as a tool to indicate the risk of type 2 Diabetes mellitus among patients attending Bapuji Hospital OPD

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Abstract

Introduction: Diabetes is a chronic condition that is now a global disease. WHO predicts that it may be the seventh leading cause of death by 2030 (WHO, 2011). Type 2 Diabetes Mellitus is more common and is genetically controlled. Dermatoglyphics is the study of epidermal ridges (Cummins and Mildo, 1961). The dermatoglyphic patterns are formed in the first trimester of pregnancy under genetic and environmental control. Deducing a relationship between dermatoglyphic patterns and Diabetes Mellitus (type2) both of which are genetically controlled gives a promising solution to screen for high risk individuals

Objectives: To compare dermatoglyphic patterns in people with Type 2 Diabetes Mellitus and normal individuals.

Materials and Methods: Case-control study is done with 50 cases (25 female, 25 male) with type2 diabetes mellitus and 50 controls(25 female,25 male) with no other morbid conditions or family history sampled randomly. An informed consent is obtained and confidentiality maintained. Fingerprints obtained after smearing the fingers are examined for: whorls, loops and arches. The prevalence of each is calculated with percentages and 'p' value.

Results: Males: Loops were decreased in the right hand of cases. Loops were decreased and whorls significantly increased in the left hand of cases. In females, whorls were increased in the right hand of cases.

Discussion: The findings of the study are in partial agreement with findings of the study conducted by Sant SM et al and Sengupta etal

Conclusion: With respect to the above results we can use fingerprint analysis as a cheap screening program to identify the population which has greater risk for developing Diabetes mellitus. Fingerprints being constant with time, individuals can thus be screened early in their childhood for the risk of developing diabetes.

Conflict of interest: No conflict of interest observed.

Introduction

Diabetes is a chronic condition that is now a global disease. WHO predicts that it may be the seventh leading cause of death by 2030 (WHO, 2011). The global cost of diabetes is now 825 billion dollars per year[1]. The total number of patients suffering from diabetes is expected to increase from 366 million in the year 2011 to 552 million in the year 2030[2]. Thus discovering new cost effective ways to screen the general population at an early stage, and thus bring about a change in lifestyle, becomes truly valuable. Type 2 Diabetes Mellitus is more common and is genetically controlled. Dermatoglyphics is a branch of science involved in the study of epidermal ridges (Cummins and Mildo, 1961). The dermatoglyphic patterns are formed in the first trimester of pregnancy under the control of genetic factors and environmental factors[3]. Deducing a relationship between dermatoglyphic patterns and Diabetes Mellitus type 2 both of which are genetically controlled gives a promising solution to screen for high risk individuals.

Aims and Objectives

To compare dermatoglyphic patterns in people with Type 2 Diabetes Mellitus and normal individuals.

Methodology

Type: Case-control study

Subjects: 100 subjects- 50 cases, 50 controls.

Case criteria: 25 male and 25 female (>18 years) diagnosed with type 2 Diabetes Mellitus atleast 3 months ago.

Control criteria: 25 male and 25 female (>35 years) with no diabetes or other morbid conditions and no family history of diabetes.

Sampling method: Random

Confidentiality and consent: An informed consent will be obtained and confidentiality strictly maintained.

Method of data collection: The fingers are carefully smeared with an ink pad. The fingers are rolled from radial to ulnar side individually to obtain prints. The prints are examined under a magnifying lens.

Data analysis: The fingerprints are assessed for: whorls, loops and arches.

The prevalence of each of the parameters in the right and left hands of the diabetic and control population is calculated with the help of percentages and the 'p' value.

Results

FOR MALE

	Right Hand		Left hand	
	Diabetic (Percentage)	**Non- Diabetic (Percentage)**	**Diabetic (Percentage)**	**Non- Diabetic (Percentage)**
Whorls	45.6	36	49.6	35.2
Loops	43.2	56*	34.4	56.8
Arches	11.2	8	16	8

*- The results are significant (has 'p'value of less than 0.05)

Loops were significantly decreased in the right hand of male subjects as compared to male controls. Loops were significantly decreased and whorls significantly increased in the left hand of the male subjects as compared to controls.

FOR FEMALE

	Right Hand		Left hand	
	Diabetic (Percentage)	**Non-Diabetic (Percentage)**	**Diabetic (Percentage)**	**Non- Diabetic (Percentage)**
Whorls	45.8*	31.2	42.4	36
Loops	48.2	56.8	44.8	52
Arches	6	12	12.8	12

*- The results are significant (has 'p'value of less than 0.05)

Whorls were significantly increased in the right hand of female subjects as compared to female controls.

Discussion

Dermoglyphics, being a branch of study of epidermal ridges on the fingers, palms and soles, shows similar patterns in closely related individuals. Monozygotic twins[4] have almost identical patterns suggesting the patterns are genetically determined. Thus it acts as a marker to predict diseases of genetic origin.

The findings of the study conducted by Sengupta and others[5] show an increased frequency of whorls in male cases.

In a study conducted by Sant SM and others[6], it was seen that whorls were increased and loops were decreased significantly in both hands of female and male cases compared to controls.

A study by Srivastava and others[7], found an increase in the prevalence of whorls in both sexes in both hands of cases.

The present study shows a prevalence of whorls in the right hand of females and left hand of males cases and predominance of loops in both hands of controls, indicating a partial agreement with the above studies.

Conclusion

With respect to the above results we can use fingerprint analysis as a cheap screening program to identify the population which has greater risk for developing Diabetes mellitus. Fingerprints being constant with time, individuals can thus be screened early in their childhood for the risk of developing diabetes and thus inculcate a healthy lifestyle from their early life thus controlling the morbidity and mortality, in turn the cost of treatment of the disease.

Conflict of Interest: No conflict of interest has been observed.

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Therapeutic role of Phyllanthus amarus on pilocarpine induced status epilepticus in experimental animals

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Abstract

Introduction: Status epilepticus (SE) a life-threatening emergency in humans which if not treated can lead to permanent brain damage. Approximately 1% of the people worldwide suffer from epilepsy. Epilepsy includes several chronic neurological disorders characterized by repeated unprovoked seizures resulting from momentary impairment of brain function due abnormal neuronal excitability and synchronization. Status epilepticus (SE) a life-threatening emergency in humans which if not treated can lead to permanent brain damage and death. Benzodiazepines are the first line drugs in SE. They potentiate the inhibitory responses mediated by GABA-A receptors. However, the efficacy of benzodiazepines drastically decreases with the increasing durations of SE. The therapeutic efficacy of benzodiazepines is lost in some cases and the administration of second-line (Phenytoin and Fosphenytoin) and third-line (Propofol or Phenobarbitol) drugs is needed. But these drugs are not always successful. Despite the treatment with various antiepileptic drugs available, millions of patients present with uncontrolled epilepsy and are also subjected to the various side effects, toxicity and teratogenecity. Traditional systems of medicine still play an important role in providing health care. The herbal drugs are clinically effective with lesser side effects and are available at cheaper cost. In Indian traditional medicine system several plants belonging to the family of Euphorbiaceae are used for the treatment of epilepsy. Hence a study with Phyllanthus amarus (phyllanthus niruri) was planned. It has antiviral, anticancer, antitumor, antioxidant, anti-inflammatory, analgesic, anticonvulsant and diuretic properties. It is also employed for nervous debility, epilepsy and dropsy.

Aim: To study the therapeutic role of Phyllanthus amarus ethanolic extract (PAEE) on pilocarpine induced status epilepticus in Swiss albino mice.

Methodology: Swiss albino mice with an average weight of 25 g were divided into three groups as follows: Scopolamine + Pilocarpine (Group I), Scopolamine + Pilocarpine + PAEE (Group II) and Scopolamine + Pilocarpine + Diazepam (Group III). N= 6 in each group [3 males and 3 females], Scopolamine: 1 mg/kg body weight i.p.; Pilocarpine: 300mg/kg body weight i.p., PAEE: 100mg/kg body weight orally; Diazepam: 10mg/kg body weight orally, Pilocarpine induced status epilepticus. For ten days the plant extract was given orally at the dose of 100 mg/kg body weight. On the 10th day the test samples were given 1 hour prior to the induction of convulsion. Half an hour prior to the administration of the pilocarpine, scopolamine was administered at the dose of 1 mg/kg body weight i.p to minimize peripheral side effects of pilocarpine. After 30 minutes, Pilocarpine 300mg/kg body weight i.p was administered to the mice. The parameters like Status epilepticus (SE) and the mortality of the animals were observed.

Results: From our results, it is seen that all the animals administered with phyllanthus amarus reached the state of status epilepticus compared to the diazepam group. Also, it was noted that all the animals died in the plant treated group. It is very clear that, the test drug PAEE does not possess any protective action on pilocarpine induced status epilepticus.

Conclusion: Phyllanthus amarus does not have anticonvulsant activity on pilocarpine induced status epilepticus.

Introduction

Approximately 1% of the people worldwide suffer from epilepsy. It involves all the age groups and both sexes. Etiological factors contributing are stroke, oxidative stress and dysfunction among many others[1, 2]. It is characterized by localized outburst of electrical activities commonly in cortical and sub-cortical regions of cerebral hemisphere resulting in cell death and permanent brain damage[3]. Epilepsy includes several chronic neurological disorders characterized by repeated unprovoked seizures resulting from momentary impairment of brain function due abnormal neuronal excitability and synchronization[4]. It is a life-threatening emergency in humans which if not treated can lead to permanent brain damage and death[5]. Benzodiazepines are the first line drugs in SE. They potentiate the inhibitory responses mediated by GABA-A receptors. Lorazepam and diazepam are given intravenously. Midazolam is given intramuscularly for prehospital cessation[6].

The therapeutic efficacy of benzodiazepines is lost in some cases and the administration of second-line (Phenytoin and fosphenytoin) and third-line (propofol or phenobarbital) drugs is needed. But these drugs are not always successful[7].

The cases which are resistant to all the above mentioned drug therapies are called as refractory SE. It is seen in up to 40% of the SE patients and is managed by coma induction using anesthetics such as propofol or pentobarbital but the patients are most often presented with poor prognosis[8-11]. Therefore, anticonvulsant drugs for the rescue of patients with life-threatening refractory SE are needed.

The herbal drugs are clinically effective with lesser side effects and are available at cheaper cost. Hence, they are used widely for the treatment numerous diseases. In Indian traditional medicine system several plants belonging to the family of Euphorbiaceae are used for the treatment of epilepsy[12].

Phyllanthus amarus (phyllanthus niruri) commonly called as "stonebreaker" is a herbaceous plant of Euphorbiaceae family. It has got elliptic leaves with antiviral, anticancer, antitumor, antioxidant, anti-inflammatory, analgesic, anticonvulsant and diuretic properties. It is employed for nervous debility, epilepsy and dropsy[13-14].

In a preclinical on Streptozotocin (STZ) induced diabetic male Wistar rats showed that methanolic extract of Phyllanthus amarus possess antioxidant property at a dose of 125 and 250 mg/kg body weight. Significant reduction in the levels of thiobarbituric acid reactive substances and increased levels of reduced glutathione, and the activities of superoxide dismutase and Catalase was observed by employing the methanolic extract in various tissues such as liver, kidney, heart and brain of the diabetic rats[15].

Hence with this in mind,the current research was undertaken to study the therapeutic role of Phyllanthus amarus on pilocarpine induced status epilepticus in experimental animals.

Materials and Methods

The Institutional Animal Ethics Committee clearance (YU-IAEC.2a/31.12.2015)was obtained before initiation of the research work.

Drugs and Chemicals: Absolute alcohol, Scopolamine, Pilocarpine, Diazepam

Instruments: Soxhlet apparatus and Rota vapour apparatus to prepare the plant extract.

Animals: Six months old healthy Swiss albino mice with an average weight of 25 g was selected for the study. They were maintained under standard housing conditions in the animal house of Yenepoya University.

Plant materials: Phyllanthus amarus plants were collected. The plants were authenticated at the Biological Sciences Department, St. Agnes College, Mangalore. They were properly washed in tap water and then rinsed in sterile distilled water and left to shade dry for several weeks. The leaves of the plants were reduced to powdered form using an electric blender. The powder was stored in air-tight containers till use.

Preparation of plant extract: Phyllanthus amarus ethanolic extract (PAEE): A weighed quantity (500 g) of the coarse powder was taken and extracted with ethanol (90%) in a Soxhlet apparatus. The extract was concentrated on a water bath at a temperature not exceeding 60°C (yield 20% w/w).The ethanolic extract was suspended in distilled water.

Assessment of anticonvulsant activity of Phyllanthus amarus ethanolic extract.

Pilocarpine induced status epilepticus

For ten days, the plant extract was given orally at the dose of 100 mg/kg body weight. On the 10th day the test samples were given 1 hour prior to the induction of convulsion. Half an hour prior to the administration of the pilocarpine, scopolamine was administered at the dose of 1 mg/kg body weight i.p to minimize peripheral side effects of pilocarpine. After 30 minutes, Pilocarpine 300mg/kg body weight i.p was administered to the mice. The parameters like Status epilepticus (SE) and the mortality of the animals were observed.

For doing the above test, the animals were grouped as follows:

Group	Drug
I	Scopolamine + Pilocarpine
II	Scopolamine + Pilocarpine+ PAEE
III	Scopolamine + Pilocarpine + Diazepam

N= 6 in each group [3 males and 3 females]

Scopolamine: 1 mg/kg body weight i.p.; Pilocarpine: 300mg/kg body weight i.p.

PAEE: 100mg/kg body weight orally; Diazepam: 10mg/kg body weight orally[16].

Observation and Results

Table 1: Effect of plant extracts on Pilocarpine induced seizures

Group	No. of animal reaching status epilepticus	Mortality
S+P	6	6
PAEE+S+P	6	6
Diazepam+S+P	2	0
Scopolamine-1mg/kg, Pilocarpine 300mg/kg, Diazepam 10mg/kg		

Discussion

From our result, it is seen that all the animals administered with phyllanthus amarus reached the state of status epilepticus compared to the diazepam group. Also, it was noted that all the animals died in the plant treated group. It is very clear that, the test drug phyllanthus amarus ethanolic extract does not possess any protective action on pilocarpine induced status epilepticus.

Conclusion

Phytoconstituents of the indigenous medicinal plant, phyllanthus amarus do not have a potential to prevent status epilepticus.

Summary

Phyllanthus amarus do not have anticonvulsant activity on pilocarpine induced status epilepticus.

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Validity of Neutrophil-Lymphocyte ratio (NLR) and Platelet-Lymphocyte ratio (PLR) as prognostic markers in breast cancer- A retrospective study from tertiary hospital of Mangalore

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Abstract

Introduction: Breast cancer (BC) continues to be the commonest cancer in women in India. Elevated pre-treatment neutrophils and platelets with low lymphocytes were a negative predictor of cancer survival. Elevated NLR and PLR was associated with advancing age, larger tumors and higher stage.

Aim and objectives: The aim was to study the validity of NLR and PLR as prognostic markers in BC. The objectives were to study the significance of NLR and PLR with tumor-size, age, histologic-subtype, histologic-grade, lymph-node status, lympho-vascular invasion, tumor-stage, estrogen receptor(ER), progesterone receptor (PR), HER2 status and Ki-67 index.

Methodology: A hospital based retrospective study was conducted in Mangalore for 9 months among patients diagnosed with BC. Patient's whose CBC, hormonal status, Her2neu, Ki-67 IHC markers done before chemotherapy and surgery, were included. Patients having hematological, inflammatory or autoimmune disease or history of neoadjuvant therapy were excluded.

Results: Out of 110 patients included, most common age group was 36-55years, 3cases of male BC were found. Invasive ductal carcinoma was most common histologic-type, stageII the commonest histologic-grade and Luminal-A the commonest molecular-type. pT2 and pN2 were commonly encountered. Increased platelet, neutrophil and decreased lymphocytes were seen associated with higher stage. There was no statistical significant correlation of PLR and NLR with age, histologic-grade, tumor-size, pT, pN-stage, Ki-67 and lymphovascular-invasion.

Discussion: Ulas et al., also identified no significant correlations among clinical and pathological indicators of BC with NLR and PLR.

Conclusion: Pre-surgical NLR and PLR was not associated with either any histologic and molecular subtypes, or the pT, pN stage and histologic grade of BC. A prospective analysis on larger cohort will aid in obtaining actual insight into the association.

Introduction

In India, breast cancer remains the commonest cancer in women in spite of various advances in its diagnosis and treatment with rise of its incidence in 3rd decade of life. The peak incidence of breast cancer is noted between 50-64 years with a significant difference in its incidence among the urban and rural areas[1]. Breast cancers vary in their natural history and response to therapy[2,3]. Lymph node status has remained as a single most important independent prognostic marker till date; however, there are enough studies stating that patients having similar lymph node status can behave clinically different[3]. Though, evaluation of hormonal and Her2 neu status have improved the clinical decision making, it is expensive and data on their utility in the diagnosis of early breast cancers are lacking. These issues warrants to search for an accurate, reproducible, cost effective yet easily available parameter that can aid in predicting the clinical outcome of breast cancer.3 Increasing studies have investigated the role of the immune system on disease progression or cessation wherein assessment of the inflammatory response to the tumor is much easier and cost effective with neutrophils and lymphocytes being the main inflammatory cells[4]. Studies have found that both elevated pre-treatment neutrophil and platelet counts were linked with poor survival in cancer patients whereas low lymphocyte count was a negative predictor of cancer survival[5].

Elevated NLR was found to be associated with advancing age, larger tumors, and stage of disease in breast cancer and also in patients with colorectal, gastro-esophageal, hepatocellular and lung cancers.

Factors representing more aggressive tumor behavior, such as increased tumor size, microvascular and lymphatic invasion, lymph node involvement, was associated with elevated NLR[6]. Although, there are numerous studies on NLR and PLR ratio are available in the literature, data from Southern India is lacking. The aim of the present study was to analyze and validate NLR and PLR as prognostic markers in breast cancers by comparing them with already established prognostic indicators such as age, tumor size, lymph node status, histologic grade, pT stage, pN stage, lymphovascular invasion, hormonal status, Her2neu status and proliferation index.

Materials and methods

The present hospital based retrospective study was conducted in the Department of Pathology, Kasturba Medical College, Mangalore. All patients who were diagnosed with breast cancer and subjected to mastectomy from July 2017 to March 2018 formed the core of the study. The study subjects were selected using sequential sampling (Non-Random) technique. The inclusion criteria included-

1. All of the patients of breast cancer who had a complete blood count (CBC) with differential leukocyte count (DLC) performed before chemotherapy and surgical treatment.
2. The patients should have been subjected to assessment of hormonal status and Her2neu status and proliferation index with Ki-67 IHC marker. ER and PR positivity was considered when >1% of tumors cells expressed the IHC marker. Her2neu status with IHC 3+ and IHC 2+ that were confirmed positive with FISH were included as Her2 neu positive cases.

   Cases with incomplete data, non-availability of CBC/DLC, or having any other cause that can alter the neutrophil, lymphocyte and platelet counts such as presence of any clinical signs of ongoing infection, hematological diseases, acute or chronic inflammatory diseases, autoimmune etiologies, or with a history of steroid treatment or pre-operative chemotherapy were excluded. A structured proforma was used to collect data which include the demographic and laboratory characteristics of the patients.

The NLR was calculated by dividing the absolute neutrophil count by the absolute lymphocyte count and PLR by diving the platelet count by the absolute lymphocyte count. Further, the NLR was divided into 4 groups- as <1.8, 1.8-2.45, 2.45-3.33and >3.33 based on Elyasinia[7].

The study protocol was approved by the Institutional Ethics Committee (IEC) of Kasturba Medical College (Manipal Academy of Higher Education), Mangalore. The patients whose samples have been tested in the laboratory for CBC and DLC were recorded. The patients' medical records were reviewed and the clinical details were retrieved for clinical correlation. The collected data was coded and were entered on to Statistical Package for the Social Sciences (SPSS) version 11.5. Results were expressed as proportions using appropriate tables and figures. Sensitivities, specificities, positive predictive value (PPV) and negative predictive value (NPV) were calculated. For comparisons, chi-square tests was used. A p-value of 0.05 was considered significant.

Results

There were 124 patients diagnosed with breast cancer during the study period and 110 patients fulfilled all the inclusion criteria. There were 3 men with breast cancer accounting for 2.7% of cases. The demographic and pathologic characteristics of these 110 patients are tabulated in table 1.

Table 1: Patients' demographic data

Characteristic feature	Total number of cases	Number (%)
Age (Mean)	**110**	52.4 years
Age groups	**110**	
≤35 years		13 (11.8)
36-55 years		52 (47.3)
56-75 years		43 (39.1)
≥76 years		2 (1.8)
Laterality	**110**	
Left		55 (44.5)
Right		53 (43.6)
Bilateral		2 (1.8)
Central		11 (10)
Quadrant	**110**	
Upper Outer		54 (49.1)
Upper Inner		16 (14.5)
Lower Outer		21 (19.1)
Lower Inner		8 (7.3)
Subareolar		23 (20.9)
Histologic type	**110**	
IDC		91 (82.7)
ILC		7 (6.4)
Papillary		4 (3.6)
Others		8 (7.2)
Tumor size	**110**	4.8×2.2×1.7 cm
pT stage	**110**	
T1		10 (9.1)
T2		68 (61.8)
T3		26 (23.6)
T4		6 (5.5)
pN stage	**110**	
N0		41 (37.3)
N1		26 (23.6)
N2		27 (24.5)
N3		16 (14.5)
Histologic grade	**110**	
I		22 (20)
II		64 (58.2)
III		24 (21.8)
Lymphovascular Invasion	**110**	87 (79.1)

Surgical resected margin	**110**	6 (5.5)
ER	**85**	
Negative		34 (30.9)
Positive		51 (46.4)
PR	**85**	
Negative		45 (40.9)
Positive		40 (36.4)
Her2 neu	**85**	
Negative		60 (54.5)
Positive		25 (22.7)
Ki-67 proliferative Index	**52**	
≤20		35 (31.8)
21-50		10 (9.1)
≥51		7 (6.4)
Molecular subtype	**85**	
Luminal A		46 (41.8)
Luminal B		5 (4.5)
Her2 enriched		19 (17.3)
Triple negative		15 (13.6)

In the study, the mean platelet count was 301.2×109/L (range:78-720×109/L). Mean NLR was 3.9 and mean PLR was 138.5. There were 31 cases with NLR <1.8, 25 cases with NLR 1.8-2.45, 24 cases with NLR 2.45-3.33 and 30 cases with NLR >3.33. There was no statistical significant correlation of PLR and various groups of NLR with age, histologic grade, tumor size, pT stage, pN stage, Ki-67 index and lymphovascular invasion. In the various histologic types of breast cancers, 30.8% of cases of IDC were having >3.3 NLR as compared to ILC that had maximum number of cases (42.9%) clustered in low NLR (<1.8) category. 40% cases of mucinous types, all cases of medullary (100%) had an NLR between 2.45 and 3.33. However, there were no statistical significance NLR with various histologic types of breast cancers. Maximum number of ER positive (34%), PR positive cases (32.5%) had a low NLR ratio (<1.8); whereas, maximum number of her2 enriched (31.6%) and triple negative cases (40%) had a high NLR (>3.33). However, there were no statistical significance NLR with various molecular types of breast cancers.

An increased platelet count, neutrophil count and decreased lymphocyte count were seen associated with higher stage of cancer (higher pT and pN staging). There was no statistical significance of these parameters with the tumor stage.

Discussion

There are enough evidence that inflammation and immunogenicity have a pivot role in breast cancer prognosis and higher the inflammatory response in the form of high NLR and high PLR and higher immunologic response in the form of triple negative and Her2 enriched types are associated with poor prognosis. In the present study, we aimed at analyzing the utility of inflammatory pointers such as NLR and PLR with various histologic and molecular types of breast cancers[8]. However, we found that there is no statistical differences in the inflammatory indicators (NLR and PLR) when compared among the types of breast cancers.

Leucocytes i.e. neutrophils and lymphocytes have a pivotal role in neoplasia. Not only in breast cancers, high NLR has been proved to be an single important prognostic indicator in cancers of gastric mucosa, colonic cancer, non-small cell lung carcinoma and metastasis from renal cell carcinoma and melanoma[9].

Increase in neutrophil count is secondary to myeloid growth factors secreted by tumor cells[10]. Its mechanism of association with poor prognosis of breast cancer is less well-understood and probably involves a multi-factorial pathway which ultimately results in promoting neovasculogenesis and tumor progression resulting lesser survival chances[11].

NLR and PLR are simple and cost-effective indicators that takes into account the absolute neutrophil count, absolute lymphocyte count and the platelet count. Noh et al., established increased NLR to be an independent prognostic marker in early breast cancer that can predict a poor survival in such patients[3]. In 2014, Yao et al. proved that increased NLR and increased RDW are poor prognostic indicators. In our study, we aimed at analyzing the association of elevated NLR and PLR with breast cancer types[12]. In our study we observed that increased NLR was associated with higher pT and pN stages, younger patients' age, ER/PR negativity and Her2 positivity. In a study conducted by Azab et al., it was noted that higher NLR was seen in older individuals, patients with more number of lymph nodes and increased metastatic potential. We did not find any statistical significance of NLR and PLR with various indicators.5 Ulas et al., also identified no significant correlations among clinical and pathological indicators of breast cancer with NLR and PLR[13].

There are many limitations in our study. It was a retrospective study and hence the number of cases which fulfilled the inclusion criteria was less during the study period. Not all cases had underwent hormonal receptor analysis, Her2 analysis and Ki-67 index. Hence, adequate number of cases to establish the statistical correlation

among the various molecular subtypes was not achieved. To conclude, pre-surgical NLR and PLR was not associated with either various histologic and molecular subtypes of breast cancers, or the pT, pN stage and histologic grade of breast cancer. A prospective analysis on larger cohort will aid in obtaining actual insight into the association.

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Assessment of taboos regarding menstruation in adolescent rural girls

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Abstract

Introduction: Menstruation is a physiological procedure that imparts women the power of procreation. But various taboos regarding menstruation in India and other parts of world have made this "normal" physiological procedure an abnormal one.

Objective: To assess the prevalence of taboos regarding menstruation in rural adolescent girls.

Materials and methods: It was an observational, descriptive, cross-sectional study done within 10/6/18- 6/7/18 at Bajitpur Saradamani Balika Vidyalaya and study population was 146. Study tool was a semi- structured, self-administered questionnaire.

Results: 41.8% of the study population had no knowledge regarding physiological basis of menstruation. Mother and friends were the two important sources of information regarding menstruation. Most of them did not enter temple or took part in an auspicious event during menstruation because some of them thought they were impure in that period. But most of them [58.2%] blindly followed the customs because of the influence of any female family member preferably mother. Only 58.2% of the study population thought menstruation is important for life but their knowledge was incomplete. 75.3% of the study population thought that those ancient customs were important and should be followed and in future they would instruct their daughters to follow those customs.

Discussion and conclusion: The taboo regarding menstruation is deep rooted in the society and the female family members specially mothers are carrying the tradition forward. It is hampering the normal lifestyle, education and mental health of an adolescent girl.

Introduction

Menstruation is the visible manifestation of cyclic physiologic uterine bleeding due to shedding of endometrium[1]. It is a natural process that first occurs in girls usually between the age of 11-14 years and imparts women the power of procreation. But in India and all over the world, abundant myths and taboos have made the "Natural" process a very "Unnatural" one. Menstruating women are labelled as "Impure and evil"[2] by the society till date. They have to go through various physical, mental and social compromises during "Those days of month"

Vedic explanation of menstruation:

The origin of this myth dates back to the Vedic times and is often been linked to Indra's slaying of Vritras. For, it has been declared in the Veda that guilt, of killing a brahmana, appears every month as menstrual flow as women had taken upon themselves a part of Indra's guilt[2]. According to hindu myth, women are prohibited from participating in normal life events during menstruation.

Current taboos and practices in India:

1. Not entering the "puja" room
2. Not entering the kitchen [menstruating women are considered unhygienic and unclean and hence the food they prepare or handle can get contaminated. According to another[3] study participating women also reported that during menstruation the body emits some specific smell or ray, which turns preserved food bad]
3. Restricted from offering prayers and touching holy books
4. Cultural norms and religious taboos on menstruation are often compounded by traditional associations with evil spirits, shame and embarrassment surrounding sexual reproduction
5. In some cultures, women bury their cloths used during menstruation to prevent them being used by evil spirits.
6. Many adolescent girls believe that doing exercise/ physical activity during menses aggravate the dysmenorrhea while in real exercise can help

relieve the menstruating women with symptoms of premenstrual syndrome and dysmenorrhea and relieve bloating. Exercise also causes a release of serotonin, making one feel much happier.

7. It is believed that if a girl or women touches a cow while she is on her period, that the cow will become infertile – leading girls to associate their own bodies with curse and impurity.

Hence the study was planned to assess the prevalence of taboos regarding menstruation in rural adolescent girls.

Materials and Methods

It was an observational, descriptive, cross- sectional study done within 10/6/18- 6/7/18 at Bajitpur Saradamani Balika Vidyalaya and the study population was 146. A multistage sampling technique was adopted. Out of 23 districts of West Bengal, Purba Medinipur district was randomly selected. Then out of 25 developmental blocks of the district, Sutahata block was randomly chosen. Bajitpur Saradamani Balika Vidyalaya was randomly chosen from 5 girls' school of that block. Study tool was a pre-designed, pre-tested, self- administered, semi-structured questionnaire. The variables were age, class, social class, knowledge about menstruation, age of menarche, and knowledge before menarche and source of information, reaction after menarche, comfort level while discussing about menstruation, customs followed during menstruation and the reasons behind it, practice during menstruation, perception of importance of menstruation and necessity of such customs. Girls studying in 6th/7th/8th standard who were present in the school at that period, have experienced menarche and gave consent for the study were only chosen. The data entry was done in Microsoft Excel and analysed manually.

Results

From the study it is seen that 50% of the study population was 13 years old and 40% from lower middle socioeconomic class. 41.8% of the study population had no knowledge regarding physiological basis of menstruation. Most of them did not know about the occurrence of menstruation before menarche and was scared during menarche. Most importantly 12.3% of the study population regretted for being female. Mother and friends were the two important sources of information regarding menstruation. The girls did not prefer to discuss about menstruation with their male family members and 30.8% felt ashamed of it. Most of them did not enter temple or took part in an auspicious event during menstruation because some of them thought they were impure in that period. But most of them [58.2%] blindly followed the customs because of the influence of any female family member preferably mother. Some of them separated themselves from the family, skipped school and preferred to sit at one place and spent time during menstruation . Only 58.2% of the study population thought menstruation is important for life but their knowledge was incomplete. 75.3% of the study population thought that those ancient customs were important and should be followed and in future they would instruct their daughters to follow those customs.

Reaction and Practices during Menstruation (n=146)	
Reactions:*	Number(%)
Scared	94 [64.4%]
Impure	6 [4.1%]
Regret	18 [12.3%]
Normal	43 [29.4%]
Discuss about menstruation with everyone	
Yes	2 [1.4%]
No	144 [98.6%]
Feel Ashamed of Menstruation	
Yes	45 [30.8%]
No	101 [69.2%]
Various Customs Followed*	
Does not enter temple	144 [98.6%]
Does not enter kitchen	3 [2%]
Does not touch children	4 [2.7%]
Does not touch domestic animals	13 [8.9%]
Does not take part in auspicious events	90 [61.6%]
Others	10 [6.8%]
Source of Direction to Follow the Customs*	
Elder Sister	9 [6.1%]
Mother	138 [94.5%]
Other elderly ladies	17[11.6%]
Creating Distance from Family During Menstruation	
Yes	15 [10.3%]
No	131 [89.7%]
Skip School During Menstruation	
Yes	31 [21.2%]
No	115 [78.8%]
Restriction of Movement	
Yes	54 [36.9%]
No	92 [63.1%]
*multiple response table	

Knowledge and Source of Knowledge About Menstruation

(n=146)

Knowledge	**Number(%)**
Physiological process	85 [58.2%]
Curse of God	0 [0%]
No Idea	61 [41.8%]
Knowledge about menstruation before Menarche	
Yes	45 [30.8%]
No	101 [69.2%]
Source of Information about Menstruation*	
Mother	125 [85.6%]
Friends	44 [30.1%]
Relatives	6 [4.1%]
Tv/Newspaper/Magazine	4 [2.7%]
Others	1 [0.6%]

*multiple response table

Discussion and Conclusion

Perception of Importance of Menstruation and Taboos

(n=146)

Importance of Menstruation	**Number(%)**
Yes	85 [58.2%]
No	19 [13%]
Does not know	42 [28.7%]
Importance of Taboos	
Yes	110 [75.3%]
No	36 [24.7%]
Will Impose the Restrictions on Their Daughters	
Yes	110 [75.3%]
No	36 [24.7%]

As we have seen in various papers published before on similar topic, menstruation in this study population is also not free from various taboos. The taboos are followed irrespective of the socioeconomic status of the individuals. Through the study it is found that women family members specially mothers impose various restrictions to the menstruating adolescent girl and most of them cannot explain the reasons behind following those restrictions. Also some of them feel that women become impure and it is sinful to touch holy books and enter temple during menstruation. So we can conclude that these traditional practices and taboos are deep rooted in the society and women are their flag bearers. These practices are inhibiting women to lead a normal life during a "normal physiological process". The adolescent girls are getting either no or severely wrong information regarding the physiological basis, importance and ideal practices and hygiene of menstruation. It is hampering the normal lifestyle, education and mental health of an adolescent girl. They are considering "menstruation" as nothing but "monthly headache" with no purpose or importance in their lives.

Recommendation

The issue is very sensitive till date so it should be solved with patience. Proper education and counselling of both mothers and daughters are important to banish the age old unnecessary customs and promote menstrual health and hygiene in all strata of the society.

Limitation: This is a cross sectional study conducted only in one school and lacks generalization of results. Since the information was obtained from a self-administered questionnaire, information bias cannot be ruled out.

Conflict of Interest: Nil

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Immunization status awareness among elderly living with diabetes mellitus

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Abstract

Background: The prevalence of diabetes mellitus in the elderly population is increasing. Pneumonia is leading cause of death in older people for which diabetes is a major risk factor. The response to vaccines though is not cent percent in elderly population, it is said that an "ounce of prevention is worth a pound of cure".

Material & Methods: The elderly patients attending the geriatric clinic and diabetes clinic of our institute were interviewed over a period of one month to know their immunization status after attaining 60 years of age and awareness among them regarding immunization schedule in the elderly population. Results: Out of 100 elderly participants, males constitute 59% and the young old (60 -74 years) constitute 94%. Thirty participants have been immunised against either Tetanus, Hepatitis, Pneumococcal, and Influenza after attaining 60 years of age. A total of sixty eight participants were not aware about immunisation schedule. Higher immunization rates are found in the people who are graduate and those are motivated by the clinicians to receive vaccines. The elderly living with diabetes of 5 to10 years duration have received more shots of vaccine.

Conclusion: The study concludes that there is less awareness among the elderly and clinicians regarding immunization schedule for the elderly living with diabetes.

The people living with diabetes are prone for communicable and community-acquired diseases which can be prevented to certain extent by immunization. In the era of transplantation and replacement surgeries, the elderly need to receive protective methods.

Keywords: Awareness, Diabetes Mellitus, Elderly, Immunization.

Introduction

The elderly people (>60yrs) constitute 9% of total population in India. Diabetes is a serious growing and more concerned health issue globally and about a quarter of them are aged 65 years or older with type 2 diabetes mellitus[1,2].

The elderly people living with Diabetes Mellitus are more prone to develop infectious diseases mostly pneumonia, influenza and herpes zoster. The vaccines prescribed for elderly over sixty years are against influenza, herpes zoster, hepatitis B, tetanus, diphtheria and pneumococcal infections[3]. Severe morbidity and mortality during typical Influenza season occur among persons aged ≥65 years and those who have chronic medical conditions like diabetes mellitus[5]. Pneumococcal pneumonia is a vaccine preventable disease in diabetes with the incidence being higher than general population with mortality rates as high as 50%[6].

The two best practices about immunization in elderly are noted in India. One is the Haj pilgrims need to be vaccinated against pneumococcal infection by compulsion before submitting their registration form. Secondly the chest physicians are creating awareness and ensure in some patients with COPD to get immunization against influenza and pneumococcal.

Aims and Objectives

This study is done to know about the immunization status and awareness about immunisation in the elderly population living with diabetes mellitus.

Materials and Methods

This study is a hospital based prospective study. A total of 100 elderly people irrespective of sex and educational status, living with Diabetes Mellitus who were attending Geriatric clinic (Every Wednesday) and Diabetic clinic (Every Thursday) of our hospital over a period of one month were randomly selected and were interviewed to answer a questionnaire which was prepared by the authors. The questions framed were to know the demographic profile, educational status, awareness regarding immunization schedule and status of immunization among the participants.

Observations

In the present study of 100 participants, males were 59% and females were 41%. The males constitute 54 % in young old (60-74 years), 4% in old (75 -84 years) and 1% in very old (>85 years) categories. The females constitute 40 % in young old and 1% in very old categories. (Table 1). The oldest participant was 86 years old Male.

Table1: Age and Sex Distribution

Age (years)	Male	%	Female	%
60-70	54	54	40	40
75-84	04	04	00	00
>85	01	01	01	01
Total	59	59	41	41

The awareness about immunization in elderly was present in 21% of males and 11% of females constituting 32% (Table 2).

Table 2: Awareness about immunization

Sex	Not aware	% present	Awareness	%
Male	38	38	21	21
Female	30	30	11	11
Total	68	68	32	32

Participants who had undergone immunisation in the past few years but after the age of 60 years were 30, among which Males were 19 and females were 11 in number. (Table 3).

Table 3: Immunization status

Sex	No	%	Yes	%
Male	40	40	19	19
Female	30	30	11	11
Total	70	70	30	30

In our study, not a single participant had suffered from pneumonia in the past one year while one participant suffered from Hepatitis B and one participant from Herpes zoster in the past one year. (Table 4)

Table 4: History of immunization-preventable diseases

Diseases	Yes	%	No	%
Pneumonia	0	0	100	0
Hepatitis B	1	1	99	99
Herpes Zoster	1	1	99	99

In our study, the illiterate population comprised 9 % of which one was immunized. The participants who have studied upto tenth standard were 38% among which only seven were immunized, and those who studied greater than 10th standard were 25% among which 8 have been immunized. The participants who were graduate comprised 28% among which 14 had immunization. (Table 5).

Table 5: Education level and immunization status

Educational status	%	Males (%)	Females (%)	Immunized (%)	%
Illiterate	09	05	04	01	3.3
<10th	38	17	21	07	5.5
>10th	25	14	11	08	9.6
Graduate	28	23	05	14	15
Total	100	59	41	30	

The present study showed that 30 % of total subjects were immunised against multiple diseases. Of these 9% were immunised against Influenza, 23% were immunised against tetanus,10% against Hepatitis B and 2% subjects against pneumonia. (Table 6).

Table 6: Details of elderly who are immunized.

VACCINE	NUMBER
Influenza	09
Tetanus	23
Hepatitis B	10
Pneumococcal	02
Herpes Zoster	00

Discussion

In our study 9 % of elderly living with diabetes received vaccination against Influenza and were mostly motivated by physician recommendation. In a study conducted by Heymann DA[6] et al. where they compared hospitalization and mortality rates in 15,556 patients with diabetics with age >65 years and found that vaccination against influenza was seen in 42.8%. In another study by Garcia RJ[13] et al showed that 65.7% were vaccinated against influenza.

Two participants had received pneumococcal vaccine in our study. In a study done by Garcia RJ[7] et al showed that 23.3% had received pneumococcal vaccine. Their study included 2288 subjects having respiratory illness and diabetes mellitus for a period of 7 years and being recommended by general practitioners. Hepatitis B vaccine was received by ten participants in our study while 34 % in a study done by Williams RE et al.[8].

The emphasis needs to be drawn in particular on immunisation in the elderly populations with diabetes mellitus in order to reduce morbidity, hospitalization, financial burden on the family and finally the mortality rate especially in the developing countries like India

Conclusion

This study shows that most of the elderly people living with type 2 diabetes are not aware about immunisation schedule and their immunisation levels are much below the expected rates. The common barrier being lack of knowledge regarding the need for immunisation and lack of information from the clinicians. People living with diabetes mellitus are highly susceptible to various infectious diseases and their sequelae of complications. Hence elderly living with diabetes mellitus should be motivated and made aware about the immunisation schedule.

This in turn will reduce morbidity, hospitalisation, financial burden on the family and mortality rate globally.

Our study may help the policy makers and health care providers to make new schemes in creating awareness on immunization in the elderly population living with diabetes, hence increasing coverage by targeting vulnerable population.

As on now we do not have policy framework from government of India regarding immunization in elderly. We recommend the immunization program called Indradhanush should be extended as Indradhanush– S (where "S" suggest seniors). The geriatric society of India has published Indian guidelines for vaccination in elderly and has submitted to Government of India in the year 2015, which needs to be implemented as part of health care system.

Comparison with other studies

Immunisations	Our study N=100	Sahin S9 et al N=97	Alvarez CE10 et al N =279	Koul PA11 et al N=1100
1. Tetanus	23%	9.28%	Nil	Nil
2. Influenza	09%	38.1%	40%	9%
3. Pneumococcal	02%	13.4%	2%	8.8%
4. Hepatitis B	10%	Nil	2%	Nil
5. Herpes zoster	Nil	Nil	Nil	Nil

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A study on platelet indices in type 2 diabetes mellitus

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Abstract

Background: Type II DM is a part of metabolic syndrome. Inadequate glycemic control, protein glycation and oxidative stress can adversely influence platelet morphology and endothelial function contributing to diabetic angiopathy[1].

Aims: To evaluate and compare platelet indices in type 2 DM and non – diabetics and to determine the correlation of MPV and PDW with glycosylated haemoglobin (HbA1c), Fasting blood glucose (FBS), Postprandial blood sugar (PPBS), Body mass index (BMI) and Duration of DM.

Materials and Methods: Analytical cross sectional design with study population comprising 60 patients, each with type 2 DM and non – diabetic control group. Diagnosis of DM using the American diabetes association criteria of 2010[2] and the cut off value of HbA1c was >6.5. Hematological parameters measured using automatic analyzer Sysmex XS 1000i.

Results: The mean platelet count was higher in diabetics. There was a mild positive, but statistically insignificant correlation between MPV and HbA1c, FBS, BMI. There was a statistically significant correlation between MPV and PPBS (P = 0.007). There was a mild positive correlation between PDW and HbA1c, FBS, PPBS, BMI but statistically insignificant.

Conclusion: Platelet indices are a simple, easily available and cost-effective tool in early detection of diabetic complications.

Keywords: Diabetes mellitus, platelet indices, platelet count, mean platelet volume.

Introduction

Diabetes mellitus (DM) is a global health problem and is fast gaining the status of a potential epidemic in India.[3,4] Type 2 DM is a part of metabolic syndrome which comprises of hyperglycemia, hypertension, dyslipidemia, impaired fibrinolysis and increased procoagulation factors. Chronic hyperglycemia results in micro (retinopathy, neuropathy, nephropathy) and macrovascular complications (coronary artery disease, peripheral arterial disease and stroke).[5]

Traditionally the measurement of blood glucose and other markers of glycemia provide some insight into the presence of the disease, but does not predict the presence and progression of the various vascular complications.1The metabolic derangements like inadequate glycemic control, protein glycation and oxidative stress in DM can adversely influence platelet morphology and vascular endothelial function contributing to the pathogenesis of diabetic angiopathy[6]. Several studies have shown that increased platelet sensitivity have a direct consequence in diabetes with platelets being larger , more reactive, more aggregable and release more prothrombotic factors from the granules leading to the formation of a platelet gradient, increased platelet turnover rate and reduction in survival of platelets in diabetic individuals[7].

Platelet indices i.e. platelet count (PLT), plateletcrit (PCT), mean platelet volume (MPV), platelet distribution width (PDW) are the markers of platelet function and activation which can be quantified by clinical hematology analyzers. Although these indices have been available in the laboratory routine using blood cell counters for several years, only the platelet count gets a mention in the hematology report. There is scope to make better use of the platelet parameters generated.

In the Indian set up, literatures have shown utility of some of the platelet indices (MPV); however the association of glycemic status and the vascular complications with other markers like PDW and PCT hasn't been much explored. This study aimed to establish variations in platelet indices in type 2 diabetic patients and nondiabetic controls.

Materials and Methods

This was a prospective case control study involving 60 Type II diabetics and 60 non diabetic healthy controls, undertaken at Yenepoya Medical College, Deralakatte, Mangalore, Dakshina Kannada district of Karnataka. Data was collected by means of a questionnaire which included the subject's age, gender, demographic

information, and duration of diabetes, medications, last fasting blood sugar, family history of diabetes and other relevant information. Body mass index was calculated by using Quetlet's Index, i.e., weight in kilograms / square of the height in meters. The diabetic group included individuals with both vascular complications and without complications.Exclusion criteria for the cases was Type II diabetic Males with hemoglobin (Hb) less than 12 gm/dl and females with Hb less than 11 gm/dl, Idiopathic thrombocytopenic purpura, iron deficiency anemia, cyanotic congenital heart diseases, along with suspected or confirmed cases of malignancies, individuals with history of anti thrombotic/ anti platelet medication and individuals with gestational diabetes were excluded from the study. Exclusion criteria being Non- consenting non diabetics and subjects with coronary artery disease.

Blood samples collected in dipotassium EDTA tubes were analyzed within one hour for complete blood count including Hemoglobin (Hb), Total WBC count, platelet count, mean platelet volume, platelet distribution width and plateletcrit using automatic analyzer Sysmex 1000i. Fasting blood glucose and HBAc1 was measured by glucose oxidase method using automatic analyzer Johnson & Johnson Vitros 5600 and automated ion-exchange high performance liquid chromatography using Biorad D10 respectively.

The data was analysed by statistical package for the social sciences (SPSS) version 23 for windows using unpaired T test and Pearson's correlation test. Data was expressed as mean ± standard deviation. P value of <0.05 was considered as statistically significant.

Results

The study comprised of 60 diabetic patients, out of which 39 were males and 21 were females. Out of the 60 non-diabetic controls, 40 were males and 20 were females. The male to female ratio of diabetics was 1.8:1 and that of non diabetics was 2:1. The mean age of the diabetic population was 55.26±10.76 years with a minimum age of 35 and a maximum age of 82 years; whereas that of non diabetic population was 52.30±13.27 years. The mean duration of diabetes was 8.80±7.46 years.

Out of the 60 diabetics, 29 had complications such as peripheral neuropathy, autonomic neuropathy, diabetic foot, diabetic retinopathy, diabetic nephropathy, coronary artery disease, peripheral vascular disease and 31 did not have any of these complications. The mean Hemoglobin level among the diabetics was 11.45±1.85 gm/dl and that of the controls was 13.49±1.35 gm/dl. The Hb level in diabetics was lower and the difference was statistically significant.

The mean BMI, FBS, PPBS, glycosylated haemoglobin, platelet count, plateletcrit, platelet volume, PDW and P-LCR in diabetics and non-diabetics is depicted in Table 1.

Table 1: Comparison of mean, standard deviation & P values of BMI, FBS, PPBS, HbA1c , platelet count and indices between type II diabetic and th nondiabeic controls.

Parameters	Type II diabetics	Non- diabetics	P value
BMI	23.96±4.62	23.03±3.09	0.199
FBS	170.70±79.65	88.70±10.0	<0.001
PPBS	229.68±98.27	117.21±20.85	<0.001
HbA1c	9.41±2.90 %	5.24±0.42 %	<0.001
Platelet count	287.45±108.63	247.93±73.50	0.021
PCT	0.292±0.12	0.256±0.63	0.046
MPV	10.29±0.96	9.90±0.89	0.024
PDW	11.61±2.06	11.53±1.79	0.814
P – LCR	26.32±7.60	26.87±8.22	0.702

The platelet count, Mean platelet volume and Plateletcrit were significantly higher in diabetics compared to non-diabetics. Though the PDW was higher in diabetics, there was no statistically significant difference between the PDW and P-LCR between the two study groups.

There was mild positive correlation between MPV and HBA1C, FBS, BMI but not statistically significant. PPBS had a significant correlation with MPV with a P value of 0.007. A negative correlation was found between MPV and duration of diabetes but the finding was not statistically significant. There was mild positive correlation between PDW and HBA1C, FBS, BMI but not statistically significant. There was negative correlation between PDW and duration of diabetes, which was statistically insignificant. In our study we found an inverse correlation between the platelet count and MPV, though it was not statistically significant. The diabetic group was divided into two subgroups based on the presence of vascular complications. However our study did not find any statistically significant difference in comparison of MPV and PDW between diabetics subjects with and without complication

Discussion

In our study we found a higher mean platelet count in Type II diabetics compared to the controls which was statistically significant. Similar results have been obtained

in studies undertaken by Zuberi et al, Kodiatte et al, Jabeen et al, Akinsegun ET al. [8, 9, 10, 11]. However few studies have shown a lower platelet count in diabetics[7,12]. Studies have suggested that platelet volumes and counts are inversely correlated, and the total platelet mass (platelet count *MPV) remains stable. In pathological conditions physiological feedback between platelet count, morphometric indexes, and immature platelet fraction is lost with an augmented risk of thrombotic events[13]. In our analysis we did find an inverse correlation between the platelet count and MPV.

Mean platelet volume (MPV) and platelet distribution width (PDW) are morphometric indexes reflecting the size distribution of the peripheral platelet population. Larger platelets contain more granules and mitochondria; synthesize more thromboxane A2 which is a biomarker of platelet activation. Increased endothelial damage is seen in diabetes mellitus, which reduces the survival of platelets and increases turnover of younger platelets. Our results evidenced statistically significant higher values of MPV in T2DM compared to non-T2DM; this difference represents the heterogeneity in platelet morphology, including the presence of larger reticulated platelets. Therefore, the combined rise of MPV and PDW might consistently indicate a higher fraction of immature platelets in peripheral blood. This finding is in agreement with several studies[6, 8, 9, 12, 14].

Data on PDW are fewer; there are recent reports which suggest that PDW is associated with, or can predict cardiovascular disorders[15]. Yilmaz et al described a significantly higher PDW among diabetics which was the highest independent risk factor compared to other platelet indices[16, 17].

In our study, we found a statistically significant correlation of MPV with PPBS, with a P value of 0.007. Several studies have found a highly significant association of MPV with FBS, PPBS and HbA1C levels contrary to a very few studies like Yenigun et al. and Hekimsoy et al. which have found no association between these parameters[10, 14, 18, 19]. The lack of association of MPV & PDW with the BMI is in agreement with the finding by Kodiatte et al.[9]. This study yielded a negative correlation between MPV, PDW and duration of diabetes, though not statistically significant. Yenigun et al., Hekimsoy et al. and Kodaitte et al found no significant association whereas Ulutas et al and Navya et al. have found a positive Pearson correlation between MPV and duration of diabetes[7, 9, 14, 18].

The prevalence of diabetic micro vascular complications is greater in people with poor control of glucose level, long term duration of diabetes, an elevated blood pressure and obesity[20]. However the studies with no association have hypothesized that vascular damage may be due to more reactive platelets and the rate of damage may be constant for the duration of the disease and independent of diabetic control[9, 21].

Similar to previous studies we obtained higher mean P-LCR values in diabetic patients than non-diabetic controls, though not statistically significant[12, 21]. There is limited information on the clinical importance of P- LCR, because this is a relatively new parameter and is generated by only a few machines (with the Sysmex analyzer being one). Also, very limited studies have observed the PCT in diabetics, with almost equal number of studies displaying a higher mean PCT in diabetics than non-diabetics and vice-versa. Our results revealed a higher PCT in type II diabetic group which was also statistically significant. Our study might have a few limitations. One of them being small size of study population. We haven't taken into consideration the possibility of anti diabetic drugs affecting the platelet function.

Conclusion

This study revealed a higher Platelet count, MPV, PDW and PCT in Type II DM compared to healthy individuals. A positive correlation of MPV & PDW with FBS, PPBS, HbA1C and BMI may reflect increased platelet activation or increased number of large, hyperaggregable platelets in diabetics. Hence, platelet indices routinely measured by hematology analyzers are a simpler, easily available and cost-effective tool and could be used clinically as a surrogate marker in early detection of diabetic complications. The combined use of MPV and PDW could predict activation of coagulation more efficiently.

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Changing rhythm of life- modern epidemic of mobile phone misuse

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Abstract

The near-epidemic and extensive use and dependence on mobile phone usage by all strata of modern society has had effects on sleep patterns, social interactions and work outputs.

Aim: To examine the relationship between mobile phone usage and sleep patterns among medical students.

Methodology: A cross sectional survey was conducted on 294 UG MBBS students aged between 17 and 25 years and they were questioned on their sleep patterns and mobile phone usage. This was assessed by a self-administered, Pittsburgh Sleep Quality Index (PSQI) questionnaire. In addition they were also interviewed with a semi-structured questionnaire on the pattern of their daily mobile phone usage.

Results: Mean age of students (SD) was 20.74 years (± 1.72). All the students owned a smartphone and mainly used it for communication, social networking, gaming, reading, watching movies/videos and taking photographs and videos. 42.85 % of students used their phone for up to 60 minutes before sleeping and 45.23% used it for up to 30 minutes before sleeping. Night time usage of mobile phones was significantly ($p<0.05$) associated with increased difficulty in waking up, wake- time tiredness, decreased concentration, sleep latency and tendency to miss or be late to classes. These problems were more prevalent in students living in hostels compared to those students living with their families.

Conclusion: Use of mobile phones before bedtime negatively impacts sleep, psychological health and academic performance of students. Avoidance or restriction of late night mobile phone use should be encouraged.

Introduction

Mobile phones have now become an indispensable part of our daily lives. Originally developed as a business tool, they are now being used by every strata of society. This device incorporates features of a telephone, television, computer, camera, alarm clock, music player and calculator into an all-in-one pocket sized device.

When originally introduced, they were expensive, bulky and impractical. As technology advanced, they have become simpler, more affordable and widely. With easy internet availability, mobile phones now have multipurpose uses. According to the International Telecommunications Unions, India currently has the second highest number of internet users in the world.

Teenagers and young adults, being inherently tech savvy, have graciously accepted mobiles as a part of life. This is a generation shaped by smartphones and by the parallel rise of social media.

However, the highly portable and pervasive nature of digital devices with their small screens and blue –light emission affects daily routines, sleep and rest patterns and diurnal rhythms.

Excessive screen time, especially at night disrupts the natural circadian rhythm of the body leading to reduced sleep quality, increased sleep latency, difficulty in waking up, wake time tiredness, decreased energy and productivity, difficulty in concentration, reduced academic output and increased skipping of classes.

Anything that gives excitement has the potential to cause addiction. Addiction to mobiles leads to inappropriate usage and causes mental, physical and emotional stress.

Our study was undertaken to examine the effects of late night mobile phone usage and its perceived effects on sleep length and quality in undergraduate medical students.

Methods

294 Undergraduate MBBS students aged between 17 and 25 years were recruited as a part of a cross sectional survey and were questioned on their sleep patterns and mobile phone usage. This was assessed by a questionnaire on their demographic characteristics and pattern of mobile phone usage. Demographic details included age, gender, year of study and residence (hostel or family). Pattern of mobile phone usage included questions on smartphone ownership, duration of total

daily phone use , duration of phone use 1 hour before sleeping, where the phone is kept while sleeping and purpose of phone use.

They were asked about perceived effects faced in wake-hours due to reduced quality of sleep, decrease in concentration ability, being late to or skipping classes, decreased appetite or any mood changes.

In addition they were also interviewed by a self-administered, Pittsburgh Sleep Quality Index (PSQI) questionnaire used to measure quality and patterns of sleep. It is used to grade sleep in the last one month from poor to good using 7 components. These components are subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances, use of sleep medication and daytime dysfunction. Each component is given a score and a sum of the 7 component scores will give a global PSQI score. A global score of 5 or greater indicates poor sleep quality.

The study was conducted after obtaining due clearance from the Ethics Committee of the institution. Data was collected after obtaining informed consent and confidentiality was maintained.

Results

The study consisted of 294 undergraduate medical students, out of which 42.17% were males and 57.82% were females. The mean age of the students was 20.74 ± 1.72 years. The median value of daily mobile use was 4.5 hours. 182 (61.9%) of students lived in the hostel and 112 (38.09%) lived with their families. 238 (80.95%) kept their mobile phone next to their pillow while sleeping.

Table 1: Relationship between Night time usage of mobile phones and sleep related problems

Problems faced by students the next day	Duration of Mobile Phone use before going to sleep Total number of students =294 (%)					
	60 minutes n=126 (42.85)	30 minutes n=133 (45.23)	Less than 15 minutes n=27 (9.18)	No use within 60 minutes n=8 (2.72)	$\chi 2$	P value
Difficulty in waking up (n=220)	107(84.9)	98(73.6)	14(51.8)	1(12.5)	30.97	<0.00001
Wake time tiredness (n=239)	110(87.3)	112(84.2)	16(59.2)	1(12.5)	37.25	<0.00001
Decreased energy and productivity (n=175)	86(68.2)	78(58.6)	10(37)	1(12.5)	17.03	0.00069
Inability to concentrate in class/on studies (n=260)	119(94.4)	121(90.9)	18(66.6)	2(25)	49.27	<0.00001
Disturbed appetite (n=43)	23(18.2)	18(13.5)	1(3.7)	1(12.5)	4.06	0.25466
Skipping/being late to class (n=202)	97(76.9)	90(67.6)	14(51.8)	1(12.5)	19.40	0.00022
Negative mood or behavioural changes (n=70)	35(27.7)	31(23.3)	3(11.1)	1(12.5)	4.07	0.25334
None (n=36)	10(7.9)	12(9)	9(33.3)	5(62.5)	33.43	<0.00001

Mobile phone use at night (60 minutes prior to sleeping) was significantly associated ($p<0.05$) with difficulty in waking up the next day, wake time tiredness, decreased energy and productivity the next day, inability to concentrate on studies and increased incidence of skipping or being late to classes.

The most commonly used social media apps were Facebook, Instagram and Snapchat. The most common messaging tools were WhatsApp and SMS. For shopping the common apps were Flipkart and Amazon. For online videos, students commonly used YouTube, Netflix, Amazon Prime and Showbox.

Table 2: Relation between PSQI score and total daily hours of mobile phone use

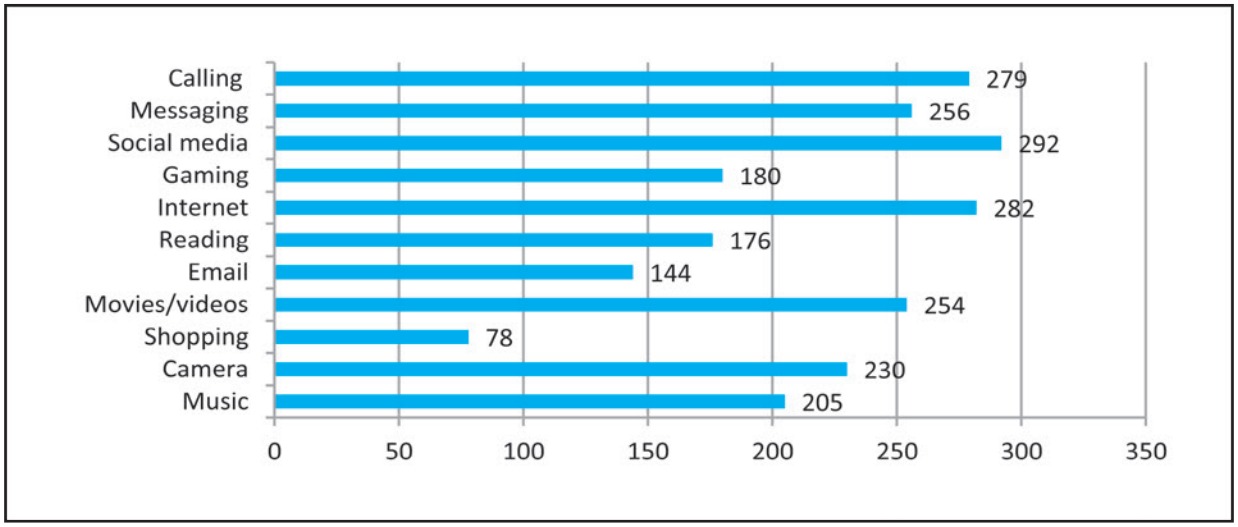
Global PSQI score	Total Daily hours of mobile phone use		χ2	P value
	< 4.5 hours	> 4.5 hours		
<4 (good)	71	33	22.2931	<0.01
>5 (poor)	75	115		

The result is significant at p<0.05.

Table 3: Relation between place of residence and total daily mobile phone usage

Place of residence	Total Daily hours of mobile phone use		χ2	P value
	< 4.5 hours	> 4.5 hours		
Hostel (182)	55 (30.21%)	127 (69.78%)	4.865	<0.05
Family (112)	48 (42.85%)	64 (57.14%)		

Figure 1: Purpose of mobile phone use by students



Discussion

A mobile phone is a device which is an inherent part of every college student's life. In our study, we observed that every medical student owned a smartphone and its use was extensive among both genders[1].

The main purpose of using mobile phones was communication (calling and messaging), social media use, internet, watching movies and videos, listening to music and camera functions[2].

Students were always expected to be reachable by their friends and family at all hours, hence always had their phone with them, which may be a reason for extensive use of phones. Even while sleeping, majority of students kept their phone next to their pillow indicating habitual mobile use even before sleeping at night.

We observed that large majority of students used their phones before going to sleep. Night time mobile phone use was significantly associated with difficulty in waking up the next day, wake time tiredness, decreased energy and productivity, inability to concentrate on studies and increased incidence of skipping or being late to classes. Our results were consistent with a similar study conducted by Gupta et al.[3]. Studies have also shown that poor sleep quality leads to lower cognitive scores[4]. Use of mobiles late at night is more harmful than daytime use[5]. This is because light from the screen gets more concentrated due to absence of ambient environmental light which dilute the effect.

Mobile phones hamper sleep because of cognitive stimulation, emission of electromagnetic radiation, and the effect of blue light from the screens. Due to cognitive stimulation, there is increased release of cortisol in the body, which confuses the body's internal clock.

Blue light emitted from screens also affects our circadian rhythm by altering the synthesis pattern of melatonin, which is essential for good sleep and reduces the sleep latency period. These are interpreted by higher PSQI scores, indicating poor sleep quality[6,7].

With the entry of new telecom services offering high speed 4G internet services at low prices, the internet usage and total daily mobile phone usage has also increased in the student population. We observed that an increase in total daily hours of mobile usage

was associated with higher PSQI scores, and this was significantly associated with poor sleep quality[8, 3]. Poor sleep hygiene is also be an associated factor in reduced sleep quality as shown by this study[9]. Students living in hostels were observed to have poorer sleep quality and higher total daily mobile phone usage when compared to those living with their parents. This may be due to lack of adult supervision and influence by peers. However this was in contradiction to a study done in Malaysia where 75.6% of study population was between 21 and 25 years of age[10].

The smartphone addiction magnitude in India ranges from 39% to 44%[11].Overuse and addiction to mobile phones use can also lead to insomnia, social anxiety, stress and depression among students[12,13]. Excessive mobile phone use has also been linked to promotion of sedentary behaviour and obesity[14]. Mobile phone addiction can also lead to sensation of phantom ringing of phones called ringxiety, which was faced by 34.5 % students in a study done by Subba et al.[15].

The limitations of the study we conducted are it's cross sectional nature, self-reporting of data and the inclusion of only a small section of the student population (only medical students).

Conclusion

Mobile phone addiction is a problem plaguing college students and is significantly associated with reduced sleep quality. It can be corrected by limiting the daily screen time, switching off or restricting use of mobile phones for at least an hour before sleeping, switching to 'night mode' on the mobile phone and reducing constant refreshing of social media applications, following a strict sleep schedule and good sleep hygiene.

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Sizable diagnosis

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A case of acromegaly with classical clinical features- large fleshy nose, lips, oily skin with coarse facial features, prognathism, prominent supraorbital ridge, acanthosis nigricans and spade shaped hands. (acral enlargement)

Diagnosis was confirmed by persistent non-suppressible serum Growth Hormone levels during a oral glucose tolerance test and elevated IGF-1 levels. MRI brain showed a large pituitary macroadenoma.

Cannon Ball Metastasis

Maj Arun Valsan
Department of Internal Medicine,
Armed Forces Medical College, Pune

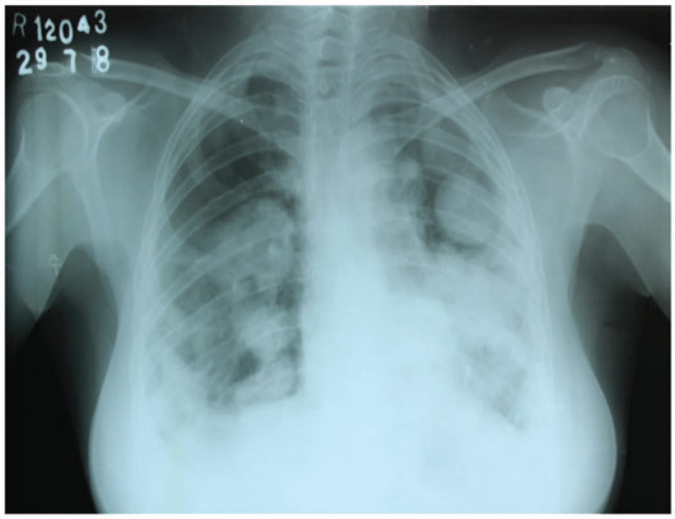


Image Credits: Maj Arun K Valsan

Cannonball metastases refer to large, well circumscribed, round pulmonary metastases that appear, well, like cannonballs. The French term "envolée de ballons" which translates to "balloons release" is also used to describe this same appearance.

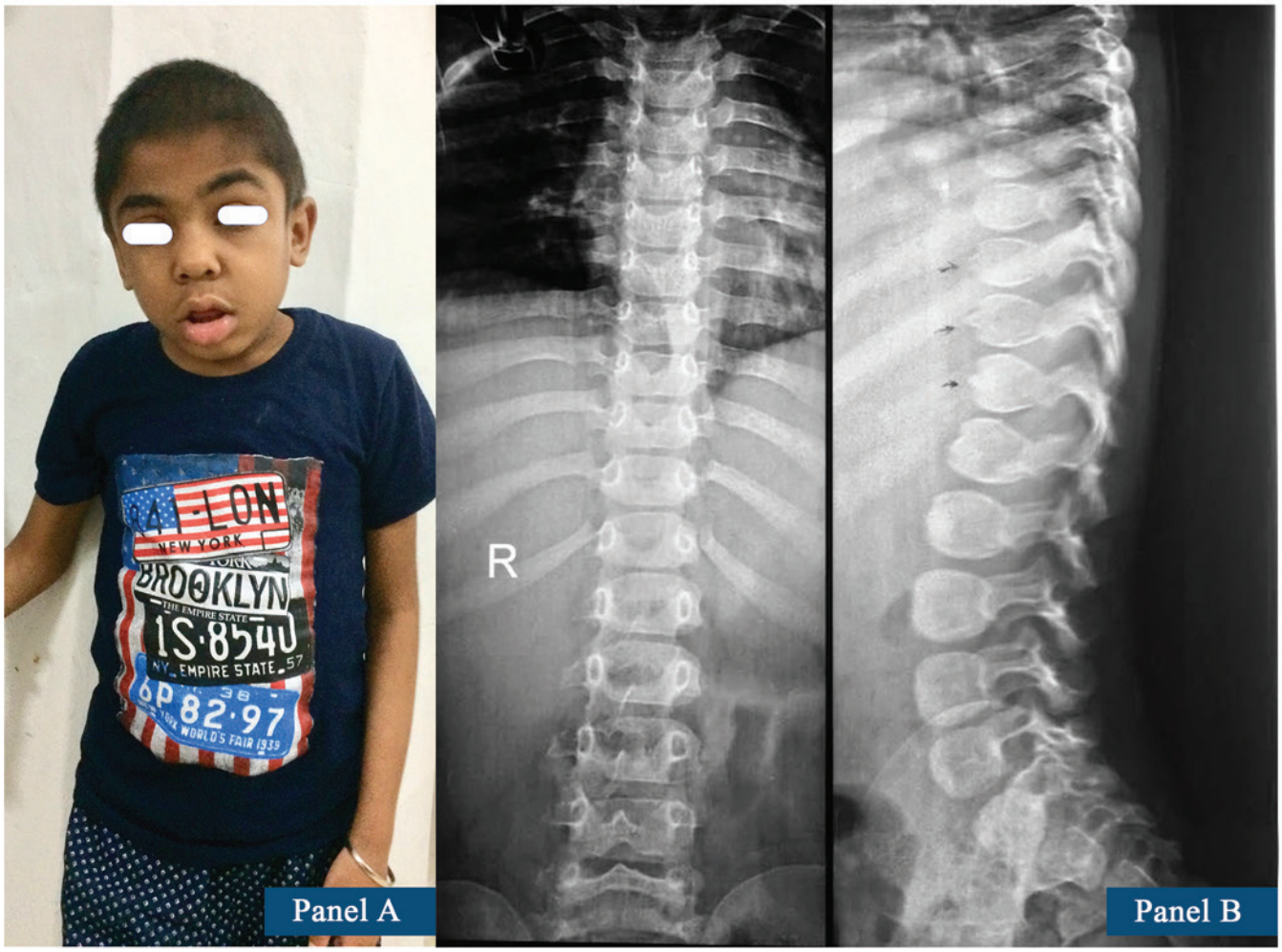
Metastases with such an appearance are classically secondary to:

Renal cell carcinoma
Choriocarcinoma
Or less common primary tumours like:
Prostate carcinoma
Synovial sarcoma
Endometrial carcinoma

Source: Radiopaedia

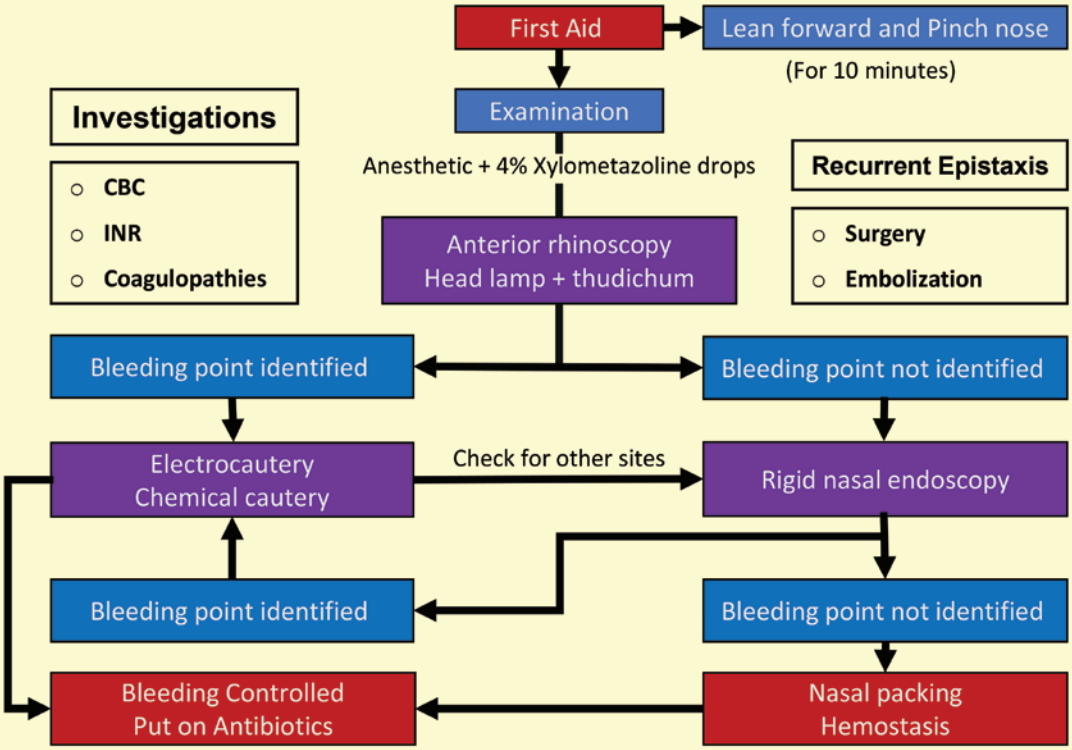
Intellectual disability with coarse facies: What does it entail?

Maj (Dr.) Ankur Rawat and Col (Dr.) Deepak Joshi
Department of Pediatrics, Armed Forces Medical College, Pune



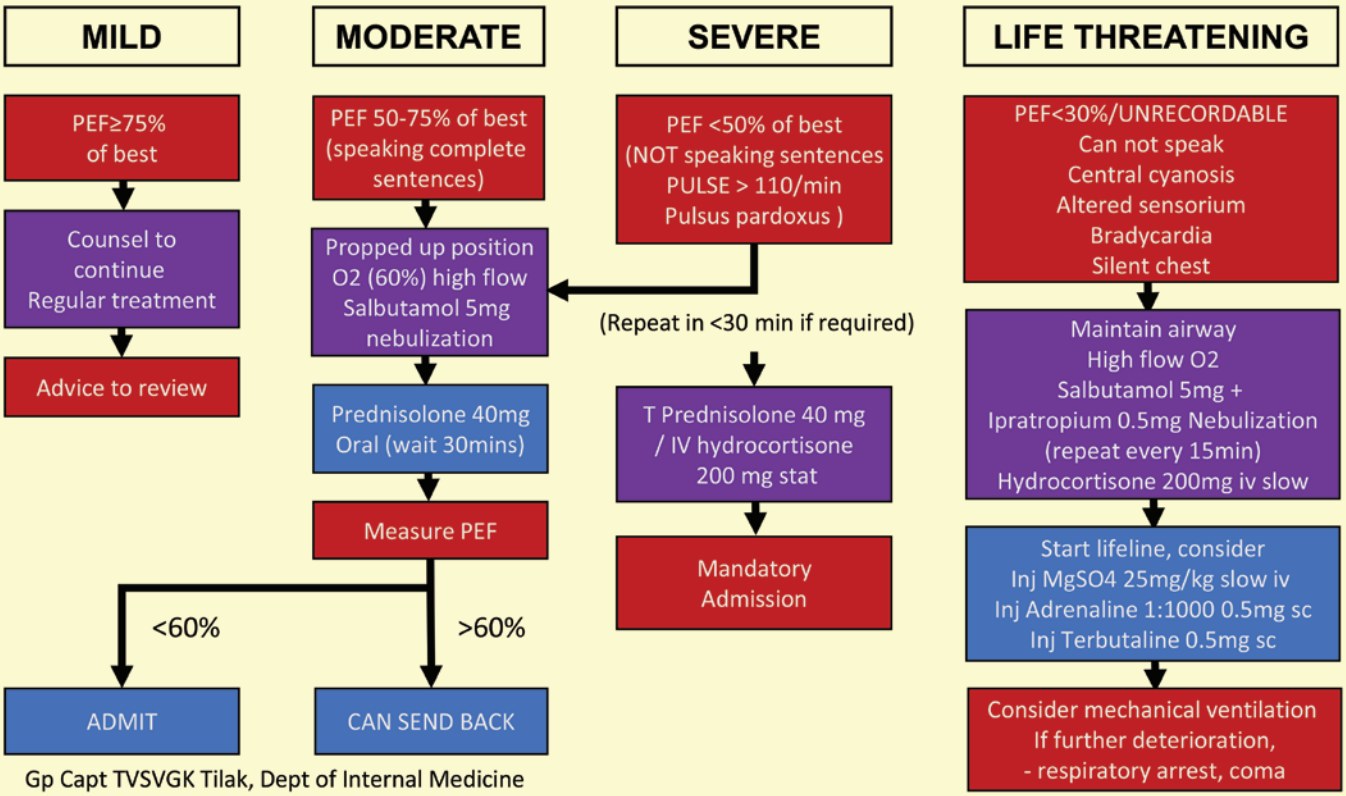
Eight-year boy, first born of a non-consanguineous marriage was brought with history of initial global developmental delay with later catch up of milestones in motor domain. On evaluation, he had intellectual disability (IQ=52) with delayed socio-cognitive and language milestones. He was hyperactive, aggressive and inattentive with autistic features. Physical examination revealed coarse facial features (broad thick eyebrows, widely spaced eyes, wide depressed nasal bridge, thick vermilion of upper lip, thick lower lip and broad jaw; Figure 1, Panel A) , with macroglossia, and hepatomegaly. Radiograph of spine was suggestive of anterior beaking with posterior scalloping of vertebral bodies (Figure 1, Panel B). Based on phenotype, Mucopolysaccharidosis Type III was suspected. The urinary screen for mucopolysaccharidosis was positive and the subsequent enzymatic and genetic studies confirmed Mucopolysaccharidosis Type III (Sanfilippo type A).

MANAGEMENT OF NOSE BLEED



Nishant Raman, Student Editor

MANAGEMENT OF ASTHMA



Gp Capt TVSVGK Tilak, Dept of Internal Medicine

TRIAL OF LABOR AFTER CAESAREAN (TOLAC)

INTRA PARTUM MANAGEMENT -CHECK LIST

- Patient has been assessed and selected for TOLAC, by senior gynaecologist
- Blood demand sent
- Gynecologist on call, OT, Pediatrician alerted
- NPO
- IV Fluids @ 125 ml/hr
- Continuous monitoring of vitals
- CTG Monitoring
- Labour Analgesia
- Only selective augmentation with low dose Oxytocin (no induction with prostaglandins)
- Remain alert for scar tenderness / F/O uterine dehiscence and uterine rupture
- Beware of abnormal labor progress
- Vacuum application in case of prolonged second stage only
- Know when to abandon a trial of labor
- No routine exploration of caesarean scar
- Post delivery counseling for contraception

SUITABLE PATIENT FOR TOLAC

- Contraindications to TOLAC to be ruled out
- H/O previous vaginal delivery
- Singleton pregnancy with cephalic presentation with average sized baby
- Emergency Facilities immediately available
- Single previous cesarean for nonrecurring indication

CONTRAINDICATION FOR TOLAC

- Advanced maternal age
- Obesity (BMI>30) and short stature (<150cm)
- Maternal comorbidities like GDM, Hypertension
- POG > 40wks
- Recurrent indication of prior cesarean delivery
- Interpregnancy interval < 12 months
- Need for induction/augmentation of labour
- EFW > 4 kg
- Classical/inverted T scar h/o Hysterectomy, myomectomy, uterine rupture, malpresentation
- CPD

Col Sanjay Singh, Dept. of Obstetrics and Gynaecology, AFMC

MANAGEMENT OF HYPOVOLEMIC SHOCK

GOALS OF MANAGEMENT
- Maximize oxygen delivery
- Control further blood loss
- Fluid Resuscitationz

INVESTIGATIONS
- CBC
- Blood Electrolytes level (Sodium, Potassium)x
- BUN, Creatinine, pH, Calcium, Phosphate, Urine Sodium

Maintainance of Airway and Ventilation. (100% oxygen, intubate & mechanical ventilation if O2 sat<70)

↓

Volume resuscitation-500-1000mL bolus
Rapid fluid replacement with Normal Saline or Ringer Lactate
(if anemic- add whole blood or packed RBC)

↓

If conditions worsen

ASSESS
- Insert Foley's catheter to monitor urine flow
- Assess Mental Status Frequently
- Serial Measurement of BP, HR, Continuous ECG, Pulse Oximetry, ECHO, CVP, Pulmonary artery pressure, PCW

HEART FAILURE PRESENT (CI<2.2 L/m2, PCW> 20mL/ Hg, SVR Elevated)

↓

Guided fluid resuscitation
Add Dobutamine 2-20mcg/kg/min

Add vasopressors if SVR decreased Norepinephrine (0.5-30mcg/min) or Dopamine (2-10 mcg/kg/min)

Persistant hypotension- Phenylephrine- 40-180 mcg/min or Vassopressin- 0.01-0.04 U/min

Add whole blood or packed RBC along with fluid replacement

If metabolic acidosis (pH<7.15) sets, add NaHCO3

Aditya Kumar Perumallapalli, Student Editor

The prevalence and risk factors of Hypovitaminosis-D in children, with intellectual and movement disorders, attending the developmental paediatric clinic in a teaching hospital

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Abstract

Title: The Prevalence and Risk Factors of Hypovitaminosis-D in Children, with Intellectual and Movement disorders, attending the Developmental Paediatric Clinic in a Teaching Hospital.

Background: Children with neuro-developmental disorders are found to have low serum concentrations of 25-hydroxyvitamin-D as they are less mobile and likely to be indoors for longer periods. Optimal levels of serum 25-hydroxyvitamin-D concentrations for optimal health in the range of 75 to 125 nmol/L, will benefit musculo-skeletal development in infants, children, and adolescents[1]. Children with epilepsy are known to be at significantly increased risk for vitamin-D deficiency.[2] This study was planned to find out the prevalence and risk factors of hypovitaminosis-D in children with neuro-developmental disability. ACCESS

Objectives:

1. To document the prevalence of hypovitaminosis-D in children with intellectual and movement disorders.
2. To identify the risk factors present in children with disability who have low serum levels of vitamin-D.

Methodology: This is a cross-sectional study on 90 children with intellectual and movement disorders coming to the Developmental Paediatrics and Child Neurology OPD. After Ethics committee approval, written informed consent was taken and relevant maternal and child history along with their developmental assessment, clinical-examination and Vitamin-D status is collected. The sample size was calculated from the prevalence of Hypovitaminosis-D of 62.2% from the study by Vasudevan et al.[3] for a 95% confidence interval and precision of 10%[4]. The prevalence of Hypovitaminosis-D is compared in children with intellectual and movement disorders. The prevalence of risk factors such as sun exposure, age-appropriate mobility, diet, skin colour and anti-epileptic medications is studied in the two groups. The categorical variables in the two groups will be compared using Chi square test and the continuous variables by the student t-test.

Results and Conclusion: Of 90 children studied, Hypovitaminosis-D is present in 35 (76.1%) intellectually disabled ones and 30 (68.2%) movement disabled children. The Risk factors such as less sun-exposure, use of Anti-epileptic Drugs, skin color and diet are seen more common in the Hypovitaminosis-D.

Introduction

Children with neuro-developmental disorders are found to have low serum concentrations of 25-hydroxyvitamin-D as they are less mobile and likely to be indoors for longer periods. Optimal levels of serum 25-hydroxyvitamin-D concentrations for optimal health in the range of 75 to 125 nmol/L, will benefit musculo-skeletal development in infants, children, and adolescents.[1] Children with epilepsy are known to be at significantly increased risk for vitamin-D deficiency. [2] This study was planned to find out the prevalence and risk factors of hypovitaminosis-D in children with neuro-developmental disability.

Aims and Objectives

1. To compare the prevalence of hypovitaminosis D in children, with intellectual and movement disabilities, attending a developmental paediatrics department in a tertiary care hospital.
2. To identify the risk factors present in children with disability who have low serum levels of vitamin-D.

Methodology

Study Population: All children below 12 years of age coming to the outpatient services of this department were eligible to participate in this study.

Study Setting: The study was conducted in the Developmental Paediatrics and Child Neurology department.

Study Design: Cross-Sectional Study

Sampling: All children who fulfill the selection criteria will be consecutively enrolled to the study if the parents give written informed consent.

Selection Criteria: *Inclusion Criteria:* All children, under 12 years of age, who have a neuro-developmental disability attending the out-patient department of this hospital during the period September 2017 to October 2017.

Exclusion criteria: Children who are very sick and children who are currently receiving vitamin D supplementation.

After approval from Ethics committee and Institution Review board, Written informed consent was taken and relevant maternal and child history along with their developmental assessment, clinical-examination and Vitamin-D status is collected.

The sample size of 90 children was calculated from the prevalence of Hypovitaminosis-D of 62.2% from the study by Vasudevan et al.[3] for a 95% confidence interval and precision of 10%[4]. The prevalence of Hypovitaminosis-D was compared in children with intellectual and movement disorders. The prevalence of risk factors such as sun exposure, age-appropriate mobility, diet, skin colour and anti-epileptic medications were studied in the two groups. The categorical variables in the two groups was compared using Chi square test and the continuous variables by the student t-test.

Results

Of the 90 children enrolled 46 had cognitive (intellectual) disabilities and 44 had movement disabilities: The mean serum Vitamin D level in children with intellectual or cognitive disability was found to be 26.7 ± 16.3 ng/ml and in the children with movement disability it was 27.9 ± 10.5 ng/ml. 86 (95.5%) of them had at least one sign of Vitamin D deficiency . Of 90 children studied, Hypovitaminosis-D is present in 35 (76.1%) intellectually disabled ones and 30 (68.2%) movement disabled children. The Risk factors such as less sun-exposure, use of Anti-epileptic Drugs, skin color and diet .Though the risk factors were found in greater numbers in children in the deficient group with Vitamin D levels less than 30ng/L the difference between the two groups was not significant.

Conclusions

- The prevalence of Vitamin-D deficiency was 76.1% in the cognitive disability group and 68.2% in the movement disability group.
- Most of the children (95.5%) with neuro-developmental disability who participated in this study had at least one sign of Vitamin D deficiency.
- The risk factors such as skin colour, sun exposure, anti-epileptic drug intake were more common in children with vitamin D levels below 30ng/mL.

Implications

- Vitamin D levels below 30ng/mL are frequently seen in children with neuro-developmental disorders.
- Out of 90 differently-abled children studied, 86 had rachitic features like frontal bossing, costochondral prominence, widening of wrists and bow legs. Thus it is not clear if children with movement and cognitive disorders have a greater requirement of Vitamin D.
- Vitamin D deficiency can be effectively, safely and inexpensively treated and thus improving the quality of life of the children.

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A cross-sectional study to assess the usage and unmet needs of assistive technology and its implications among the disabled persons in Hubli-Dharwad

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Abstract

Assistive Technology (AT) concerns the practical tools that can support functional needs of people who experience difficulties linked to disability or ageing.

Aim: To assess prevalence of usage and unmet needs of Assistive Technology and to study the implications of using assistive technology.

Methodology: A cross-sectional study was conducted among the disabled persons of Hubli-Dharwad district for a period of one month. The sample size was calculated to be 223, which was collected from 8 disability centers using simple random sampling method. Data was collected using standard questionnaire from National Disability Survey, 2006 conducted in Ireland with necessary modifications.

Result: Our study revealed highest prevalence of Intellectual and Learning disability (33.2%). Top most used AT is Magnifiers large print or Braille reading materials and unmet need was highest for Speech and language therapy and most of them had no difficulty participating in Social activities and use of public transport. From our study, we conclude that across each disability group there are substantial number of people who still require additional AT and a further group who have received no AT yet at all. AT used and required by people with a physical and/or sensory disability is diverse.

Introduction

Assistive Technology (AT) concerns the practical tools that can support functional needs of people who experience difficulties linked to disability or ageing. Our study aims to assess prevalence of usage and unmet needs of Assistive Technology and to study the implications of using assistive technology. A cross-sectional study was conducted among the disabled persons of Hubli-Dharwad district for a period of one month. The sample size was calculated to be 223, which was collected from 8 disability centers using simple random sampling method. Data was collected using standard questionnaire from National Disability Survey, 2006 conducted in Ireland with necessary modifications. Our study revealed highest prevalence of Intellectual and Learning disability (33.2%). Top most used AT is Magnifiers large print or Braille reading materials and unmet need was highest for Speech and language therapy and most of them had no difficulty participating in Social activities and use of public transport. From our study, we conclude that across each disability group there are substantial number of people who still require additional AT and a further group who have received no AT yet at all. AT used and required by people with a physical and/or sensory disability is diverse.

Aim

- To assess the prevalence of usage of Assistive Technology.
- To assess the prevalence of usage of Assistive Technology
- To study the implications of using assistive technology.

Materials and Methods

Study design: A cross-sectional study

Study setting: Disability centers of Hubli-Dharwad

Study period: One month starting from 8th June, 2018 to 5th July, 2018

Sample size: Per Census 2011 of India, the proportion of disabled population was 2.21%. (3) Hence, we calculated our sample size using the formula:

$$\frac{\sqrt{n} = (1.96\sqrt{pq})}{l}$$

Where,
Prevalence, p= 2.21%
q = 1-p = 1-0.0221 = 0.9779
Permissible error, l = 2%
Considering 95% confidence interval and 10% non-response rate, sample size is 223.

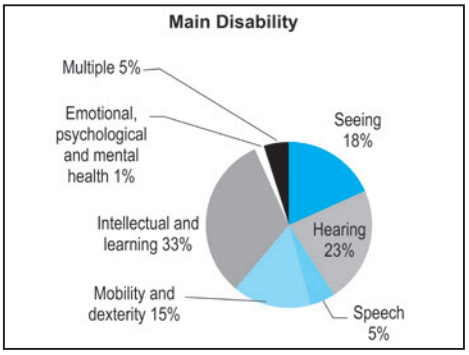
Sampling strategy: There are totally 22 of disability centers and institutions in Hubli-Dharwad district, out of which 7 centers were selected by simple random technique.

- Permission was taken from the Department of Community medicine, KIMS, Hubli and the Head of the Institutions we visited.
- Form each center/institution, every person with permanent disability, who gave consent were included.
- The standard questionnaire of National Disability Survey(NDS) of Ireland, 2006 was used.
- We carried out a pilot study and accordingly modified the questionnaire to the needs of the population we interviewed.
- We interviewed each person who took part in the study. Each interview took around 10 minutes.

Data analysis: The data collected were entered in Microsoft excel sheet and analyzed using IBM SPSS version 21software. Categorical variables were expressed in frequency and percentages. The test of proportion i.e., Z-test was applied wherever necessary and 'p' value less than 0.05, 0.01, 0.001 and 0.0001 was considered as statistically significant.

Observation and Results

The data analysis revealed that among 223 participants we interviewed, 70.4% belonged to the age group birth to 17 years; 26.5% belonged to age group 18 to 59 years and 3.1% of the participants were above 60 years; and 63.2% were male and 36.8% were female. In our study population, 39.5% received special education; 4% were not eligible; 2.2%were illiterate; 19.7% received primary education; 11.2% received middle school education; 10.8% received high school education; 4.9% received Intermediate education 6.7% completed graduation and 0.9% did profession or honours. Among our study group 34.1 % belonged to upper middle class; 27.8% belonged to lower class; 19.7% belonged to upper class and 72.6% received state benefits.



Among our study group 33.2% had intellectual and learning as main disability followed by hearing (22.4%); seeing (18.4%); mobility and dexterity (15.2%); speech (4.9%); and multiple disability (4.9%); very few had emotional, psychological and mental health (0.9%) as main disability.

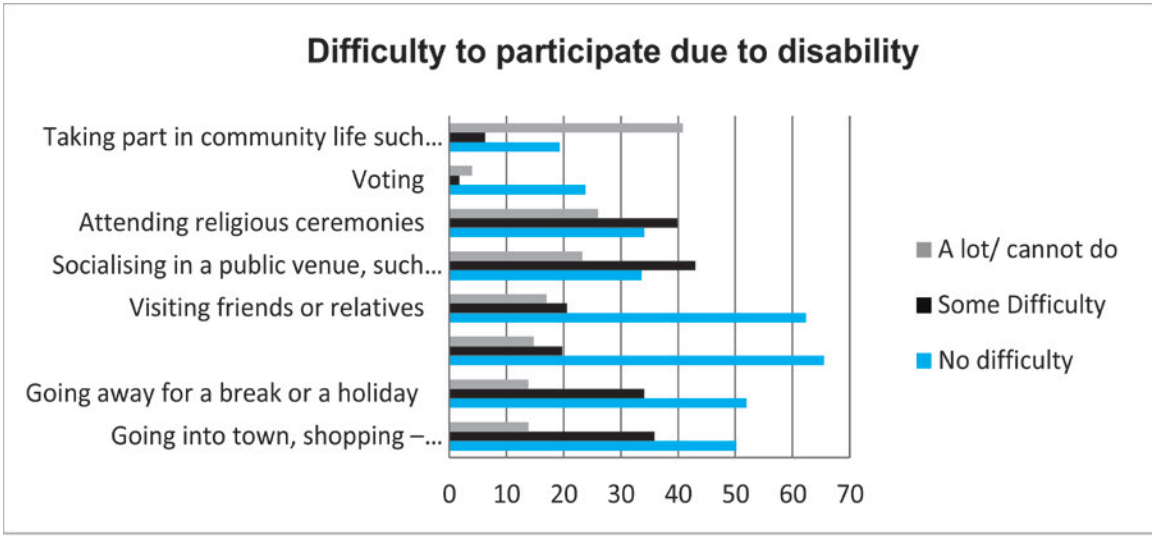
Graph 1: Prevalance of Disability

Assistive Technology	Usage		Unmet need		Test of significance	Remarks
	Frequency	%	Frequency	%		
Seeing difficulty						
Magnifiers, large print or Braille reading materials	37	78.72	4	40	Z=2.58	P<0.01 Significant
Audible or tactile devices, such as talking scales, clocks,	4	8.51	37	86.04	16.27	P<0.0001 Highly significant
Recording equipment or portable note-takers	4	8.51	34	79.07	12.74	P<0.0001 Highly significant
A computer with large print, Braille etc.	7	14.89	36	90	18.97	P<0.0001 Highly significant
A screen reader	5	10.64	35	83.33	14.48	P<0.0001 Highly significant
A scanner	3	6.4	35	79.55	13.08	P<0.0001 Highly significant
A guidance cane	9	19.15	27	71.05	9.65	P<0.001 Significant
A guide dog	1	2.13	2	4.35	1.44	p>0.05 Not significant
Mobility or rehabilitative worker	3	6.38	3	6.82	1.79	p>0.05 Not significant
Community resource worker	3	6.38	3	6.82	1.79	p>0.05 Not Significant

Assistive Technology	Usage		Unmet need		Test of significance	Remarks
	Frequency	%	Frequency	%		
Hearing difficulty						
Hearing aid(s) without 'T-switch	12	19.04	10	19.60	Z=3.52	p>0.001 not significant
Hearing aid(s) with 'T-switch'	37	58.73	10	38.46	Z=4.03	p>0.001 not significant
Cochlear implants	1	1.58	10	16.13	Z=3.45	p>0.001 not significant
Phone related devices, e.g. phone 'coupler', flashers, and minicom.	0	0	3	4.77	Z=1.77	p>0.05 not significant
A mobile phone for texting	5	7.93	1	1.72	Z=1.00	p>0.05 not significant
A fax machine	0	0	1	1.59	Z=1.00	p>0.05 not significant
Speed text	0	0	2	3.17	Z=1.43	p>0.05 not significant
A computer to communicate, e.g. email or chat service	1	1.58	21	33.87	Z=5.63	p>0.001 not significant
Sub-titles on TV	5	7.93	2	3.45	Z=1.43	p>0.05 not significant
Sign language, e.g. ISL	35	55.55	12	42.86	Z=4.58	p>0.001 not significant
Lip read or speech read	46	73.01	3	17.65	Z=1.90	p>0.05 not significant
Mobility and dexterity						
Walking aids, e.g. orthopedic footwear, walking stick or frame, rollator	10	21.27	15	39.47	4.977	p<0.001 Not significant
A manual or electric wheelchair or a scooter	8	17.02	11	28.2	3.91	p<0.001 Not significant
Portable ramps	2	4.25	15	33.33	4.74	p<0.001 Not significant
Assistive device, e.g. braces or supportive devices, reach extenders or grasping tools	1	2.12	6	13.04	2.62	p<0.001 Not significant
Intellectual and Learning difficulty						
Occupational therapy (e5800)	30	38.96	11	23.40	3.78	p<0.001 Not significant
Speech and language therapy (e5800)	68	45.45	21	50	6.48	p>0.001 significant
Psychology service (e360)	16	20.77	17	34	5.60	p<0.001 Not significant
Physiotherapy, instructor or educator (e5800)	21	27.27	20	35.17	5.51	p<0.001 Not significant
Screen reading software, learning support software (e1301)	11	14.28	47	71.21	12.77	p>0.0001 highly significant
General products and technology for education not adapted or specifically designed, e.g. talking books, computer hardware or software (e1300)	11	14.28	48	72.72	13.26	p>0.0001 highly significant

The above table shows usage of various assistive technologies among different disability groups. The assistive technology ranges from magnifiers and braille for visually impaired to the wheel chairs, ramps and talking books. Among the wide range of assistive technologies considered in our study, highest usage was reported for Magnifiers, large print and braille reading materials. Unmet need for the assistive technologies vary greatly with utmost unmet need being for Speech and language therapy.

Among our study group 90.6% did not use specialized transport, 26% did not use public bus, 39.5% did not use private transport, 45.7% faced no difficulty in using public bus; 6.3% faced a lot of difficulty in using public bus. 50.2 % faced no difficulty in going to town for grocery, shopping etc. whereas 35.9% faced some difficulty and 13.9% couldn't do at all. Majority (65.5%) had no difficulty in having friends for a social visit and 62.3%of the participants had no difficulty in visiting friends. 43.0% participants had some difficulty in socializing in public venue such as cinema. 39.9% participants had some difficulty in participating in religious ceremonies. 43.08% participants had no difficulty in taking part in community life.



Graph 2: Social Participation

Discussion

Facilitating the ability to live and work independently in the community is a central goal for policymakers and public health practitioners. Although it is difficult to measure optimal care arrangements for persons with disabilities, the results presented here further increase our understanding of the relative effectiveness of assistive technology and provide insights into the conceptualization and measurement of unmet need. (9)

Our study revealed that 70.4% of them belonged to the age group of 0 to 17 years, like the Census 2011. (3) Intellectual and learning was found to be the main disability (33.2%) affecting majority of the persons in our study group whereas in the analysis of the National Disability Survey, 2006 conducted in Ireland revealed major disability to be mobility and dexterity (56%). (8)

The most commonly used of Assistive Technology by persons with visual impairment, were Magnifiers large print or Braille reading materials (78.72%); people with seeing disabilities, with almost one-in-three (31.8%) reporting using these. For other impairments, such as hearing- Lip read or speech read (73%); mobility and dexterity- Physiotherapy (34.04%) and Intellectual and Learning- Speech and language therapy (45.45%); were reported maximum usage. In NDS, 2006, Magnifiers, large print or Braille reading materials was the most commonly used AT by visually impaired, with hearing disabilities were hearing aids. (8)

In our study, unmet need was found to be highest with computer with large print, Braille etc. (90%) – seeing impairment; a computer to communicate (33.87%) – hearing impairment, speech and language therapy (93.33%) – speech difficulty; Physiotherapy (61.29%) – mobility and dexterity and General products and technology for education – Intellectual impairment which was comparable to the results of NDS, Ireland of 2006.

Majority (65.5%) had no difficulty in social participation and 93.3% of them received help from family or others to carry out their routine activities, similar to the NDS,2006.

Conclusion

There is an interaction between someone's Assistive Technology status and his or her barriers, participation restrictions and everyday living. Across each disability group there is a substantial number of people who still require additional AT and a further group who have received no AT yet at all. Access to information (e.g. about entitlements, services, or nature of the condition) was a major barrier to participation and was significant. Too often, assistive technology has been a missing link in the chain of prerequisites that enable children with disabilities to lead a life where they enjoy and exercise their rights rather than being deprived of them.

Our study also identifies several factors that appear to increase the likelihood of having unmet demand for AT. These helps to identify groups that may be underserved by AT delivery systems at present and may warrant more attention. We have used cross-sectional data and thus were unable to directly examine the order in which each type of assistance was adopted.

There has been increasing recognition of the importance and benefits of social inclusion and the full participation of people with a disability. Assistive technology as a space is underserved in India. Products available in India have been primarily been developed in the western world where affordability is not a criterion. A retail organized

market for these devices is almost non-existent in India. Steps need to be taken to make the devices affordable by the people – including it under medical devices.

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Higher hematocrit in Sickle cell disease is associated with higher risk of osteonecrosis

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Abstract

Introduction: In India prevalence of Sickle cell disease (SCD) is 9.4- 22.2% in endemic areas. Osteonecrosis of the femoral head (OFH) in SCD is the result of recurrent vaso occlusion and infarction of the articular surfaces and heads of long bones and is found in 12-15% of the children with sickle cell disease. In adults the prevalence is up to 26.7%. OFH, frequently progresses to femoral head collapse and osteoarthritis. The physiology and adhesiveness of sickled RBC may play important role in pathogenesis of OFH. Our aim was to assess the relationship between various hematological factors resulting in vaso-occlusion and increased viscosity and OFH

Methodology: This was an observational, analytical, case control study including 20 SCD subjects with osteonecrosis of femoral head and 30 SCD without osteonecrosis of femoral head. Diagnosis of SCD was established using solubility test followed by electrophoresis and high performance liquid chromatography as per standardized protocol. Hematological analysis were performed on hemoglobin analyzer. Biochemical tests were performed on iLab 650 clinical chemistry analyzer using manufacturer's protocol.

Result: Study group were found to be matched for gender and previous crisis episodes and number of blood transfusions. Age was found to be significantly higher in subjects with osteonecrosis of femoral head (0.008).MCHC was found to be significantly lower (p=0.001) while hematocrit was found to be significantly higher (p=0.001) in subjects with osteonecrosis of femoral head. No significant difference was noted regarding any other hematological or biochemical parameters.

Conclusion: Our study concluded that SCD subjects with higher hematocrit and lower MCHC are at significantly increased risk of osteonecrosis. Also our study re emphasis the fact that the subjects with higher age are at increased risk of OFH.

Keywords: Hematocrit, MCHC, Osteonecrosis, sickle cell disease.

Introduction

Sickle-cell disease (SCD), or sickle-cell anemia (SCA) or sometimes drepanocytosis, is a hereditary blood disorder, characterized by an abnormality in the oxygen-carrying hemoglobin (Hb) molecule in red blood cells that leads to a propensity for the cells to assume an abnormal, rigid, sickle like shape under certain circumstances. Pathology of SCD lies in point mutation of beta globin gene on short arm of chromosome 11 where at position 6 glutamate is replaced by valine. This result in an abnormal Hb called sickle Hb (HbS).

SCD mainly affects natives of Sub-Saharan Africa, the West Indies, India, and South-America. In India, most cases of sickle cell disease are found in state of Odisha, Madhya-Pradesh, Chhattisgarh, Maharashtra and Gujrat. Small focus are also found in Kerala and Tamilnadu. In India, the prevalence has ranged from 9.4 to 22.2% in endemic areas.

Osteonecrosis of the femoral head (OFH) in sickle cell anemia (SCA) is the result of recurrent vaso-occlusion and infarction of the articular surfaces and heads of long bones and is found in 12%–15% of children with SCA[1,2]. In adults the prevalence is up to 26.7%[3,4,5]. It is most commonly seen in subjects with Sickle cell disease (SCD) and concomitant presence of α-thalassaemia[6,7]. OFH is frequently progresses to femoral head collapse and osteoarthritis. Early intervention prior to collapse is key to a successful outcome in joint-preserving procedures[8,9]. There is a relationship between elevated hemoglobin level and osteonecrosis of femoral head, suggesting that vaso-occlusion and increased viscosity are determining factors of osteonecrosis of femoral head[10]. Blood viscosity depends on hematocrit, plasma viscosity (carrying phase) and rheological properties of the red blood cells. Elevated hemoglobin or hematocrit levels in combination with rheological problems lead to sickling and vaso-occlusion, especially in the femoral head sinusoids. Deformability and aggregation tendency are primary determinants of rheological properties and are found to be affected in sickle cell disease[11]. Thus we aimed to study the various hematological parameters in subjects with osteonecrosis of femoral head in sickle cell disease and find the correlation between these parameters and osteonecrosis of femoral head in sickle cell patients.

Methodology

This was a hospital based observational, analytical, case control study conducted in Dept. Of Biochemistry in collaboration with SCIC, Raipur

Our study included 2 groups within age of 15-40 yrs.

Group 1: 20 subjects, with Sickle cell disease associated OFH. Group 2: 30 subjects, with sickle cell disease without OFH as controls.

We included Sickle cell disease subjects of age group 15-40 years diagnosed with osteonecrosis of femoral head.

We excluded other causes of osteonecrosis and subjects, not willing to participate in the study.

Data collection: After obtaining written informed consent, Detailed history of all the hemoglobin concentration, RBC count, Mean corpuscular volume (MCV), mean corpuscular, hemoglobin concentration (MCHC), Mean corpuscular hemoglobin (MCH), Red blood cell distribution width (RDW), total leukocyte count (TLC), hematocrit and platelet count were performed subjects participating in the study were elicited and their thorough clinical examination was also done.

Sample Collection: Five milliliters of peripheral venous blood was obtained from each subject after overnight fasting through phlebotomy.

Two milliliters of blood were separated in a vial containing EDTA for performing hematological test and rest three milliliters of blood without any anticoagulant was used for performing biochemical test.

Analysis and Diagnosis

The diagnosis of the of sickle cell disease (HbSS), sickle cell trait (HbAS) and normal controls (HbAA) were established by performing hemoglobin electrophoresis and High performance liquid chromatography (HPLC) using Hb Variant ® (Bio-Rad Laboratories, Hercules, CA, USA).

Biochemical analysis were performed on ILAB 650 Clinical chemistry analyzer, Werfen (Belgium) as per manufacturer protocol.

Hematological analysis like on Auto Hematology Analyzer BC-3000Plus (Mindray). Biochemical tests including Total bilirubin (T bilirubin), conjugated/direct bilirubin (d bilirubin), Aspartate transaminase (AST), Alanine transaminase (ALT), alkaline phosphatase (ALP), serum sodium and potassium were performed.

Osteonecrosis was diagnosed by department of orthopedics using MRI scan of Hip joint.

Statistical analysis: Data was expressed as percentage and mean ± SD. Kolmogorov-Smirnov analysis was performed for checking linearity of the data. Student's test was used to check the significance of difference between two parameters in parametric data. ANOVA was used to test the significance of difference between more than two parameters in parametric data. Fisher's exact test or Chi square test was used to analyze the significance of difference between frequency distribution of the data. P value <0.05 was considered as statistically significant. SPSS© for Windows™ Vs 17, IBM™ Corp NY and Microsoft excel™ 2007, Microsoft® Inc USA was used perform the statistical analysis.

Table 1: Indicates general characteristics of study subjects and various hematological findings. Out of 50 subjects 27 (54%) were females and 23 (46%) were males.

Characteristics		SCD with OFH	SCD without OFH	t/Chi sq.	P value
Age (Years)		25.45 ± 9.09	18.10 ± 9.23		0.8
Gender	**Male**	11	12	1.8	0.226
	Female	9	18		
Hb (gm%)		9.6 ± 1.63	9.02 ± 1.97	1.104	0.258
RBC (10^5/mm^3)		2.940.60	2.840.61	.556	.581
MCV (fl)		93.68±15.40	88.06 ±10.90	1.511	.137
MCHC (g/dl)		31.95 ±1.08	34.78± 3.42	-4.233	<0.0001
MCH (pg)		29.97±5.30	30.78±4.60	-.574	.569
RDW		16.10±1.92	17.39±3.66	-1.635	.109
TLC (1000/mm^3)		9.38 ±4.04	11.34± 4.36	-1.609	.114
Haematocrit (%)		30.96±5.08	25.66±5.55	3.482	.001
Platelet (1000/mm^3)		326.20±109.91	311.97±149.53	.365	.717

Table 2: Indicates various biochemical findings of the 50 study subjects

Characteristics	SCD with OFH	SCD without OFH	t/Chi sq.	P value
T Bil (mg/dl)	1.92± 1.49	2.61±1.55	-1.573	.123
D Bil (mg/dl)	0.40± 0.16	0.38 ±0.16	.433	.667
AST (IU/L)	63.35± 69.14	47.67±35.39	.936	.358
ALT (IU/L)	32.65± 39.44	44.17±21.82	-1.327	.191
ALP (IU/L)	102.40±29.74	104.87±30.59	-.284	.778
S. Sodium (Mmol/L)	141.25±3.46	141.30±3.05	-.054	.957
S. Potassium (Mmol/L)	4.15±0.21	4.17±0.19	-.287	.775

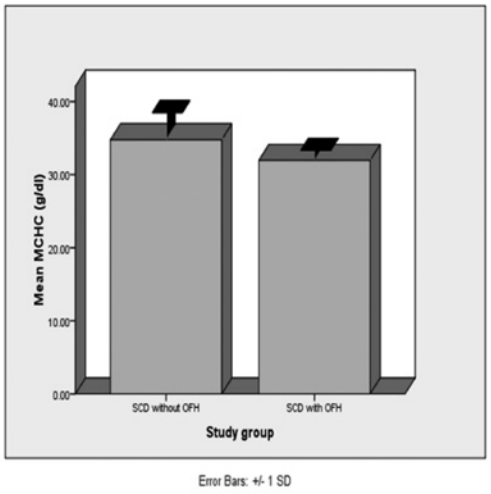

Figure 1: Shows the correlation between MCHC & osteonecrosis among subjects with SCD

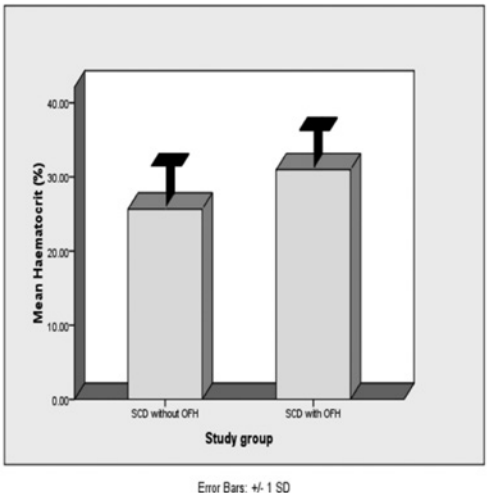

Figure 1: Shows the correlation between hematocrit & Osteonecrosis among subjects with SCD

Discussion and Conclusion

Avascular necrosis of the femoral head is an important cause of morbidity in sickle cell disease. The mechanisms involved in the pathogenesis of osteonecrosis in sickle cell disease have not been fully explained. Blood hyper viscosity has been suggested as a factor involved in the genesis of osteonecrosis1 but has not been studied until now. We hypothesized that abnormal hematological parameters could play a role in this complication.

In our study MCHC was found to be significantly higher in SCD without OFH subjects and Hematocrit was found to be significantly higher in subjects with SCD with OFH. Previous studies demonstrated that increased RBC deformability is associated with osteonecrosis in SCA. Irregularly shaped, deformable sickle RBCs were previously shown to be more adherent than rigid, irreversibly sickle RBCs, hence triggering vascular occlusion though in our study no significant difference was found in terms of RDW in SCD subjects with and without OFH.

Higher hematocrit levels may lead to hyper viscosity which has been found to be associated with increased risk of osteonecrosis. Also lower MCHC may lead to less efficient delivery of oxygen to the vasculature of femoral neck leading to relative hypoxia thus leading to osteonecrosis

Though in our study no significant difference was found in terms of RDW in SCD subjects with and without OFH.

Higher hematocrit levels may lead to hyper viscosity which has been found to be associated with increased risk of osteonecrosis.

Also lower MCHC may lead to less efficient delivery of oxygen to the vasculature of femoral neck leading to relative hypoxia thus leading to osteonecrosis

Our study concluded that SCD subjects with higher Hematocrit and lower MCHC are at risk of SCD associated Osteonecrosis of femoral head. . Though these findings should be interpreted in the light of fact that our study was a cross sectional study with small sample size and metacentric studies with larger sample size and prospective design should be organized to further confirm findings. These findings could be of help in modifying the current blood transfusion based treatment protocol for SCD.

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Comparative study of the efficacy, safety and cost of the various treatment options used in chronic ITP patients

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Abstract

Introduction: Immune thrombocytopenic purpura (ITP) is an autoimmune disorder characterized by platelet destruction due to auto-immune antibody production. Patients with chronic ITP usually have to take drugs and remain under follow up all their life. The cost and safety considerations in respect to these aspects needs to be given special emphasis. The overall purpose of this study was to identify and evaluate the efficacy, safety and price efficacy of the management options available in chronic ITP.

Methodology: The study was conducted as a retrospective comparative manner in a tertiary care hospital in West Maharashtra, India. 41 patients were included in the study, of which 114 cases of drug administration were derived. Past history was taken from hospital records

Results: Various results were extracted from the study. 35.83 was found to be the average age, female predominance with 78.04% was observed. Bone marrow aspiration was still the gold standard of diagnosis of chronic ITP. Eltrombopag and Rituximab were found have high efficacies >75% but the interpretation was inconclusive. Splenectomy was associated with high risk 33% and Dapsone was found to be the most price effective with 2200 rise in platelet per rupee spent.

Conclusion: This study although not fully conclusive but provides various cues and hints for further research. The finding on safety may serve to revisit the guidelines and conduct more studies. The findings on price efficacy may serve as a better practical guideline in terms of patient guideline.

Introduction

Immune thrombocytopenic purpura (ITP) is an autoimmune disorder characterized by platelet destruction due to auto-immune antibody production. Patients with chronic ITP usually have to take drugs and remain under follow up all their life. The cost and safety considerations in respect to these aspects needs to be given special emphasis. The overall purpose of this study was to identify and evaluate the efficacy, safety and price efficacy of the management options available in chronic ITP[5].

Immune thrombocytopenia (ITP) has undergone a sea change in its understanding since its discovery. From being termed idiopathic, not only a greater understanding about its mechanism and pathogenesis has occurred but also new diagnostic, treatment and management options have surfaced[2,3]. The most common clinical manifestation of ITP are easy bruising in the form of petechial haemorrhage or ecchymosis patches and mild mucosal bleeds. autoantibody are said to bind GpIIb/IIIa and GpIb/IX complexes of surface glycoproteins in platelets, which are then cleared by the reticuloendothelial system (RES) macrophages in spleen[10,6,7].

For a long time the role of spleen and other organs in the development of chronic ITP was speculated and thought over. R. Macmillan et al were amongst the initial few who made progress in this development. Using radiolabelled IgG with ^{125}I from two sources the sera and the splenic cell culture and respective controls[4]. In all 6 cases that were studied splenic samples contained significantly higher concentration of platelet – specific IgG. This anticipated the role of spleen in destruction of platelets. A recent study shows that a higher number of patients are dying due to treatment of the disease than the disease itself [11].

Aim

- To analyse and compare the efficacies of various treatment options used in chronic ITP
- Identify the safety of the drugs administered.
- To formulate an efficacy to price index.

Materials and Methodology

The study was conducted as a retrospective comparative manner in a tertiary care hospital in West Maharashtra, India. 41 patients were included in the study, of which 114 cases of drug administration were derived. Past history was taken from hospital records

Inclusion criteria

- Patients who have been diagnosed with chronic ITP adhering to the following criterion.
- Only patients attending the OPD for their monthly/ bi-monthly follow will be under consideration in this study.

Exclusion criteria

Patients who were found to have associated disorders like HIV, SLE and other associated autoimmune disorders.

Response to the above were assessed and graded in accordance to the standard ASH criterion into the following:

1. Complete Response (CR): A platelet count ≥ 100 X 109/L measured on 2 occasions > 7 days apart and the absence of bleeding.
2. Response (R): A platelet count ≥ 30 X 109 /L and a greater than 2-fold increase in platelet count from baseline measured on 2 occasions > 7 days apart and the absence of bleeding.
3. No Response (NR): A platelet count < 30 X 109/L or a less than 2-fold increase in platelet count from baseline or the presence of bleeding. Platelet count must be measured on 2 occasions more than a day apart.

The number of instances where a drug expressed an ADR's or due to some reason had to be stopped was tabulated and also the particular adverse drug reaction (ADR) and reason for discontinuation were noted.

Here the efficacy of a drug in each group was measured with respect to:

- The maximal rise in platelet count of a patient of a certain group, administered with a particular drug/ procedure after its TTR, considering hundred percent compliance

Drugs/Procedures which are contra-indicated or stopped due to its adverse effects in more than 50% of the patients administered with it were not included in this index

All dosages of drugs under consideration were in compliance with the standard dosing guidelines suggested by the American Society of Haematological.

Prices for each drug used in this index will be according to the National Pharmaceutical Pricing Authority (NPPA) Government of India (as per DPCO 2013)

Prices of all procedures like splenectomy will be as per that charged in the tertiary healthcare centre under consideration.

The drug price efficacy index was calculated as:

$$\frac{\text{Avg. platelet rise}}{\text{Cost of entre drug dosage}}$$

Results

Various results were extracted from the study. 35.83 was found to be the average age, female predominance with 32 females (78.04%) and 9 males (21.96%) was observed. Only 16 of the 41 manifested with bleeding at the time diagnosis and the most prevalent manifestation being petechial haemorrhages with the majority presenting with mild severity. Bone marrow aspiration was still the gold standard of diagnosis of chronic ITP with positive findings in 40 out of 41 (97.56%). 10 (24.3%) showed anomaly on USG screening with hepatosplenomegaly with the most prevalent positive finding, no cases of HIV or HbsAg/Anti-HCV were found positive. Rituximab (100%), Eltrombopag (89.9%) and Dexamethasone (85.71%) were found to have high efficacies >75% but the interpretation was inconclusive due to the limited sample size. Splenectomy was associated with high risk as 33% patients undergoing the procedure facing complications. Dapsone was found to be the most price effective with 2200 rise in platelet per rupee spent followed by Dexamethasone with 1168.57 rise in platelets per rupee.

Conclusion

This study although not fully conclusive but provides various cues and hints for further research. Only few patients presented with bleeding manifestations (mostly mild), this might serve as an important indicator for all clinicians as these mild symptoms often get unnoticed and may only be realized after the severity of the disease has worsened or in a case of accident. 10 patients (24.3%) with Hepatosplenomagaly is also consistent with our general understanding of the disease with the role of live and spleen in the destruction of platelets and pathogenesis of chronic ITP. Meta – Analysis including studies like these may provide a more conclusive and definitive results. The finding on safety may serve to revisit the guidelines and conduct more studies. The findings on price efficacy are in absolute compliance with the current clinical practice in India, where these happen to be the most widely and extensively used treatment options. These may also serve as a better practical guideline in terms of patient guideline.

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Presence of opportunistic parasites in the stool of HIV positive patients and its relation with the total CD4+ cell counts

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Abstract

Introduction: Presently, India has around 2.3 million HIV positive patients with the prevalence rate of around 0.3%. GI (Gastrointestinal) symptoms have been observed in up to 90% of HIV positive patients. Diarrhea has become one of the AIDS defining criteria. Information on intestinal parasitic infestation can help public health bodies to restrict the spread within the general population

Methodology: A total of 100 HIV positive patients with or without diarrhea took part in the study. Stool samples were examined for the parasites using various laboratory techniques.

Results: 64% of the patients had parasitic infestations. All the patients with CD4+ counts less than 100 had parasiteic infestation in them. The most common organism was *Cryptosporidium* followed by *Ascaris lumbricoides.* Rate of mixed infections was also very high.

Conclusion: The high prevalence of mixed infections rings the bell for appropriate measures to be taken to overcome such problems. Regular monitoring of CD4 counts and screening for these opportunistic agents in the HIV infected will help to reduce the morbidity associated with infections by these agents and will also limit transmission. This study reflects the possible use of anti-parasitic drugs in HIV positive patients especially with very low CD4+ counts.

Introduction

Since 1981, when first case of HIV was detected, there has been a constant rise in the HIV positive patients. It has touched every part of the globe and has become a worldwide phenomenon and is a major public health crisis. More than 20 million lives had been lost across the globe and a further 40 million people are thought to be living with this infection [1]. Presently, India has around 2.3 million HIV positive patients with the prevalence rate of around 0.3% [2].

Globally about 3.5 billion people are infested with intestinal parasites. Out of whom, approximately 450 million are suffering from its symptoms [3]. GI (Gastrointestinal) symptoms have been observed in up to 90% of HIV positive patients [4]. Diarrhea has become one of the AIDS defining criteria. When CD4+ count falls below 200/mm^3, it causes permanent loss of defense system of the body. At this stage, many patients suffer from chronic diarrhea causing weight loss and muscle wasting leading to profound morbidity and mortality.

Chronic diarrhea is defined as persistent diarrhea for more than 4 weeks of duration [7].

Many parasites have been identified to cause diarrhea in HIV positive patients. Furthermore, recent studies have outlined the emergence of important protozoans like Microsporidia, *Cryptosporidium parvum*, *Isospora belli* and *Cyclospora cayetanensis*[8]. In developing countries like India *Cryptosporidium hominis* is the most common parasite causing diarrhea in these patients [9]. In a research by Assefa *et al.*[10], patients with severe immunodeficiency are more susceptible to acquire particular parasites and are also unable to clear established infections. The increased prevalence of diarrhea among patients with CD4+ counts ≤ 200 cells/μL may reaffirm the view that diarrhea is an AIDS defining condition. In spite of various awareness programmes patients remain undiagnosed or there is delay in diagnosis leading to morbidity and mortality.

There have been very few studies on the correlation of opportunistic parasites in stool with CD4+ counts. Hence the current study has been undertaken to report a relation between the opportunistic parasites in the stool of HIV positive patients and its relation with total CD4+ cell counts. It is aimed to evaluate prevalence of infectious agents in the stool of these patients. The results of current study may help to guide the treatment and prophylaxis of diarrhea in HIV positive patients. With the aim of assessing the opportunistic parasites with immune status, treatment status and other co morbidities have also been considered.

The identification of parasites in these clinical samples is important in the clinical assessment of the treatment and prognosis. Information on intestinal parasitic infestation can help public health bodies to restrict the spread within the general population. Such data reflects the necessities of early diagnosis and management in order to prevent the health complications among HIV positive patients.

Review Of Literature: In another study by A. De, K. Patil, and M. Mathur *et al.,* Detection of enteric parasites in HIV positive patients with diarrhea, a total of 100 HIV positive patients with diarrhea and 40 HIV positive patients without diarrhea had taken part. Out of 100 HIV patients with diarrhea, 16 had *Microsporidia,* 13 had *Cryptosporidium,* and 4 patients had mixed parasitic infections. However, out 40 HIV patients without diarrhea, one patient had *Cryptosporidial* cyst, one had eggs of *Ascaris* and one patient was infected with *Giardia.* The overall prevalence of this study was 39%. Such high prevalence has shown importance of screening in HIV positive patients for these opportunistic parasites.

National AIDS Research Institute, Pune had conducted a study on 137 HIV positive patients with diarrhea at different levels of immunity between March 2002 and March 2007. They had found out that Intestinal parasitic pathogens were detected in 35 per cent patients, and the major pathogens included *Cryptosporidium parvum* (12%) the most common followed by *Isospora belli* (8%), *Entamoeba histolytica*/*Enatmoeba dispar*(7%), *Microsporidia* (1%) and *Cyclospora*(0.7%). In HIV infected patients with CD4 count < 200 cells/µl, *C. parvum* was the most commonly observed (54%) pathogen. Proportion of opportunistic pathogens in patients with CD4 count <200 cells/µl was significantly higher as compared with other two groups of patients with CD4 count >200-499 and ≥ 500 cells/µl (P=0.001, P=0.016) respectively.

Aim

To study the prevalence of parasitic infestation in stools samples of HIV positive patients and correlate with their CD 4 T cell counts.

Objectives

1. To detect enteric parasites in HIV infected patients at different levels of immunity.
2. To determine the prevalence of intestinal parasites and elucidate the association between intestinal opportunistic parasitic infection and CD4 (CD4+ T lymphocyte) counts in HIV-positive patients.

Methodology

This study has been conducted on the HIV positive patients in the tertiary care hospital.

Sample size: A total of 100 HIV positive patients took part in this study.

Questionnaire: A questionnaire has been used to collect personal data from participants concerning episodes of diarrhea, antiretroviral treatment, and use of any drugs for the prevention of the opportunistic infection.

Sample collection: Stool samples have been collected according to WHO procedure *(Reference: Communicable Disease Toolkit: Guidelines for collection of specimens for laboratory testing. IRAQ MARCH 2003)* in a universal container. Each participant in the study has received a clean sterile, leak proof container and clear explanation for fecal sample collection has been given. The sample has been transported to the Department of Microbiology.

Stool Examination:

- The consistency of the stool sample was noted.
- It has been examined microscopically following direct and formalin-ether concentration methods.
- The stool samples were fixed in 10 percent formalin saline, concentrated using formyl/ ethyl acetate and examined through direct observation in saline (0.85% NaCl solution) for ova, cyst and parasite detection.
- Further stools has been concentrated using a modified formol-ether technique. Fecal smears were then stained following the Safranin and Kinyoun method, a modified acid-fast stain technique (Reference- Hussey, A. M., Zayaitz, A., "Acid-Fast Stain Protocols", American Society for Microbiology, 8th September 2008. Retrieved on1stNovember 2014),to detect oocysts of Nocardia.
- Also stools will be cultured on Sabouraud's dextrose agar and subsequently subjected to Gram stain for identification of Candida species colonies.

CD4+ Counts: CD4 cell counts will be measured by using a FACScount system (Becton Dickinson, Singapore BD). Patients will be categorized by their immune status according to the 1993 – revised classification system for the HIV infection by CD4 T-cell categories.

Statistical Analysis: CD4+ counts will be compared based on the former treatment threshold fix at CD4+ ≤ 200 cells/µL and the current treatment threshold fixed at ≤ 350 cells/µL. All statistical analyses will be conducted using XLSTAT 2015. Odds ratio will be calculated to estimate the risk attributable to different factors.

Results

Participant Characteristic: A total of 100 HIV positive patients were screened for intestinal parasites. 73 male and 27 female patients took part in the study. The patients' age ranged from 12-52 years.

The study population consisted of 23 patients with CD4+ counts < 100/mm^3, 27 patients with CD4+ counts < 200/mm^3, 31 patients with CD4+ counts between 200-350/mm^3 and 19 patients with count >350/mm^3.

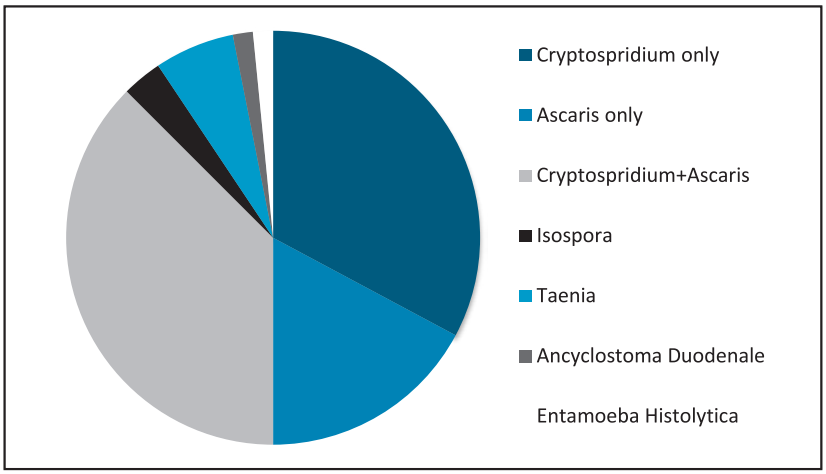

Table 2: Relationship Between Parasitic infestation and CD4+ counts

CD4+ COUNTS Cells/mm^3	Total	Negative	*Cryptos-poridium* only	*Ascaris* only	*Crptosp-oridium+ Ascaris*	*Isospora*	*Tenia*	Others
<100	23	0	8	2	8	1	3	1 *(Entamoeba histolytica)*
100-200	27	4	10	0	11	0	1	1 *(Ancyclostoma duodenale)*
200-350	31	17	2	8	3	1	0	0
>350	19	15	1	1	2		0	0
Total	100	36	21	11	24	2	4	2

Discussion

In the HIV/AIDS era, the infections by opportunistic agents are on the rise. Numerous opportunistic infections occur in HIV-infected patients, because of the down-regulation of the immune system. Opportunistic infections of the gastrointestinal tract are one of the major causes of morbidity and mortality in HIV positive individuals worldwide. Diarrhea is a significant problem in immunocompromised patients worldwide, especially patients with HIV/AIDS with CD4 counts < 200 cells. This study tried to determine the prevalence and profile of intestinal parasites among the HIV positive patients.

Overall 64 out of 100 patients harbored the parasitic infestations. The prevalence of the study was 64% which is quite high as compared to other studies conducted across the globe. For example, in a study by National AIDS Research Institute, Pune, between the year 2002-2007, the prevalence rate of parasitic infestation was 35%, however the current study shows an increase prevalence of around 1.5 times.

Opportunistic parasites were present in 47 HIV positive patients (47%) and prevalence of non-opportunistic parasite was 17% (17/100).

The isolation of *Cryptosporidium spp.* was the highest in the study reaching up to 45% of total 100 patients. In patients with CD4+ counts less than 100/mm^3, the prevalence of *Cryptosporidium spp.* was 70% (16/23), which has never been found in any of the studies done earlier. Prevalence rate of around 78% (21/27) was observed in patients with CD4+ counts between 100-

200/mm^3.Previous studies have demonstrated that C. parvum is frequently associated with diarrhea in patients with AIDS with CD4 counts < 200 cells in developed countries where the prevalence of infection ranges from 17% to 62% [19,20]. As the CD4+ counts increased, the prevalence decreased drastically 16% (3/19) in patients with CD4+ counts more than 350/ mm^3.The lifetime risk of infection by cryptosporidium in HIV patient is 10% [21].

Following *Cryptosporidium spp.* was the non-opportunistic parasite *Ascaris lumbricoides* with the prevalence rate of 35% (35/100). Highest prevalence of *Ascaris lumbricoides* was found in the patients with CD4+ counts between 200-350/mm^3, 65%(11/17).

Mixed infections of both *Cryptosporidium spp* and *Ascaris lumbricoide* was the most significant in this study with prevalence of24 out of 64 positive samples (38%). Such high prevalence of mixed infections is one of the hallmarks of this study.

The presence of *Isospora belli,* in HIV positive patients has been quite different in different studies. Few have shown high prevalence while few results have shown low prevalence of this opportunistic parasite. In our study however the prevalence of *Isopora belli* was low 2% (2/100). The lower prevalence of *Isosporiasis* may be ascribed to the secondary prophylaxis for pneumocystosis through the administration of sulfamethoxazole-trimethoprim during the course of AIDS, since *Isopora belli* is sensitive to this treatment.

The prevalence of parasites like *Taenia, Entamoeba histolytica* and *Ancyclostoma duodenale* cannot be neglected.

In patients with CD4+ counts >350/mm^3, the prevalence of parasites was very low 21%. Only 4 patients out of 19 had parasites in their stool.

The reported prevalence of non-opportunistic parasites varied from 5-30 per cent in HIV infected patients [22]. In the present study, non- opportunistic parasites were detected in 17 per cent patients across different CD4 groups, thus, highlighting the need for early detection and treatment of such infections among HIV-infected patients to reduce the morbidity.

Gender and age did not significantly affect the prevalence of intestinal parasitic infections while it was not a risk factor for acquiring these infections. The distribution of the parasitic infections in both sexes as well as, among the various age groups suggested that sex and age were not predetermining factors for parasitic infections in our study.

No significant correlation was found between the use of ART and the presence or absence of intestinal parasites. This result is likely multifactorial; noncompliance with medications, viral resistance to the drugs, drug–drug interactions and decreased drug bioavailability might have played a significant role [23].

Our study had some limitations. The sample size of this project is not large. Majority of the patients seen had already received antibiotics prior to their visit and therefore the number of symptomatic patients was less. Also the PCR or other molecular technique has not been used which would have improved the diagnosis.

Conclusion

Intestinal parasite was found in 64% of patients. Most important observation was prevalence rate of 100% intestinal infection is HIV positive patients with CD4+ cell <100/mm^3. Also, the high prevalence of mixed infections rings the bell for appropriate measures to be taken to overcome such problems. These parasites are frequently seen in the stool of both symptomatic and asymptomatic HIV patients than the HIV negative patients. Detection of etiologic pathogens might help clinicians decide appropriate management strategies. Regular monitoring of CD4 counts and screening for these opportunistic agents in the HIV infected will help to reduce the morbidity associated with infections by these agents and will also limit transmission.

This study reflects the possible use of **ANTI-PARASITIC** in HIV positive patients especially with very low CD4+ counts may be benificial. It recommends addition of Anti-Parasitic drugs in the Anti-Retroviral Regimen as a Prophylaxis for patients CD4+ counts below 200/mm^3.

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Is aerated soft drink and packaged juice consumption an independent risk factor to cause non-alcoholic fatty liver disease

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Abstract

Introduction: NAFLD in majority of patients is associated with metabolic risk factors.

Recent evidence suggests an association between the intake of sugar sweetened soft drinks and the risk of obesity and diabetes resulting from large amounts of fructose used in their manufacture, which raises blood glucose similar to sucrose.

We studied/investigated this phenomenon in patients of NAFLD without features of metabolic syndrome with a hypothesis that excess soft drink intake can be an independent risk factor to cause NAFLD

Methodology: Various Readings were obtained from the patient to confirm the presence of metabolic syndrome. The history of soft drink intake was obtained from the patient. The fructose/sugar content and calories/100ml of commonly consumed soft drinks were deciphered from the market. Log regression analysis was used to find the association between the soft drink consumption and development of NAFLD as against age-matched controls. 50 age-matched controls were also included in the study.

Results: The mean total sugar consumption of sweetened soft drinks / packaged juices were significantly higher in patients with NAFLD versus those in the control group.

The radiological grade of NAFLD was also compared. These was significantly higher consumption in patients with grade II-III versus those in grade I patients.

Patients with NAFLD were categorized into those with presence or absence of metabolic syndrome. There was no significant difference in the intake of sweetened soft drinks / packaged juices amongst these groups.

Patients with NAFLD but without the presence of metabolic syndrome were compared to the control group. The intake of sweetened soft drinks / packaged juices was significantly higher in this subgroup versus the control.

Discussion:

We categorized patients with NAFLD into those with and those without metabolic syndrome . The intake of SSD did not differ significantly amongst both the groups. This probably hints towards SSDs being an independent risk factor in the etiology of NAFLD. Patients with NAFLD and without metabolic syndrome were compared with controls. The intake of SSDs was again significantly higher in these patients as compared to the controls (p=0.05). This proves that SSDs are an independent risk factor in the development of NAFLD.

Introduction

Nonalcoholic fatty liver disease (NAFLD) is characterized by hepatic steatosis, confirmed either by imaging or by histology and there are no causes for secondary hepatic fat accumulation such as significant alcohol consumption, use of steatogenic medication, viral diseases or hereditary disorders[1]. NAFLD in majority of patients is associated with metabolic risk factors such as obesity, diabetes mellitus, and dyslipidemia[1]. There has been a surge in introduction of sweeteners such as fructose and sucrose by the food industries. Regular aerated soft drinks and packaged fruit drinks have become major sources of high fructose or sugar[2].

Consumption of sugar sweetened beverages per capita in India is reported to be about 11 litres a year, which is low compared with other nations as per 2013 report from the global marketing research firm Euromonitor International that found consumption is increasing by 13% a year[3].

Recent evidence suggests an association between the intake of sugar sweetened soft drinks and the risk of obesity and diabetes resulting from large amounts of fructose used in their manufacture, which raises blood glucose similar to sucrose[4]. The newer type of low calorie aerated soft drinks contain aspartame sweetener and caramel coloring, which are rich in advanced glycation end products that also increase insulin resistance and inflammation[5]. Research both in humans and animals has confirmed that diet rich in sucrose/ fructose can cause NAFLD [5,7].

It is conjectured that hepatic fructose metabolism begins with phosphorylation of fructokinase. Fructose carbon enters the glycolytic pathway at the triose phosphate level. Fructose thereby bypasses the main regulator point by which glucose carbon enters glycolysis. This permits excess fructose to function as an unregulated source of glycerol-3-phosphate and acetyl-CoA for hepatic lipogenesis.

We studied/investigated this phenomenon in patients of NAFLD without features of metabolic syndrome with a hypothesis that excess soft drink intake can be an independent risk factor to cause non-alcoholic hepatic steatosis.

Objectives

- To categorize NAFLD patients reporting to our gastroenterology clinic:- with /without metabolic syndrome
- To determine the quantity, frequency, duration and type sweet soft drinks /packaged fruit juices consumption.
- Assess the association between consumption patients with or without metabolic syndrome as against age-matched controls.
- To correlate the level of steatosis with the amount of intake of soft drinks in patients of NAFLD

Materials and Methods

Type of study: Descriptive Study

Study Population: 50 patients of NAFLD diagnosed by clinical, radiological and histopathological criteria. The serum biochemical analysis, liver ultrasound and liver biopsy histopathology report were analyzed to confirm the diagnosis of NAFLD.

Data Collection: Following readings were obtained from the patient to confirm the presence of metabolic syndrome (NCEP 2005 criteria): Waist hip ratio, Blood pressure values, Serum lipid profile and blood sugar levels [10].

The history of soft drink intake was obtained from the patient under following heads: a) quantity consumed, b) type of soft drink/packaged juice consumed, c) period of ingestion and d) frequency of consumption. The fructose/sugar content and calories/100ml of commonly consumed soft drinks were deciphered from the market. Log regression analysis was used to find the association between the soft drink consumption and development of NAFLD as against age-matched controls. 50 age-matched controls reporting to gastroenterology clinic with ailments other than NAFLD, which would not bias the findings, were also included in the study. The biochemical and radiological reports of these controls were also vetted to rule out a co-incidental finding of NAFLD. The intake history of soft drinks under same sub-heads was analysed in these controls.

The NAFLD conventionally are graded and staged using 2005 NAS criteria on liver biopsy[11]. Herein the extent of steatosis, ballooning of hepatocytes, lobular inflammation and fibrosis is objectively used to objectively stratify the patient. The radiologist use a 4 grade system to grade the extent of fatty liver[8,9].

Statistical analysis: Discrete categorical data were expressed as number and percentage. Continuous data were expressed as mean±standard deviation. Continuous variables were compared between the two groups using independent samples unpaired single tailed Student t test. A p value < 0.05 was considered as significant. Spearman correlation coefficient was used to correlate the objective radiological extent of NAFLD against the quantity of soft drink intake.

Results

The mean age of patients with NAFLD was 48.2 years with 72% of these cases showing presence of metabolic syndrome (Table 1).

Table 1: Demographic details of patients with NAFLD (N=50)

Age (Mean)	48.2 years (range: 24-67 years)
Sex (M/F)	42/8
Presence of Metabolic Syndrome	36 (72%)

The 50 patients of NAFLD were compared with 50 control patients. Both the groups were equally age and sex matched. The average monthly consumption, duration of consumption and the mean total sugar consumption of sweetened soft drinks / packaged juices were significantly higher in patients with NAFLD versus those in the control group (Table 2).

Table 2: Consumption of Sweetened Soft Drinks/ Packaged Juices

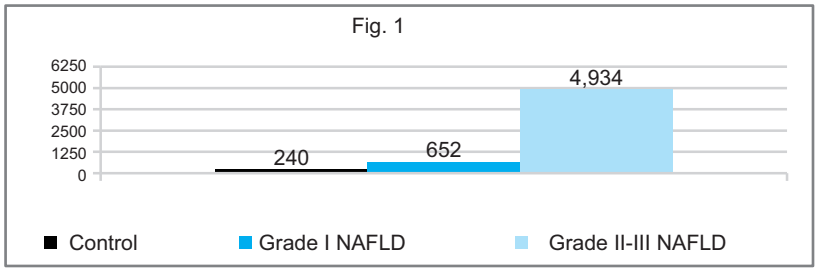
	NAFLD	Control	p value
N	50	50	
Age (years)	48.2±12	45.1±12.6	0.1 (NS)
Sex (M/F)	42/8	43/7	
Average Consumption (ml/month)	1766±2789.6	240±362.4	0.0002
Period (years)	14.84±11.6	3.96±6.5	<0.0001
Mean Sugar consumption (gms)	47492.66±82527.4	2587.96±5478.6	0.0002

The radiological grade of NAFLD was also compared. These was significantly higher consumption in patients with grade II-III versus those in grade I patients (Table 3, Fig 1).

Table 3: Association of Grade of NAFLD with Intake of Sweetened Soft Drinks

	Grade I NAFLD	Grade II-III NAFLD	p value
N	37	13	
Average Consumption (ml/month)	652.7±1212.9	4934.61±3558.6	0.0004
Period (years)	13.43±11.4	18.84±11.7	0.08
Mean Sugar consumption (gms)	25886.23±67062.3	114112.5±92677.6	0.004

A total of 11 patients out of all the 100 patients (study and control groups combined) had a daily intake of 150-300ml of SSD for a period ranging from 5 to 20 years. Two of these had grade I NAFLD whereas 9 had grade II NAFLD. Five of these 11 patients had a daily intake of 250ml or greater. All these 5 patients had grade II-III NAFLD documented on ultrasound findings.



Since only 2/50 cases had undergone a hepatic biopsy, no correlation of fat content in biopsy was done against the consumption of SD as it would have a been too small a number.

Patients with NAFLD were categorized into those with presence or absence of metabolic syndrome. There was no significant difference in the intake of sweetened soft drinks / packaged juices amongst these groups (Table 4).

Table 4: Association of metabolic syndrome with Intake of Sweetened Soft Drinks in patients with NAFLD

	Metabolic Syndrome Present	Metabolic Syndrome absent	p value
N	36	14	
Average Consumption (ml/month)	1958.33±2896.8	1271.43±2524.5	0.207
Period (years)	15.88±11.6	12.14±11.4	0.15
Mean Sugar consumption (gms)	51844.15±87637.5	36613.92±69871.2	0.26

Patients with NAFLD but without the presence of metabolic syndrome were compared to the control group. The intake of sweetened soft drinks/packaged juices was significantly higher in this subgroup versus the control (Table 5). This finding indicates that sweetened soft drinks/packaged juices are independent risk factors for development of NAFLD in the absence of metabolic syndrome.

Table 5: Association of Sweetened Soft Drinks / Packaged Juices with NAFLD in patients without metabolic syn-drome

	NAFLD without Metabolic syndrome	Control	p value
N	14	50	
Average Consumption (ml/month)	1271.43±2524.5	240±362.4	0.07
Period (years)	12.14±11.4	3.96±6.5	0.01
Total Consumption (ml)	340714±672552.7	20100±41934.1	0.05
Mean Sugar consumption (gms)	36613.92±69871.2	2587.96±5478.6	0.046

Discussion

In our study, the intake of sweetened Soft Drinks (SSD)/ packaged Juices was found to be statistically higher in patients with NAFLD versus that in controls (1766 ml/month vs 240 ml/month; p<0.0002) (Table 2). The chronicity of intake also mattered and was significantly higher in the NAFLD group (p<0.0001). We graded the degree of NAFLD based on ultrasound criteria and grouped the patients into 2 categories: Low grade (grade I) and High Grade (II-III). The intake of SSDs was again significantly higher in high grade NAFLD as compared to low grade NAFLD (p= 0.0004) indicating that SSDs are not just linked to the higher incidence of NAFLD but also to the grade of NAFLD (Table 3).

The amount of sugar consumed due to sweetened Soft Drinks (SSD) / Packaged Juices was found to be statistically higher in patients with NAFLD versus that in controls in our study (p<0.0002).

We categorized patients with NAFLD into those with and those without metabolic syndrome (Table 4). The intake of SSD did not differ significantly amongst both the groups. This probably hints towards SSDs being an independent risk factor in the etiology of NAFLD. Patients with NAFLD and without metabolic syndrome were compared with controls (Table 5). The intake of SSDs was again significantly higher in these patients as compared to the controls (p=0.05). This proves that SSDs are an independent risk factor in the development of NAFLD.

Conclusions

The consumption of sweetened soft drinks and packaged juice is on the rise in India. The intake of these drinks is significantly higher in patients with NAFLD. Increasing consumption of these drinks is an independent risk factor not only for the development of NAFLD but also for a higher grade of NAFLD especially in population with high daily and chronic intake.

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Proportion of Orthorexia Nervosa among undergraduate students and its determinants

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Abstract

Introduction: Orthorexia Nervosa (ON) is an eating disorder characterized obsessive concern over the relationship between food choices and health concerns. Presently Orthorexia Nervosa (ON) is not recognized in the Vth edition of Diagnostic and Statistical Manual of Mental Disorders (DSM-V) but scientists believe that ON is a genuine syndrome and needs more research. Some scientists believe that it is more closely associated to Obsessive Compulsive Disorder (OCD) since orthorexics worry more about the nature of food. Through our study we aim to find out the ubiquity of orthorexia nervosa among undergraduates based on ORTO-15 questionnaire and the tendencies associated (OCD, BDD etc.)

1. To identify the proportion of Orthorexia Nervosa, obsessive compulsive tendencies, body dysmorphic disorders and disordered eating tendencies (determinants) amongst undergraduates.
2. To determine association between Orthorexia Nervosa and its determinants.

Materials and Methods: A total of 366 subjects were surveyed using the following study tools – ORTO-15, EAT-26, Body Dysmorphic Disorder questionnaire (BDDQ), Obsessive Compulsive Inventory – Revised (OCI-R)

Results: Out of the 366 subjects surveyed, 284 (77.5%) showed Orthorexic trait, 57 (15.6%) showed Eating Attitude Disorder, 26 (7.1%) showed Body Dysmorphic Disorder, 277 (75.6%) Obsessive Compulsive Tendencies. There was significant association in the proportion of Obsessive Compulsive Tendencies with Orthorexia Nervosa, 184 of all subjects surveyed had both OCD and ON traits, 64.7% Orthorexics showed OCD traits. There wasn't statistically significant association of Orthorexia with other determinants (EAT and BDD).

Discussion: In our study proportion of Orthorexia Nervosa was found to be 77.5% which indicates prominence of Orthorexics. Similar results were obtained by Ramaciotti et al. Contrasting to studies by Donini et al and Rebecca Reynolds. In our study proportion of Orthorexia Nervosa; Obsessive compulsive tendencies, Eating Attitude disorders and Body Dysmorphic disorder didn't statistically correlate with sociodemographic data, which coincides with the study of Ramaciotti et al. In a study by Bundros, significant positive correlation was found between proportions of ON and OCD. Koven et al also reported similar findings. Our study also confirms this correlation (chi square= 4.120, p value=0.042).

Conclusion: Through our study we found that there is a high proportion of ON. OCD was found to be a risk factor for Orthorexia. Though a lot of research has not been done on this, it requires more attention as its prevalence is increasing amongst youngsters and might manifest as an array of negative consequences leading to body dysmorphia.

Introduction

Orthorexia Nervosa as defined by Steven Bratman in 1997 indicates "having an unhealthy obsession with healthy eating"[2].

Orthorexics show a maniacal obsession towards eating food items considered "healthy or pure" and avoidance of food they consider unhealthy or impure[2,3,4]. Food groups that are generally avoided include genetically modified crops, food high in salt or sugar.

They restrict their diet in desire to optimize health, to prevent or treat diseases, or to lose weight[2,5]. Young adults are more prone to social pressures, low self-esteem, and may form quixotic perceptions of an ideal body image, all of which leading to dieting behavior and body disgruntlement, mostly amongst overweight/obese college students[6].

Other attributes relating to this disorder are ongoing mental preoccupation with health and nutrition, increased concerns about the health promoting benefits of food, increased concerns about techniques and materials used in preparation of food and strict adherence to self-imposed diet[1,6]. Following specific diets or food rules such as fruitarianism, vegetarianism, veganism, raw foodism may also be associated with orthorexia nervosa[2,7].

Extreme preoccupation with healthy eating may become unhealthy for orthorexics, and the supposed benefits become reconstituted with an array of negative physical, psychological, social and occupational consequences [4,5]. These people may suffer from nutritional deficiencies and severe weight loss due to avoidance of some food groups. They may experience great irritation when their food practices are disturbed. Also, they may have difficulty

eating meals with others who do not follow their strict eating practices and thus possess risk of social isolation[5].

At present Orthorexia Nervosa (ON) is not recognised in the fifth edition of Diagnostic and Statistical Manual of Mental Disorders (DSM-V) but majority of the scientific community believe that ON is a genuine syndrome and needs more research[2]. Among the disorders included in DSM-V, ON is considered closest to Avoidant/Restrictive food intake disorder. On the other hand some believe that it is more closely associated to Obsessive Compulsive Disorder (OCD) since orthorexics worry mainly about purity and quality of food instead of quantity[2].

Through our study we aim to find out the ubiquity of orthorexia nervosa among undergraduate students based on ORTO-15 questionnaire and the tendencies associated with this condition.

Materials and methods

This cross sectional study was conducted in Kasturba Medical College, Mangalore and St. Aloysius College, Mangalore which offer undergraduate courses amongst college going students. Students above the age of 18 were included in the study. The study period was 12 June 2017 - 30 June 2018. A sample size of 415 was calculated considering a power of 80%, an absolute precision of 5%, a confidence level of 95% and assuming an ON prevalence rate of 50% among undergraduates and 10% non-response. Convenience sampling was used. Following tools were used for the study.

ORTO-15 questionnaire[4] a self-administered questionnaire consisting of 15 questions having 4 choices (Always, Often, Sometimes, Never) each. Answers suggestive of orthorexia were given a score of 1 (given to 'always' or 'never' according to the specific item) and those indicating healthy attitude were given a score of 4[2,4].Total score was used for analysis. A total score of less than 40 is considered suggestive of orthorexia while higher scores suggest normal eating behaviour[2,4].

Eating Attitudes Test-26 (EAT-26) is a screening instrument that has a validated questionnaire which includes 26 questions. It is scored using a 6-point Likert scale scored from 0=never to 3=always. This tool is widely used to assess risk for various types of disordered eating. [12,13]

Body Dysmorphic Disorder Questionnaire (BDDQ) screening instrument has a validated questionnaire which includes a set of 4 questions. Most questions are yes/no, and the more yes answers present are more suggestive of body dysmorphic disorder. Diagnosis occurs if a subject receives a total score of 4 by answering yes to the first two questions, yes to at least one part of question three, and indicates spending one or more hours per day thinking about their appearance [2].

Obsessive Compulsive Inventory-Revised (OCI-R)[8] is a validated questionnaire to assess tendencies which are seen typically in Obsessive Compulsive Disorder. This questionnaire has 18 items divided into 6 sub-scales that are scored on a 5-point Likert scale. The higher numbers indicate higher obsessive compulsive tendencies. This tool has also been used in relation to orthorexia in some previous studies. The scores were totalled and used for analysis [2]. Criteria suggestive of OCD: Total Score > or =21[2].

The study protocol was submitted for the approval of the Institutional Ethics Committee (IEC) of Kasturba Medical College, Mangalore. After the approval from ethics committee, permission was obtained from the Dean of Kasturba Medical College, Mangalore and the Principals of other colleges. The participants were provided with participant information sheet and informed consent was obtained from them. Data collected from students was entered and analyzed using SPSS version 20. The descriptive statistics were done in terms of percentages, means, medians etc. Uni-variate analysis was done using Chi-square test. The factors associated with For eg. Age, gender, etc. were tested using Chi-square test and Mann-Whitney U test.

Results

Table 1: Shows the demographic data of the subjects surveyed. A total of 366 subjects were taken, 201 males and 165 females.

Out of these 190 were medical students and 176 commerce students.

GENDER	Frequency
MALE	201(54.9%)
FEMALE	165(45.1%)
Total	366

CATEGORY	Frequency
MEDICAL	190(51.9%)
NON MEDICAL	176(48.1%)
Total	366

Table 2: Shows the number of subjects diagnosed with orthorexia nervosa using the ORTO-15 test keeping 40 as threshold.

CATEGORIES	Subjects with Orthorexia	Subjects without Orthorexia	Total
MALE	158(78.62%)	43(21.3%)	201
FEMALE	126(76.36%)	39((23.6%)	165
	284(77.5%)	82(22.4%)	366

Out of the 366 students surveyed, 284 had a score less than the cut off of 40, and were diagnosed with orthorexia.

Of total subjects 78.6% males and 76.36% females had orthorexia.

Table 3: Shows the proportions of subjects in the various determinants like Eating Attitude Disorder according to EAT-26, Subjects having a score of 21 or above , BDDQ (Body Dysmorphic Disorder) based on the questionnaire.

	Subjects with Eating Attitude Disorder	Subjects with Body Dysmorphic Disorder	Subjects with Obsessive Compulsive Tendencies
MALE	32(15.92%)	11(5.47%)	128(63.6%)
FEMALE	25(15.15%)	15(9.09%)	99(60%)
TOTAL	57(15.57%)	26(7.1%)	227(62.02%)

Out of **366 subjects surveyed 57 had Eating Attitude Disorder i.e a score of equal to or more than 21.** Of total subjects, 15.9% males had Eating Attitude Disorder and 15.15% females had Eating Attitude Disorder.

There is no significant difference in the proportions of Eating Attitude Disorders amongst males and females.

Out of the total subjects, 26 had Body Dysmorphic Disorder i.e a score of 4 on the BDDQ. Of the total subjects, 5.47% males had Body Dysmorphia and 9.09% females had Body Dysmorphia.

There is no significant difference in the proportions of Body Dysmorphia amongst males and females.

Out of the total subjects surveyed 227 had obsessive compulsive tendencies. Of the total 63.6% males and 60% females had OC tendencies.

There is no significant difference in the proportions of Obsessive Compulsive Tendencies amongst males and females.

Table 4: Association between Orthorexia Nervosa and other modalities

		ORTHOREXIA NERVOSA		P value
		Subjects with ON	Subjects without ON	
Eating Attitude Disorder	Subjects with Eating attitude disorder	47 (16.5%)	10	0.338
	Subjects without Eating attitude disorder	237	72	
Obsessive Compulsive Tendencies	Subjects with Obsessive compulsive tendencies	184 (64.7%)	43	0.042
	Subjects without Obsessive compulsive tendencies	100	39	
Body Dysmorphic Disorder	Subjects with Body Dysmorphic Disorder	23 (8.09%)	3	0.168
	Subjects without Body Dysmorphic Disorder	261	79	

From the above table it can be found out that there is association between orthorexia nervosa with eating attitude disorder and body dysmorphic disorder, although it is not statistically significant.

Although there was a significant association (p value=0.042) in the proportions of Orthorexia Nervosa and Obsessive Compulsive Disorder.

Amongst the 284 subjects diagnosed with orthorexia nervosa, 64.7% showed obsessive compulsive tendencies.

Discussion

In our study with sample size of 366 proportion of Orthorexia Nervosa was found to be 77.5% which indicates prominence of Orthorexic subjects. Similar results were obtained in a study by Ramaciotti et al.[1] with proportion of orthorexia as 57.6% among the samples.

This is in contrast to some other studies by Donini et al[4] and Rebecca Reynolds[9], where proportions are as low as 6.9% and 21% respectively.

No statistically significant correlation was found between proportion of ON and gender which is consistent with findings reported in a study by Varga et al[7].

However, many studies report higher prevalence of Orthorexia Nervosa in females than males.[1,2,10] Surprisingly a study by Sanlier et al[11] reported higher prevalence of ON in males.

In our study proportion of Orthorexia Nervosa, Obsessive compulsive tendencies, Eating Attitude disorders and Body Dysmorphic disorder didn't statistically correlate with Socio-demographic data.

According to Ramaciotti et al[1], there were no significant differences comparing ON and non ON subjects as regards socio-demographic details, our research is coinciding with Ramaciotti et al[1].

In a study done by Bundros[2], a statistically significant positive correlation was found between prevalence of Orthorexia Nervosa and obsessive compulsive traits.

Koven et al[3] reported similar findings. The current study also confirms this correlation between ON and OCD. (chi square=4.120 , pvalue=0.042).

No statistically significant correlation was found between ON and Eating attitude disorder in present study.

On the contrary, positive correlation between ON and Eating attitude disorder was reported by Bundros et al[2] and Rebecca Reynolds[9].

Conclusion

Through our study we found that there is a high proportion of ON amongst college going students. OCD was found to be a risk factor for Orthorexia. Though a lot of research has not been done on this subject, it requires more attention as its prevalence is increasing amongst youngsters. In later stages, it might manifest as an array of negative physical, psychosocial and occupational consequences and lead to body dysmorphia.

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Case Report

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A 35 year old male (known immune surveillance) who had been on Anti-Retroviral therapy since 2010 presented with fever, weight loss and chronic cough.

Clinically he had features suggestive of pleural effusion which was exudative on evaluation with a raised ADA (102) and positive MTB PCR. Resistance testing was suggestive of MDR TB. He was started on second line ATT, to which he failed to respond and developed postural symptoms.

His electrolyte profile revealed a persistent hypokalemia (K – 1.9 MG/DL). The drugs that he was on are not known to cause hypokalemia. On evaluation he had features of increased loss of potassium in the form of increased spot potassium levels in the urine and TTKG > 4.

- Urine Osmolality - 362 mOsm/kg
- Plasma Osmolality - 302 mOsm/kg
- Serum K^+ - 1.6mEq/L
- Urine K^+ - 29 mEq/l
- TTKG - 15

On further evaluation, an ABG was done which revealed metabolic acidosis.

pH – 7.22

pCO_2 – 21.3

Serum HCO^3 - 9.6 mEq/L

Anion gap - 11

As a part of further work up urine anion gap was calculated

- In this patient urinary anion gap was : 3
- Urine parameters:

Na+	-	121mEq/l (25-301)
K^+	-	29mEq/l (11-80)
Cl^-	-	147mEq/l (27-371)
24hr urinary protein	-	232 mg/24hr
24hr phosphate	-	299mg/24h

On the basis of urinary pH > 5.5, plasma HCO^{3-} < 15 mEq/l, Urine K^+ > 15 mmol/l, serum potassium levels sug gestive of hypokalemia, ABG: s/o Metabolic Acidosis, a positive urine anion gap with normal blood anion gap and hypotension, a diagnosis of Renal Tubular Acidosis – Distal was entertained.

To confirm the diagnosis, a Urine blood carbon dioxide gradient was done which showed a gradient of 2 (U- CO_2 – 44 mmol/l, B- CO_2 – 42 mmol /l). A UB –CO_2 gradient of less than 20 which is suggestive of a Distal RTA.

Biostatistics - Is It A Boon Or A Bane?

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One of the medical students had said about statistics that, "If I had only one day left to live, I would live it in my statistics class: because it would seem so much longer". It is no secret that medical students don't like statistics, but they are an essential tool for doctors. It continues to be the bane of students, most of whom consider the statistics course as a painful rite of passage on the way to an academic degree.

Quiet often the doctor says "I am too busy treating a patient to do research". So Why should I know something about statistics? The reasons are manifold. Statistics is becoming increasingly more important in modern society with passing time. In order to realistically understand the subject of statistics it is important to appreciate the rationale behind why and how statistics is used at large. Medicine is a continuously evolving science and is becoming increasingly quantitative. The planning, conduct, and interpretation of medical research are becoming increasingly reliant on statistical methodology. Many medical journals require a high level of statistical sophistication from their authors. It has furthermore become evident that the analysis of much of the research in the health sciences depends on highly advanced statistical methods. In order to begin our analysis as to why statistics is necessary we must begin by addressing the nature of science and experimentation. The characteristic method used by researcher when he/she starts his/her experiment is to study a relatively small collection of subjects, as complete population based studies are time consuming, laborious, costly and resource intensive. The researcher draws a subset of the population called as "sample" and studies this sample in depth. But the conclusions drawn after analyzing the sample is not restricted to the sample but is extrapolated to the population i.e. people in general.

When the application of statistics is in medical and health related field it is termed as Biostatistics. It is nothing but learning from data. It guides the way we collect, organize, present and interpret data. It helps us to weigh the evidences and draw conclusions. It should not be considered as merely pushing numbers through formulas and computers. The aspects of organization, presentation, and summarization of data is labelled as descriptive statistics and the other branch is inferential statistics which is concerned with logical basis of drawing inferences regarding populations based on the results from samples. The concept of drawing inference from sample to population has as its underlying foundation, the theory of probability. It does not mean that one needs to know the mathematical theory in order to use the statistical methods effectively. It is sufficient to know which technique to be used and proper interpretation of results.

We all are familiar with the statement, "There are three kind of lies-Lies, Damn lies and Statistics"- made by the former British Prime Minister Banjamine Disraeli. This clearly shows that if statistical methods are not used properly, it is more dangerous than damn lies. But if used appropriately, it will serve as a strong and essential tool in conveying the message meaningfully and validly.

Any researcher collects information with the aim to draw valid conclusions regarding the research question. The information collected is basically with the purpose of two broad things. The researcher is either interested in estimating a population parameter or testing a hypothesis concerned with population parameter. An estimate is a numerical value which is used to estimate the corresponding population parameter. Hypothesis testing as against estimation deals with testing the statements dealing with population parameters. The researcher states a hypothesis to be tested, formulates an analysis plan, analyzes sample data according to the plan, and accepts or rejects the hypothesis, based on results of the analysis. But in either methods of research it is important to balance the findings of research work in terms of statistical significance and clinical significance. The statistical significance is normally quoted in popular 'p' value (the chances of our having gone wrong from our study sample) and the reliability of research work in terms of confidence interval (CI). If $p>0.05$ it is accepted that results could be spurious and due to chance. CIs provide information about how precise the estimate is. Wider CIs indicate lesser precision and narrower CIs indicate greater precision. A very wide interval may indicate that more data should be collected before anything very definite can be said about the parameter. Thus statistics needs to be used as a guide to decision making rather than a mandate. Good statistics are based on good data and fancy statistical methods do not rescue garbage data.

Sir Jonathan Hutchinson [1828-1913]

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What's in a name? That which we call a rose by any other name would smell as sweet." said Shakespeare in the famous classic, Romeo and Juliet. But, the name of Sir Jonathan Hutchinson epitomises a true clinician.

Sir Jonathan Hutchinson was born to a well-to-do middle class family on 23 July 1828 at Selby, Yorkshire, England. His father had a rather unhappy childhood at the boarding school and hence, Sir J.H., the second child of twelve siblings, was educated at home by Misses Proctor. In his diary, which he kept, he writes of happy childhood with Society of Friends where there were narrow religious beliefs. The cut of clothes and width of the hat brim were extremely important outward signs of religious conformity. But there was enough enjoyment as seen in large families with rallies, meetings, feast days, country festivals, annual seaside holidays, excursions and pursuits. As an adolescent he had an intense desire to dedicating his life to bettering the lives of the less fortunate. Such was his passion, that his father broke the family tradition and allowed J.H. to study medicine. Incidentally, his elder brother also broke the family tradition and became a dentist.

In 1845, he was apprenticed to Caleb Williams, apothecary and surgeon at York, for a period of five years. During these years he read well, including French, Greek, Latin and German. The period of apprenticeship brought him to intimate contact with down-to-earth medical practice of the day. He eventually attended lectures at the York Medical School. The religious beliefs, love and other events in his life made his revisit his resolve and he plunged wholeheartedly to study medicine. He recorded more and more cases and read more from the medical library. Such was his resolve that at age of 20 yrs he was appointed House Surgeon at the County Hospital during the absence of the regular surgeon. In 1850 he left York and joined St. Bartholomew's Hospital Medical School, where he came under the powerful influence of Sir James Paget. The two men had a great attraction and soon Sir Paget became more of a friend and adviser than a teacher. He finely balanced two parallel paths over the next few years of medical man at day and philanthropic work by evening and weekends. The six years 1853-1859, when he was surgeon at London, laid the foundations for his future achievements. By 1862, he passed the exam for the Royal College of Surgeons and by 1875, he was on his way to become a well-known surgeon at London. He became the President of the Hunterian Society in 1869, Vice-President of Royal College of Surgeons in 1886 and President in 1889-90. He delivered the famous Hunterian Oration in 1890. In 1875, he published the first volume of "Illustrations of Clinical Surgery". Amongst his other publications are "Aid to Ophthalmic Medicine and Surgery", "Framboesial Syphilis" and "The Pedigree of Disease". The years after 1883 reaped rich harvests for his life of dedication. He received the Honorary Degrees from University of Cambridge, Edinburgh, Glasgow, Dublin, Leeds and Oxford, and holder of many honorary fellowships of foreign societies. Moreover, he was a great teacher and admirable speaker, he attracted larger number of students by his demonstrations. He was the founder of museum called *"The Hutchinson Educational Museum"* established at Haslemere in 1888. Sir J.H. chose his own epitaph and it read "A Man of Hope & Forward-Looking Mind".

His Eponyms:

- Hutchinson's angina
- Hutchinson's sign in ophthalmic herpes zoster
- Hutchinson's facies- Facial appearance of drooping of eyelids & external ophthalmoplegia in neurosyphilis
- Hutchinson's melanotic freckle now known as melanoma in situ
- Hutchinson's melanotic disease
- Hutchinson's prurigo
- Hutchinson's teeth in congenital syphilis
- Hutchinson's triad- Interstitial keratitis, malformed teeth & eighth nerve deafness
- Hutchinson's disease now known as sarcoidosis
- Hutchinson-Gilford Progeria syndrome
  (He was the first to describe progeria in 1886)