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Medical Director,
B.K.L. Walawalkar Rural Medical College, Savarde, Tal. Chiplun, Dist. Ratnagiri
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Editorial

Shri Vitthalrao Joshi Charities Trust started Bhaktshrestha Kamalakarpant Laxman Walawalkar Hospital, Diagnostic and Research Centre in 1996, to cater needy patients of rural Konkan.

This ISO certified hospital has been on a growth trajectory & has set its sights on new objectives with the only aim of serving the society. It now intends to set-up a Medical College to train competent doctors, who will be capable of serving the healthcare needs of the poor & the downtrodden.

Today the B.K.L Walawalkar Hospital Diagnostic and Research Centre is in the midst of expansion from serving 300 beds capacity to 500 beds capacity with 14 operation theatres. This hospital would soon become a teaching hospital and would be attached to B.K.L Walawalkar Rural Medical College. All the operation theatres are air-conditioned and include laparoscope, image intensifiers, different types of monitors & ventilators. These operation theatres would handle a range of surgeries including simple procedures for treatment of hernia to complicated ones like that for knee replacement, spine surgeries, Cancer surgeries. The B.K.L.Walawalkar Hospital is the only hospital in Konkan region with 300 beds (expansion to 500 beds) and 6 intensive care units like MICU, SICU, NICU, PICU, post operative recovery room. 14 well equipped operation theatres with laparoscopic facilities, image intensifier, endourology facility. Various specialty and super-specialty services like Medicine, Surgery, Paediatric, Orthopaedics, Obstetrics and Gynaecology, Ophthalmology, Oncology, ENT, Pathology, Blood Bank, Blood Component Unit, Radiology, Endoscopy and supportive services departments are available at B.K.L Walawalkar Hospital.

Today, the world is witnessing the activities of Walawalkar Hospital in its mission of serving the poor. A tiny, neglected village like Dervan in Ratnagiri district has now firmly established its place on the map of India. The self-less work of the hospital has been appreciated, especially by people from outside India leading to students from different countries visiting the hospital to study & learn. So far, students from Rosalind Franklin University (USA), Barcelona University (Spain), National University of Singapore (Singapore) and Hamburg University (Germany), Oxford University (U.K.) have visited & worked at the hospital. Their stay also made them interested in Indian culture. A dedicated group of about 30 medical professionals from Newcastle (UK) has been visiting Dervan every year for the past 10 years and carrying out complicated surgeries. As the poor population of Konkan would never have the opportunity to travel abroad for treatment, Walawalkar Hospital has instead brought the same treatment at their doorstep.

A medical college with 100 seats is envisaged for the year 2014 by S.V.J.C. Trust as there is a dire emergency to provide modern medical services to the rural population at their door steps. Medical students trained from this college are expected to offer their services to the local communities. This would then improve the overall quality of health-services in these communities. Students will get an opportunity to carry forward the research already going on at B.K.L. Walawalkar Hospital.

Thus the main objectives of the Rural Medical College would be to achieve academic growth, provide good doctors in rural area who in turn would serve the rural population, give an impetus to research and thus achieve overall upliftment of the society as a whole. Other objectives would to
produce high quality academically excellent and research oriented doctors who would serve in rural areas, to be an academic institution of excellence both in the field of curative medicine and public health, to conduct research in priority areas this would lead to positive policy changes and implementation and to establish strong foundation of public health and community medicine for the overall upliftment of the society.

Research would be the future vision of the institution and it is intended that such research would bring about positive policy changes which would be implemented at field level. Thus the loop between research, policy and implementation would be completed. With this vision in mind B.K.L Walawalkar Rural Medical College is delighted to bring its first issue of Medical Journal titled “Walawalkar’s International Medical Journal”. I thank the editorial members for their immense contribution.
Need for unique assessment parameters and interventional modalities in community dentistry for school going children.

Asawari R. Modak, Mugdha D. Shirsat, Avinash B. Kondejkar
Dept. of Dentistry
BKL Walawalkar Rural Medical College and Hospital

Abstract:
The present study was conducted in rural areas of Konkan region in which a total of 5256 school children from age group of 6 to 15 years were screened and 4750 children (90.37%) who were found to have dental caries were referred to the BKL Walawalkar hospital for dental treatment. A total of 3582 school children received treatment in the hospital. New parameters like caries teeth percentage and functional capacity percentage were assessed both at the time of screening and 1st follow-up. The prevalence of caries was found to be 90.37%, at the time of screening, the caries teeth percentage was 23.91% in group I (6years to 10years) and the caries teeth percentage was 13.33% in group II (11years to 15years). Caries teeth percentage is the number of caries teeth present in the mouth in relation to the total teeth. Functional capacity percentage was 38.24% in group I (6years to 10years) and in group II (11years to 15years) it was 58.93% at the time of screening. After treatment at the hospital by interventions like Glass ionomer cement (GIC), Permanent filling (P.F), extraction and X ray, the caries teeth percentage was brought down by 6.75% in group I (6years to 10years) and 3.13% in group II (11years to 15years) and functional capacity improved by 77.34% in group I (6years to 10years) and was improved by 82.18% in group II (11years to 15years). The data analysis was done using S.P.S.S software and appropriate statistical tests were applied for proving the statistical significance of results. Thus the study proposes that the above unique assessment tools/indicators and interventions should be used apart from the usually used prevalence of caries and DMFT indices.

Key Words
Prevalence of caries, Caries teeth percentage, functional posterior teeth percentage, functional capacity percentage, interventions.

Introduction
School going children constitute an important fraction of the total population. School children are also having tremendous latent potential as future human resource of any country. The health issues associated with school children are unique and need special interventions. Oral hygiene is often poor which leads to dental caries and a host of other oral and dental problems. Nutritional status in school children also needs attention and many of them require nutritional supplementation. Keeping in mind the above challenges B.K.L Walawalkar Hospital started its School Dental Health Project with special emphasis on oral and dental hygiene. This project was implemented in Zilla Parishad school children so that adequate follow-up and monitoring could be maintained.1 2

Objectives
- To screen school children for dental problems, to assess the prevalence of dental caries.
- Modifying the WHO dental assessment format and including new indicators like caries teeth percentage, functional posterior teeth percentage and functional capacity percentage.
- Providing curative interventions like Glass ionomer cement (GIC), Temporary filling (Z.O.E), Permanent filling (AgF), extraction and X ray at hospital level.
- Sequential follow-up of children for keeping a track of their dental status by maintaining data of each tooth of each child in appropriate database.

Materials and Methods
The study was conducted in Ratnagiri district of Konkan region which lies in Western Maharashtra and which consists of 9 Talukas (Administrative Blocks).The main reason for choosing this geographic area was the high prevalence of untreated

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carious lesions and malnutrition. Dental caries were hypothesized as both a cause and effect of malnutrition. Poor oral and dental hygiene when superadded with tobacco chewing increased the chances of oral malignancies many folds3. The prevalence of oral malignancies in Ratnagiri district is very high i.e. in male 9.5/ 100000 population and 4.7/100000 population4. This prompted us to consider an oral health project targeting the school children which would improve the oral health status and spread awareness regarding ill effects of tobacco chewing. Amongst 9 Talukas (Administrative Blocks) of Ratnagiri district, 1 taluka i.e. Chipuln Taluka was randomly selected. Chipuln taluka has an area of 130. 31 sq kms with a total population of 2.22,735 people. It has a total of 168 villages which have a total of 35 Kendra School’s (Each Kendra School consists of about 8 to 12 schools under it). Out of the 35 Kendra Schools, 11 were selected randomly. All the schools under these 11 Kendra’s i.e. a total of 118 schools were selected for the project. All the children from 1st Standard to 7th Standard (i.e. 6 years to 15 years) who were present during the screening were included for the purpose of the project. A total of 5256 children were screened for carious teeth, 4750 were referred and 3582 were treated by various interventions at the hospital. The organizational and administrative workout like approval from authorities like chief executive officer, district education officer, micro-planning for selecting the schools, operational and logistic planning, human resource allocation, monitoring and evaluation mechanism, referral services were carried out in a systematic manner.

A pilot screening of the project was conducted before the start of the study with an aim to screen and assess prevalence of caries, caries teeth percentage, loss of functional capacity and treatment needs. Modifications were made in the WHO dental assessment proforma for clarity and easy accessibility. The norms for analysis of the data were set and only then the research project was initiated. Proper informed consent was obtained from parents of all school children and school teachers before starting with the treatment procedure. The screening of school children was carried out by a dental team which visited each school according to schedule. Oral examination of each child was conducted by seating the child on a chair in day light using required instruments. The required data for conducting research was collected and recorded using a printed form. A structured questionnaire proforma was used which included questions regarding personal data, anthropology, etc. A modified WHO format for recording the denition status and treatment form was used to generate comprehensive record of “Each tooth of each student”. A session on importance of oral health was undertaken along with an interactive demonstration on thorough brushing and mouth rinsing techniques. Distribution of free toothbrush and toothpaste was done to each school child in order to promote good oral cleaning habits.

The essential instruments used for screening were mouth mirror, straight probe, explorer and pair of tweezers. Sufficient numbers of instruments were made available to have an uninterrupted examination. At field level the used instruments were disinfected using korsole.

Those children who required treatment were referred to B.K.L Walawalkar hospital, here they were treated for carious teeth and procedures were carried out to increase their functional capacity. Scaling i.e. Oral prophylaxis was performed to restore the normal health of gums. Extraction was done in case of over-retained deciduous teeth to avoid malocclusion. The essential instruments used for referrals were, airotar handpiece for cavity preparation, filling instruments like round condenser, cement carrier, pedo extraction forceps, ultrasonic scalers, to name a few. In the hospital all instruments were sterilized by autoclaving. Sequential follow-up of all school children were done at 6 months and 1 year to know the impact that the project is having on the parameters developed.

Unique assessment parameters used for the purpose of the study:

i. Prevalence of Caries: Number of children having caries teeth*100/ Total number of children screened

ii. Caries Teeth Percentage (C.T %): Number of carious teeth (C.T)*100/Total number of teeth (T.T)

iii. Total Functional Pair = Functional pair (R) + Functional pair (L)

iv. Functional posterior teeth percentage (F.P.T %) = Functional posterior teeth (FPT)*100/ Total posterior teeth (P.T)

v. Functional capacity percentage (FC %) = Total Functional pair (TFP)*100/ Total pair (TP)

Results

Despite credible scientific advances and the fact that caries is preventable, the disease continues to be a major public health problem. The research study was carried out in zilla parishad schools of chipuln taluka. In school going children belonging to 6yrs to 15yrs of age group. A total of 118 schools out of 363
schools were randomly selected. Among this 3582 school children in the age group of 6 to 15 years were treated for dental caries out of which 1725 (48%) were males and 1863(51.9%) were females.

**Table No 1**(sex)

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
</tr>
</thead>
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<td>48.1</td>
<td>48.1</td>
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<tr>
<td>Female</td>
<td>1863</td>
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<td>0.1</td>
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<tr>
<td>Total</td>
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<td>100.0</td>
<td>100.0</td>
</tr>
</tbody>
</table>

For further studies like prevalence of dental caries and functional capacity, the school children were divided in two groups. Group I included 6years to 10years school children, that was a total of 2464 children (68.8%) and Group II included 11 years to 15 years school children, which was a total of 1118 children (31.2%).

**Table No2**(Age)

<table>
<thead>
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<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
</tr>
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<td>Valid 6 to 10 years</td>
<td>2464</td>
<td>68.6</td>
<td>68.8</td>
</tr>
<tr>
<td>11 to 15 years</td>
<td>1118</td>
<td>31.1</td>
<td>31.2</td>
</tr>
<tr>
<td>Total</td>
<td>3582</td>
<td>99.8</td>
<td>100.0</td>
</tr>
<tr>
<td>Missing System</td>
<td>8</td>
<td>0.2</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>3590</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

As the study was carried out in two parts of which the first part was screening .The school children from both the groups were examined for dental caries and the percentage of caries teeth was recorded i.e. (CT%).In group I the percentage of caries found was 23.91%.

**Table No 3**

CARIES TEETH% (6 to 10 years age group)

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</thead>
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<td></td>
</tr>
<tr>
<td>Mean</td>
<td>23.91</td>
<td></td>
</tr>
<tr>
<td>Minimum</td>
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<td></td>
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</table>

The percentage of caries teeth (CT %) in group II school children was found to be 13.33%.Table No 4

<table>
<thead>
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</thead>
<tbody>
<tr>
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<tr>
<td>Mean</td>
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<td>Minimum</td>
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<td></td>
</tr>
<tr>
<td>Maximum</td>
<td>75</td>
<td></td>
</tr>
</tbody>
</table>

Hence this indicates that the percentage of carious teeth (CT %) is decreased as the age is increased or it can be said that prevalence of dental caries is more in primary dentition as compared to mixed or permanent dentition. During mastication, tooth contact exists. These occur most often during sliding movements in which the direction and the origin are variable. This justifies the concept of an occlusion field of mastication. Centric occlusion is the occlusion most often used during mastication. It is also the occlusion for which the masticator y forces are greatest.6 This occlusion determines the functional capacity(FC%), which can be calculated by pairing posterior teeth as upper right side with lower right side and upper left side with lower left side. In this way we can calculate the functional pair for each dentition. In case of primary dentition i.e. when only deciduous teeth are present there are only four functional pairs. During mixed dentition when both deciduous and permanent teeth are present there are six functional pairs. For permanent dentition there are eight functional pairs. By using these procedures we calculate the functional pairs and also the percentage functional capacity for each school children.

The percentage of functional capacity (FC %) was done for both groups.

In group I – 6years to 10years the percentage functional capacity (FC %) at the time of screening was38.24%.

**Table No5**

FUNCTIONAL CAPACITY % (FC%) 6 years to 10 years at screening

<table>
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<tr>
<td>Mean</td>
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</tr>
<tr>
<td>Minimum</td>
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</tr>
</tbody>
</table>
The percentage of functional capacity in group II i.e. 11 years to 15 years at the time of screening was found to be 58.93%.

Table No 6
FUNCTIONAL CAPACITY % (FC %) 11 years to 15 years AT SCREENING

<table>
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</tr>
<tr>
<td>Mean</td>
<td>38.24</td>
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<tr>
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<td></td>
</tr>
<tr>
<td>Maximum</td>
<td>133</td>
<td></td>
</tr>
</tbody>
</table>

This indicates that the functional capacity is less in group I that is in 6 years to 10 years school children. The studies also indicates that in primary dentition the functional capacity is less and which can be due to various factors like wrong feeding habits introduced by mothers, improper brushing teeth, snacking and many more.

The second part of the study consists of referral. In this phase the school children were treated for dental caries and also other respectful treatment like scaling and extraction was performed, for which the school children were brought to B.K.L. Walawalkar Hospital Dental Department.

The treatment procedure were also followed in similar pattern in two groups that is group I 6 years to 10 years and group II 11 years to 15 years.

After treating the group I school children for dental caries the percentage of caries teeth (CT%) was reduced by 6.75%. Table No 7
CARIES TEETH % after treatment in 6 to 10 years age group

<table>
<thead>
<tr>
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<th>Valid</th>
<th>2462</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>Missing</td>
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</tr>
<tr>
<td>Mean</td>
<td>6.75</td>
<td></td>
</tr>
<tr>
<td>Minimum</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Maximum</td>
<td>88</td>
<td></td>
</tr>
</tbody>
</table>

After treating school children in group II also showed decrease in percentage of caries teeth (CT%) by 3.13%. Table No 8
CARIES TEETH % after treatment in 11 to 15 years age group

<table>
<thead>
<tr>
<th>N</th>
<th>Valid</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Missing</td>
<td>0</td>
</tr>
<tr>
<td>Mean</td>
<td>3.13</td>
<td></td>
</tr>
<tr>
<td>Minimum</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Maximum</td>
<td>62</td>
<td></td>
</tr>
</tbody>
</table>

The study of prevalence of dental caries in school children from 6 years to 15 years can be better explained by drawing a comparison in before and after conditions that is at the time of screening and after getting treated.

This was again done separately for both groups. Graph No 1

Statistically Significant (P value < 0.01 using Standard Error of Difference between two means)

The bar graph No 1 above shows the figures, that shows the difference for percentage of caries teeth (CT%) at screening and after treatment. Similar assessment was also done for percentage of functional capacity (FC%) in both groups i.e. group I and group II. It showed increase in functional capacity in both groups. The difference was found to be statistically significant at 99% confidence limit using standard error of difference between two means test.

In group I the functional capacity (FC%) was increased by 77.34%.

In group II the functional capacity (FC%) was increased by 82.18%

The increase in functional capacity in group I and Group II was found to be statistically significant (p value < 0.01) using standard error of difference between two means statistical test.

PRE AND POST INTERVENTION EFFECT ON FUNCTIONAL CAPACITY % (Graph No 2)
The above bar graph No 2 shows the before and after results of increased in functional capacity(FC%). To summaries the whole, study of prevalence of dental caries in school children from 6 years to 15 years group with before and after conditions, that is at the time of screening and after getting treated for dental caries teeth. The percentage for caries prevalence was drawn which showed that about 90% of the school children had decayed teeth at the time of screening and after getting treated for this decayed teeth the percentage was reduced to 34.6%.

The bar graph No 3 shows the percentage of caries prevalence before the treatment and after getting treated for dental caries.

**Discussion**

Dental caries is a highly prevalent dental disease amongst school children, which is frequently neglected by the children and parents until it reaches terminal stages with painful consequences. Multiple untreated carious lesions are frequently observed among rural children because of low priority to dental caries, lack of awareness, unavailability of dental manpower and fear towards dental treatment. Caries is the most prevalent dental disease in both primary and permanent dentition. [7] By assessing the needs for dental disease among the school children, the greatest need was for one surface restoration, followed by two surface restoration, pulp restoration, extraction and other care. [7]. In this study of prevalence of dental caries the school children belonging from 6 years to 15 years were selected. For better study they were divided in two groups. The group I included children from 6 years to 10 years and group II included from 11 years to 15 years. The study showed that the percentage of prevalence of dental caries was high in first group that is 6 years to 10 years. During the study it was found that the percentage of the prevalence of dental caries was decreased in group II 11 years to 15 years. This showed that as age advances the prevalence of dental caries decrease or it can be said that the prevalence of dental caries is more in deciduous dentition as compared to mixed and permanent dentition. [7,9,10,18] On assessment of treatment required, among two groups it was found that group I that was 6 years to 10 years required more treatment. [8,19,21,22] Untreated oral diseases in children frequently lead to serious general health, significant pain, interference with eating and lost school time. A world health organization [WHO] estimation of global DMFT for 12 years old children reported in 188 countries included in their data base that on global basis 200, 335, 280 teeth were decayed, filled, or missing among just that age of group. [21]. World health organization [WHO] continues to advocate that efforts to improve the overall situation are still highly indicated. [20,21]

A study on oral health assessment and dental health education of children at an early age helps in improving preventive dental behavior and attitude which would be beneficial for lifetime. It would also help reducing amount of malocclusion and at same time awareness for oral hygiene to reduce the risk of oral cancer cases.

The result of this study is a pointer to the fact that there still exist a large segment of the population who continues to remain ignorant about the detriment effect of poor oral health and multiple benefits enjoyed from good oral health. One of the oral health advocated by WHO for 2000 AD(22) was that...
50% for 5 years to 6 years olds should be free from dental caries. It also points to the fact that new indicators like caries teeth percentage, functional posterior teeth percentage and functional capacity percentage need to be developed and used in community dentistry for school children.

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Effect of Ramadan Fasting on Renal Function Markers in Healthy Adults from Aurangabad

Shilpa B. Asegaonkar, Ishrat Kareem, Jayshree S. Bavikar, Avinash Pagdhune, Sunita Aghade, Anand P. Thorat

a-Assistant Professor b,c-Associate Professor, d,e-Senior Resident f-Professor and Head
Department of Biochemistry, Government Medical college, Aurangabad

Abstract:

Background: Ramadan fasting is a religious obligation followed by Muslims worldwide. No intake of food and water from sunrise to sunset often results in changed hydration status. Generally there is belief of renal dysfunction due to dehydration during Ramadan fasting. However, there is scarcity of scientific literature regarding its effects on renal function in healthy individuals. This study was aimed to evaluate alterations in renal functions due to long intermittent fasting schedule in the holy month of Ramadan.

Material and Methods: Thirty three normal healthy volunteers (age group 23-52 years) from the same large joint family were enrolled in this study. Blood and urine samples were collected twice: first, one day before Ramadan after a 12-hour overnight fast (baseline) and second on the 28th day of Ramadan. Blood samples were assayed for urea, creatinine and uric acid levels and urine for microalbuminuria.

Results and discussion: Mean age of the subjects was 43.8±5.4 years. There were slight but nonsignificant reductions in blood urea, serum creatinine, uric acid levels and microalbuminurea of the participants (p>0.05) from pre Ramadan to post Ramadan state. Our study findings revealed no significant impact of long intermittent fast of Ramadan on renal function markers. Mean difference between pre Ramadan and post Ramadan values of blood urea was 2.4 mg%, serum creatinine was 0.2 mg%, uric acid 0.6 mg% and microalbuminurea 3 mg/dl which are statistically not significant.

Conclusion: Among healthy individuals renal functions are not altered due to Ramadan fasting.

Key words: Ramadan fast, urea, creatinine, uric acid, microalbuminuriea.

Introduction

Ramadan fasting is a religious obligation followed by Muslims worldwide. In this month, there is no intake of food and water from sunrise to sunset. Hence energy and water intake is often reduced resulting in changed hydration status. Also there is alteration in the pattern of diet, sleep and behavior of people practicing Ramadan fasting. In this holiest month, two meals are consumed, one before sunrise called Suhore and another meal after sunset called Iftar. Islamic fasting is unique physiological model of fasting differing from experimental fasting because sometimes period of abstinence from liquid and food may extend for more than 12 hours. Decreased consumption of fluids, that too only in nocturnal period has effect on hydration status and body mass. Generally there is belief of renal dysfunction due to dehydration during Ramadan fasting. However, there is scarcity of scientific literature regarding its effects on renal function in healthy individuals. This study was aimed to evaluate alterations in renal functions due to long intermittent fasting schedule in the holy month of Ramadan.

Materials and Methods

Present study was conducted as per the guidelines of Institutional Ethics Committee.
Thirty three normal healthy volunteers (age group 23-52 years) from the same large joint family were enrolled in this before after study. All participants had the same diet, behavior, culture and level of physical activity. Participants practiced fasting from sunrise to sunset for at least 25 days during Ramadan. Informed consents were obtained from all the participants. Blood and urine samples were collected twice: first, one day before Ramadan after a 12-hour overnight fast (baseline) and second on the 28th day of Ramadan, just before sunset. Urine samples were collected in sterile container. To avoid day to day laboratory variation, all blood and urine samples were assayed on the same day in a single batch. After serum separation, blood urea, serum creatinine, uric acid was assayed using commercial kits from Erba on fully automated chemistry analyzer from Transasia. For microalbuminurea, its quantitative estimation was done by turbidimetric immunoassay using commercial kits from AGAPPE diagnostics.

**Statistical Analysis**

Data was compiled and analyzed using SPSSv10 software package. It was expressed as mean +/- S.D. (standard deviation). Student’s paired‘t’ test was used to compare pre and post Ramadan status variables. Cut off value for significant p values considered was 0.05.

**Results**

Mean age of the subjects was 43.8 +/- 5.4 years. There were slight but nonsignificant reductions in blood urea, serum creatinine, uric acid levels and microalbuminurea of the participants (p> 0.05) from Pre Ramadan to post Ramadan state. This data pertaining to the effect of fast on renal function markers has been summarized in the following table.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Before Ramadan Mean± S.D.</th>
<th>After Ramadan Mean± S.D.</th>
<th>Difference in Mean</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blood Urea mg%</td>
<td>24.6±3.8</td>
<td>22.4±2.2</td>
<td>2.4 mg%</td>
<td>0.062</td>
</tr>
<tr>
<td>Serum Creatinine mg%</td>
<td>1.1±0.3</td>
<td>0.92±0.2</td>
<td>0.2 mg%</td>
<td>0.059</td>
</tr>
<tr>
<td>Serum Uric acid mg%</td>
<td>5.8±1.2</td>
<td>5.2±1.2</td>
<td>0.6 mg%</td>
<td>0.063</td>
</tr>
<tr>
<td>Microalbuminurea mg/dl</td>
<td>32±12</td>
<td>29±8</td>
<td>3 units</td>
<td>0.06</td>
</tr>
</tbody>
</table>

NS- Not significant

**Discussion**

Present work was aimed to ascertain whether fasting in Ramadan has beneficial or detrimental effect on renal function due to restricted intake of fluids for long period. Our study findings revealed no significant impact of long intermittent fast of Ramadan on renal function markers. Mean difference between pre Ramadan and post Ramadan values of blood urea was 2.4 mg%, serum creatinine was 0.2 mg%, uric acid 0.6 mg% and microalbuminurea 3 mg/dl which are statistically not significant. Confounders’ effects were kept minimal by including all subjects from same family for recording baseline and post Ramadan samples.

Changed dietary pattern, not only with respect to quantity but quality also with no fluid intake in day time and altered lifestyle is expected to alter functioning of kidney. There are conflicting results about effects of Ramadan fasting on renal functioning. [4] Saada A observed significant rise in blood urea and serum creatinine levels while Indral et al found significant reduction in urea and creatinine values in Ramadan fasting group. [5,6] Nomani et al. reported a significant increase in blood urea level by the end of Ramadan. [7] Azizi in their study stated that during long-term hunger
pangs, serum uric acid increases abnormally, which may be caused by Glomerular filtration and release of uric acid. [8] Effect of Ramadan fast on renal function has been wisely studied in patients of hypertension, type 2 diabetes mellitus and among individuals performing physical exercise demonstrating no harmful effects. [9] Zahid observed low levels of serum uric acid without any difference in urea in his 56 Muslim healthy subjects practicing Ramadan fasting. [10]

Various researchers studied the effect of fasting on renal function tests -blood urea, serum creatinine and albumin in healthy individuals. They reported small but statistically not significant changes on these parameters. The results of our study are consistent with the previous studies [10, 11, 12]. Beneficial effect of insignificant reductions in blood urea, creatinine and urinary ACR were observed in a study by Ola A. [13] Progressive rise in the blood urea nitrogen and reduction in creatinine, but within normal range was observed with the advancement of fasting period in healthy subjects. This could be attributed to dehydration, excessive break down of nucleic acids especially RNA in tissues and restricted energy intake. [14] Creatinine which is synthesized endogenously in muscles is better marker to assess function of kidney. It is neither absorbed nor secreted by renal tubules. While blood urea levels depend on dietary protein intake. Uric acid is an end product of purine metabolism and excreted by kidney. Microalbuminuria is an early marker of renal dysfunction. [15] Khaled Trabelsi and colleagues studied effect of Ramadan fast on renal function after rugby seven matches. They concluded that renal response to matches was not different statistically. [16] In one of the Malaysian study, tubular dysfunction was observed for temporary period during Ramadan fasting. [17]

We investigated effect of Ramadan fasting on renal function markers in healthy young individuals which was not significant. Hence practicing Ramadan fast can be advocated in healthy individuals.

Conclusion
Among healthy individuals renal functions are not altered due to Ramadan fasting. Many factors can influence the effects of Ramadan fasting on biochemical and physiologic parameters like diet, daily activity, sleep pattern, the season of fasting, socio-economic factors, geography and climate. Hence large-scale coordinated multi-centre studies, with standardized methodology, to explore the issue more extensively are warranted.

Conflicts of interests
There is no conflict of interest among all authors of the study.

References:
7. Nomani M. Dietary Fat, Blood cholesterol and Uric Acid Levels
Predictive factors for a successful arterio-venous access for haemodialysis.

Lodh Neemesh Manohar

Corresponding Author:
Dr Neemesh Manohar Lodh, Department of Surgery, B K L Walawalkar Rural Medical College, Sawarde, Taluka Chiplun, District Ratnagiri. Pin: 415606, Maharashtra, India. e-mail address: neemeshl@gmail.com

Abstract

**Background:** This study, aimed to model associations between multiple predictor variables and arteriovenous fistula (AVF) maturation, is based on post-surgery data from 80 patients that received an AVF construction for the first time by a single surgeon. Using these data the factors associated with successful AVF that may have an important role in improving AVF patency rates are elucidated. **Methods:** This prospective study included 80 patients undergoing an AVF construction for the first time by a single surgeon, & followed them up till ascertainment of successful AVF maturation. Multivariable logistic regression methods were used to model associations between multiple predictor variables and AVF maturation. We constructed receiver operating characteristic (ROC) curves, by plotting sensitivity versus specificity of our model predicting AVF maturation. We used the area under the ROC curve (AUC) and odds ratio for predicting optimum venous & arterial diameters for AVF construction. **Results:** With an overall AVF patency rate of 60%, the highest patency rates were observed in brachiobasilic AVFs (89.50%), while brachiocephalic & radiocephalic AVFs had patency rates of 47.10% & 55.60% respectively. Distal venous diameter (ROC cut off) > 2.2mm was a significant predictor of a successful AVF. Using odds ratio, a vein having a diameter of ≥ 2.2mm was 4 times more likely to yield a patent fistula. Proximal arterial diameter (ROC cut off) > 3mm was a significant predictor of a successful AVF. Using odds ratio, an artery having a diameter of ≥ 3mm was 3 times more likely to yield a patent fistula. Previous central venous catheterization, brachial artery diameter, proximal cephalic vein diameter and distal basilic vein flow velocity are significant predictors of a working AVF. **Conclusion:** As per our study, the chances of a working AVF were higher in patients with no previous central venous catheterization, a distal venous diameter of ≥ 2.2mm and a proximal arterial diameter of ≥3mm.

**Key Words:** Arteriovenous fistula (AVF), Haemodialysis (HD), Receiver Operating Characteristics curve (ROC).

INTRODUCTION

With a population over a billion, and an exponential rise in the cases of diabetes, India is fast becoming the leading nation of patients with (ESRF). Approximately 1 million new cases are detected each year, out of which 90 % never see a nephrologist. Of the 10 % who do see a nephrologist, Renal Replacement Therapy (RRT) in the form of haemodialysis, peritoneal dialysis or renal transplantation is initiated in 90 % patients. The remaining 10% are simply unable to afford the prohibitive cost of therapy. [1] HD is an integral part of RRT, and constitutes a short- term measure to cover the run-up to renal transplantation without overt uremic symptomatology. [2] In such a scenario, it is even more pertinent to have a working AVF fistula. A study of the various factors which could have a predictive role in the successful maturation and patency of an AV fistula was hence undertaken.

MATERIALS & METHODS

**Subjects & Data:**
We conducted a prospective study of predictive factors for a successful AVF maturation. In all 80 patients were chosen for the study as per the inclusion and exclusion criteria laid down prior to the study. The study was a prospective one for a period of 2 years, from February 2007 to February 2009 and included male and female patients of all ages with ESRF, planned for an AVF for the first time. The study was commenced after due approval from the hospital ethics committee. Patients with a prior history of fistula surgery, those with vessels unsuitable for a primary AVF, those with arm oedema, especially with a history of prolonged central venous catheterisation & those who were candidates for primary AV graft procedures were excluded from this study. All AVFs were
constructed by the same surgeon, under uniform operating conditions.

Only the first surgical AVF construction during the follow-up period was considered for each study subject. Study variables, including such demographics as age, race, and sex and the presence of various comorbid conditions, such as hypertension and diabetes, were recorded from available medical records. Additionally, cause and length of ESRF and time on dialysis therapy before the surgery were ascertained for each subject.

Preoperative AV mapping was carried out in all patients to assess the most suitable vessels for AVF construction.

AV mapping:
The Colour Doppler imaging was carried out using a Philips Envisor machine with a linear phased array dual high frequency probe of 3-12 Megahertz.

Method: The patient was seated with the arm uncovered & outstretched on a pillow.

The veins were mapped along their natural course, at three places; namely the cephalic vein at the wrist & the cubital fossa, & the basilic vein along the medial aspect of the arm upt0 the subclavian vein, to see for the patency of the proximal central veins. The depth, diameter of the vessels & the flow across the veins was recorded.

Veins which were thin walled, varied in size with respiration, collapsed completely on compression with the transducer probe and augmented with distal compression were chosen for AVF construction. Any thickening or thrombosis was duly observed and noted.

The arteries were similarly mapped; the radial artery at the wrist & the brachial artery along the medial aspect of the arm. The ulnar artery was not routinely mapped in the presence of an adequate radial artery flow. The depth, diameter & flow were noted across the arteries. A note was made of any excessive calcification or irregularity of the vessel wall. A site for the access procedure was then chosen after correlating the clinical findings with the visual impression as seen on the Duplex scan.

The AVF construction was carried out by the same vascular surgeon, under optimum conditions.

Patients were then followed up in the post-operative period upto the time of successful AVF cannulation for Haemodialysis, wherein the AVF was termed successful.

Statistical methods:
The distribution of the various predictor variables was analyzed using tabular displays and histograms. We used the odds ratios (with 95% confidence intervals) to compare these variables and the chi-square test to determine the compatibility of data with hypotheses of no association. Multivariable logistic regression methods were used to model associations between multiple predictor variables and AVF maturation. We constructed Receiver Operating Characteristic (ROC) curves by plotting sensitivity versus specificity of our model predicting AVF maturation. The area under the ROC curve and the odds ratios were utilized for predicting optimum venous & arterial diameters for AVF construction.

RESULTS:
A total of 80 patients were included in the study, out of which 43 were male and 37 female. The mean age was 49.68 years, with a minimum age of 18 and a maximum of 78 yrs. Age, sex, ESRF, HTN, DM & duration of disease had no significance in predicting a successful AVF.Proximal brachiocephalic AVF construction was carried out in 34 patients while distal radiocephalic AVF construction was done in 27 patients. In addition, brachio-basilic vein transposition AVFs were constructed in 19 patients. The overall AVF patency rate was 60 %. Patency rates were highest in brachiobasilic AVFs (89.50%), while brachiocephalic & radiocephalic AVFs had patency rates of 47.10% & 55.60% respectively. Using Pearson’s Chi- Square test (with continuity correction), no significant association was found between final outcome and vein diameter in each type of AVF. Also, the type of AVF constructed was not a significant predictor of successful AVF, when compared using binary logistic regression.

RRT was already being carried out in 55 patients (either HD or PD) at the time of creation of the fistula. HD was being carried out by Internal Jugular Vein (IJV) catheterization in 53 Dialysis (CAPD). However, 25 patients were not on any form of dialysis. Of those being dialyzed, 55 patients (68.8%) gave history of previous central venous catheterization (CVC). This is significant in view of central venous stenosis caused by prior CVC, which may lead to venous outflow obstruction. A history of prior central venous catheterization was obtained in 68.8 % patients. Studies [3] have found subclavian and internal jugular stenosis in patients on temporary HD catheters. This is an important cause of venous outflow obstruction and subsequently, AVF failure. Majority of the patients had ESRF, Hypertension (HTN) and Diabetes Mellitus (DM). However, no significant association was found between these
comorbid illnesses and the final outcome as per binary logistic regression.

Previous central venous catheterization, brachial artery diameter, proximal cephalic vein diameter and distal basilic vein flow velocity were found to be significant predictors of a successful AVF using binary logistic regression.

Using the ROC curves (Table 1), it was found that a distal vein diameter of ≥ 2.2 mm was a significant predictor of a working AVF, with a 95% confidence interval of 0.547 to 0.895, and an area under the ROC curve of 0.750. Positive likelihood ratio was 2.8, while negative likelihood ratio was 0.1, which was significant. The odds ratio suggest that, a vein having a diameter of ≥ 2.2mm was 4 times more likely to yield a patent fistula.

Furthermore, using the ROC curve, it was found that a proximal arterial diameter ≥ 3mm was found to be a significant predictor of the final outcome, with 95% Confidence intervals of 0.566 to 0.824 & an area under the ROC curve of 0.707. Positive likelihood ratio was 1.75, while negative likelihood ratio was 0.39, which was significant. Using odds ratio, an artery having a diameter of ≥ 3 mm was 3 times more likely to yield a patent fistula.

**DISCUSSION:**

1). Sex-wise AVF maturation differences:

Women usually have smaller arteries and veins and, therefore, this may be the reason for poorer maturation and survival rates of vascular access in them. However, the literature remains contradictory. Some studies have shown that there was no difference in the arterial and venous diameters between males and females, with similar maturation and 1- year patency rates; whereas others have shown that that female gender was associated with an increased use of grafts and a higher number of access revisions. [4-10,17]

However, our study showed no significant association between sex and the final outcome (successful AVF maturation), as confirmed by binary logistic regression.

2). Age-wise distribution:

The mean age was 49.68 years, with a minimum age of 18 and a maximum of 78 yrs. Age may have an influence on post-operative blood flow in newly created autogenous fistulas, which results in a slightly higher failure rate as compared with young patients. [9]

No significant association was found between age and the final outcome, as per binary logistic regression.

3). Comorbid illnesses (Diabetes Mellitus, Hypertension, ESRF, Others):

The combination of age and diabetes does have an impact on fistula outcome with significantly higher failure rates and an increased percentage of grafts in elderly patients. [10-12] Our study did not show any significant association between the two and the final outcome.

The presence of diabetes and hypertension may have an additional negative impact on the chance
of successful access creation. These patients usually have poor, thickened and calcified arteries with proximal and/or distal vessel obstruction.\textsuperscript{12-15} Access creation is more difficult, and the risk of symptomatic ischaemia of the upper and lower extremity due to access-induced steal syndrome is significant.

Hypotension is a well-known cause of thrombosis of a vascular access. In some studies, hypotension was found to be protective against AVF failure.\textsuperscript{13} In a retrospective study of 191 patients, Thomsen et al.\textsuperscript{21} described a greater early failure rate (first 4 weeks after placement) in patients with low perioperative systolic blood pressure (110 mm Hg; 53% versus 24%; \(P<0.02\)). These findings suggest that consideration should be given to evaluating strategies in which antihypertensive therapy is deintensified around placement of an AVF.

In this study, Diabetes Mellitus and Hypertension did not affect the final outcome. Also, no significant association was found between Diabetes Mellitus and the final outcome in each category of venous diameter. No discernible cause was found. However, more cases need to be included to study this causal association.

4). Association between Final Outcome and Vein diameter:

Preoperative vascular mapping has shown to substantially increase the total proportion of patients dialyzing with fistulae.\textsuperscript{17,20} Several studies support the 2.0- to 2.5-mm vein diameter threshold for successful creation of a fistula. Radiocephalic fistulae constructed in veins with a less than 2.0-mm diameter had only 16% primary patency at 3 months compared with 76% for those with veins greater than 2.0\textsuperscript{17}. In a pivotal study,\textsuperscript{20} a threshold of 2.5 mm vein diameter assessed by duplex ultrasound was used. This resulted in an increase in fistula creation of 63\% compared with a retrospective 14\% rate in the absence of vascular mapping.\textsuperscript{20} A similar study using the same duplex ultrasound criteria showed a fistula increase from 34\% in historical controls to 64\%. Importantly, in this study, duplex ultrasound altered the surgical plan based entirely on the surgeon’s clinical evaluation, resulting in increased placement of fistulae.\textsuperscript{21}

Although angiography remains the standard for evaluating the central veins, they may be assessed indirectly by using duplex ultrasound.\textsuperscript{12} Compared with invasive venography, duplex ultrasound had a specificity of 97\% and sensitivity of 81\% for detecting central vein occlusion.\textsuperscript{23} Alternatively, Magnetic Resonance Angiography may be used for evaluation of central venous occlusion.\textsuperscript{21,22}

In our study, an overall AVF patency of 60\% was achieved, with brachiobasilic vein transposition fistulae having the maximum patency rates of 89.50\% (17 working out of 19), while radiocephalic AVFs had a patency rate of 55.60\% (15 working out of 27). Brachiocephalic AVFs had the poorest patency rate of 47.10\% (16 working out of 34).

In the present study, a distal vein diameter of \(\geq 2.2\) mm was a significant predictor of a working AVF, with a 95\% confidence interval of 0.547 to 0.895 & an area under the ROC curve of 0.750. Positive likelihood ratio was 2.8, while negative likelihood ratio was 0.1, which was significant.

The odds ratio for distal venous diameter was 4.008, which meant that an AVF created using a venous diameter \(\geq 2.2\)mm was 4 times more likely to succeed as compared to that using a vein with lesser diameters.

Also, a proximal arterial diameter \(\geq 3\)mm was found to be a significant predictor of a working AVF, with confidence intervals of 0.566 to 0.824 & an area under the ROC curve of 0.707. Positive likelihood ratio was 1.75, while negative likelihood ratio was 0.39, which was significant.

An odds ratio of 3.02 signified that arterial diameter of \(\geq 3\)mm was 3 times more likely to produce a patent AVF.

This study showed no significant association between the final outcome and vein diameter in each type of AVF. Also, the type of AVF was not a significant predictor of the final outcome (working AVF).

This study showed that previous central venous catheterization, brachial artery diameter (mm), proximal cephalic vein diameter (mm) & distal basilic vein flow velocity (cm/sec) were significant predictors of working as final outcome.

<table>
<thead>
<tr>
<th>Table 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>ROC Curve for vein diameter (mm) as a predictor of final outcome (working AVF):</td>
</tr>
<tr>
<td><strong>Variable</strong></td>
</tr>
<tr>
<td><strong>Classification Variable</strong></td>
</tr>
<tr>
<td>Select</td>
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<tr>
<td><strong>Positive group</strong></td>
</tr>
<tr>
<td>Final outcome</td>
</tr>
<tr>
<td>Sample size</td>
</tr>
<tr>
<td><strong>Negative group</strong></td>
</tr>
<tr>
<td>Final outcome</td>
</tr>
<tr>
<td>Sample size</td>
</tr>
<tr>
<td>Disease prevalence (%)</td>
</tr>
<tr>
<td>Area under the ROC curve</td>
</tr>
<tr>
<td>Standard error</td>
</tr>
<tr>
<td>95% Confidence interval</td>
</tr>
<tr>
<td>Significance level (P) (Area=0.5)</td>
</tr>
</tbody>
</table>
Table: 2  
Association between Final Outcome and Vein diameter (mm)

<table>
<thead>
<tr>
<th>Final Outcome</th>
<th>Vein diameter (mm) (ROC cut-off)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>&gt;2.2</td>
<td>≤2.2</td>
</tr>
<tr>
<td>Working No.</td>
<td>41</td>
<td>7</td>
</tr>
<tr>
<td>%</td>
<td>68.30%</td>
<td>35.00%</td>
</tr>
<tr>
<td>Not working No.</td>
<td>19</td>
<td>13</td>
</tr>
<tr>
<td>%</td>
<td>31.70%</td>
<td>65.00%</td>
</tr>
<tr>
<td>Total No.</td>
<td>60</td>
<td>20</td>
</tr>
<tr>
<td>%</td>
<td>100.00%</td>
<td>100.00%</td>
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</tbody>
</table>

Chi-square Tests  
<table>
<thead>
<tr>
<th></th>
<th>Value</th>
<th>df</th>
<th>p-value</th>
<th>Association is-</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pearson Chi-Square</td>
<td>6.944</td>
<td>1</td>
<td>0.008</td>
<td>Significant</td>
</tr>
<tr>
<td>Continuity Correction</td>
<td>5.625</td>
<td>1</td>
<td>0.018</td>
<td>Significant</td>
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</table>

Risk Estimate  
<table>
<thead>
<tr>
<th></th>
<th>Value</th>
<th>95% Confidence Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Upper</td>
</tr>
<tr>
<td>Odds Ratio for Final Outcome (Working / Not working)</td>
<td>4.008</td>
<td>1.378</td>
</tr>
<tr>
<td>For cohort Vein diameter (mm) (ROC cut-off) ≥ 2.2</td>
<td>1.439</td>
<td>1.056</td>
</tr>
<tr>
<td>For cohort Vein diameter (mm) (ROC cut-off) ≤ 2.2</td>
<td>0.359</td>
<td>0.161</td>
</tr>
</tbody>
</table>

Table: 3  
ROC Curve for proximal arterial diameter (mm) as predictor of final outcome (working AVF):

<table>
<thead>
<tr>
<th>Variable</th>
<th>Arterial diameter (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Classification variable</td>
<td>Final outcome</td>
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<td>Select</td>
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<tr>
<td>Positive group</td>
<td></td>
</tr>
<tr>
<td>Final outcome</td>
<td>= 1</td>
</tr>
<tr>
<td>Sample size</td>
<td>33</td>
</tr>
<tr>
<td>Negative group</td>
<td></td>
</tr>
<tr>
<td>Final outcome</td>
<td>= 0</td>
</tr>
<tr>
<td>Sample size</td>
<td>20</td>
</tr>
</tbody>
</table>

Table: 4  
Association between Final Outcome and Arterial diameter (mm)

<table>
<thead>
<tr>
<th>Final Outcome</th>
<th>Arterial diameter (mm) (ROC cut-off)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>&gt;3</td>
<td>≤3</td>
</tr>
<tr>
<td>Working No.</td>
<td>26</td>
<td>22</td>
</tr>
<tr>
<td>%</td>
<td>74.30%</td>
<td>48.90%</td>
</tr>
<tr>
<td>Not working No.</td>
<td>9</td>
<td>23</td>
</tr>
<tr>
<td>%</td>
<td>25.70%</td>
<td>51.10%</td>
</tr>
<tr>
<td>Total No.</td>
<td>35</td>
<td>45</td>
</tr>
<tr>
<td>%</td>
<td>100.00%</td>
<td>100.00%</td>
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Chi-square Tests  
<table>
<thead>
<tr>
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<th>Value</th>
<th>df</th>
<th>p-value</th>
<th>Association is-</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pearson Chi-Square</td>
<td>5.291</td>
<td>1</td>
<td>0.021</td>
<td>Significant</td>
</tr>
<tr>
<td>Continuity Correction</td>
<td>4.286</td>
<td>1</td>
<td>0.038</td>
<td>Significant</td>
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</tbody>
</table>

Risk Estimate  
<table>
<thead>
<tr>
<th></th>
<th>Value</th>
<th>95% Confidence Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Upper</td>
</tr>
<tr>
<td>Odds Ratio for Final Outcome (Working / Not working)</td>
<td>3.0</td>
<td>1.16</td>
</tr>
<tr>
<td>For cohort Arterial diameter (mm) (ROC cut-off) ≥ 3</td>
<td>1.9</td>
<td>1.04</td>
</tr>
<tr>
<td>For cohort Arterial diameter (mm) (ROC cut-off) ≤3</td>
<td>0.6</td>
<td>0.43</td>
</tr>
</tbody>
</table>

CONCLUSION:

Pre-operative Colour Doppler imaging of the arterio-venous system, coupled with utilization of optimal arterial & venous cut-off diameters can be helpful in improving the success rate of AV Fistulae.
REFERENCES:

Comparison of Vitamin B\textsubscript{12} Levels in Gastritis with and without \textit{H. pylori}

Shrikant S. Raut* , Rittu S Chandel,
a,b-Postgraduate resident
Dept of Biochemistry, Grant Government Medical College and Sir JJ
Group of Hospitals, Mumbai

Address for Correspondance-
Dr Shrikant S. Raut, 5/501, Mangalumurti Annexe, S.K. Bole road, Agar Bazzar, Dadar (W),
Mumbai - 400028, Maharashtra, E-mail - dr.shrikantraut@yahoo.in

Abstract

Background: \textit{H. pylori} infection is widespread in developing nations, prevalence is more than 80% among middle-aged adults. It may play an important role in impairment of vitamin B\textsubscript{12} absorption. It is almost invariably associated with the presence of gastritis in India. The classical sign of vitamin B\textsubscript{12} deficiency is megaloblastic anemia which, occurs in only 50% of vitamin B\textsubscript{12}-deficient subjects. Other signs are psychiatric and neurodegenerative changes.

Aim: To study the status of vitamin B\textsubscript{12} in gastritis with and without \textit{H. pylori}.

Methods and Material: Prospective study carried out at tertiary care hospital in Mumbai between June to December 2013.

Ninety gastritis suspected patients who underwent gastroscopy were enrolled. Rapid urease test was used to diagnose \textit{H. pylori} infection. Chemiluminescent immunoassay based Immulite 1000 analyzer was used for analysis of vitamin B\textsubscript{12}.

Statistical analysis used: The mean serum levels of vitamin B\textsubscript{12} in \textit{H. pylori}-positive and \textit{H. pylori}-negative gastritis groups of patients were compared by independent sample ‘t’ test.

Results: Serum vitamin B\textsubscript{12} levels were significantly lower in patients with \textit{H. pylori} positive gastritis than in those with \textit{H. pylori} negative gastritis (261.2 ±89.2 ; 382.7 ± 164.9 respectively, \(p = 0.0001\))

Discussion: The study shows serum vitamin B\textsubscript{12} levels to be lower in \textit{H. pylori}-positive as compared to \textit{H. pylori} negative gastritis.

Key-words: \textit{H. pylori} gastritis, vitamin B\textsubscript{12}, gastroscopy, rapid urease test, chemiluminescence

Introduction

The epidemiology of \textit{H. pylori} infection in developing countries, such as India is characterized by a rapid rate of acquisition of the infection such that approximately 80% of the population is infected by the age of 20 yrs because the disease is most often acquired in childhood. In developing countries the prevalence of infection peaks in the 20 to 30 year old age group. \textit{H. pylori} is recognized as a major etiologic agent for chronic active gastritis. Asymptomatic carrier state is common in \textit{H. pylori} infection and if left untreated \textit{H. pylori} infection is lifelong. It has been suggested that \textit{H. pylori} infection may play an important role in impairment of folate and vitamin B\textsubscript{12} absorption owing to diminished acid secretion, lower ascorbic acid levels in gastric juice and reduced secretion of intrinsic factor. Studies have been published where Vitamin B12 was compared between \textit{H. pylori} positive and \textit{H. pylori} negative gastritis.

Subjects and Methods:
We conducted our study at Biochemistry laboratory in collaboration with Department of Surgery, at a tertiary care hospital in Mumbai. It was conducted over a period of six months from June 2013 to December 2013. A complete medical history and informed consent was obtained from all participants included in the study.

Ninety symptomatic patients, in the age group 20-60 yrs of either sex, suspected of gastritis were subjected to upper gastrointestinal endoscopy and enrolled in the study. On confirmation of gastritis by endoscopy, biopsy was taken from the gastric antrum to diagnose the presence of \textit{H. pylori} infection with Rapid Urease Test.
Inclusion criteria:
- Patients of age group 20-60 yrs.
- Patients of either sex.
- Patients diagnosed as gastritis with or without *H. pylori* by rapid urease test on gastric antral biopsy specimen taken during endoscopy.

Exclusion criteria:
- Patients with previous *H. pylori* eradication therapy in last 6 months.
- Renal failure.
- Liver diseases.
- Use of drugs affecting plasma vitamin B12 and folic acid levels.
- Patients with history or presence of other causes of vitamin malabsorption.
- Pregnant women.

Of the Ninety patients ten were excluded on the basis of exclusion criteria.

**CASES:**

Forty patients in the age group 20-60 yrs of either sex diagnosed as *H. pylori* associated gastritis by positive rapid urease test on gastric antral biopsy specimen taken during endoscopy.

**CONTROL:**

Forty patients in the age group 20-60 yrs of either sex diagnosed as gastritis other than *H. pylori* associated gastritis, by negative rapid urease test on gastric antral biopsy specimen taken during endoscopy.

All the patients enrolled in the study, who underwent upper gastrointestinal endoscopy were subjected to gastric antral biopsy for diagnosis of *H. pylori* infection so as to categorize them into gastritis with and without *H. pylori* infection. *H. pylori* infection was diagnosed by Pylo-dry test, (manufactured and marketed by Halifax Research Laboratories, Kolkata, India) which is a rapid urease test.

Procedure For Rapid Urease Test: Written and informed consent was taken for the procedure. Patients subjected to upper gastrointestinal endoscopy were nil by mouth for 8 hours. Local anaesthesia with Lidocaine Topical Aerosol (LOX 10% spray) was given. A flexible, fiber-optic, endoscope (PENTAX EG – 2770K (2.8)) was manoeuvred into the stomach. Patients with gastritis were subjected to a biopsy from the pyloric antrum. The biopsy specimen was transferred from the biopsy forceps onto the exposed yellow media of the Pylo-dry test kit. One drop of distilled water was added onto the yellow media containing the biopsy specimen. Urease enzyme of *H. pylori*, if present, reacts with urea of the media and changes the colour from yellow to red or pink altering the pH to make it alkaline.

The change in the color of the media from yellow to red or pink was taken as a positive test, thus the patients were categorized as cases and controls.

Analysis of Vitamin B12

A fully automated enzyme amplified chemiluminescent immuno assay based Immulite 1000 analyzer was used for quantification of vitamin B12. Commercial kits from Siemens Medical Solutions Diagnostics, Los Angeles, CA, USA were used.

The reference serum level of:

\[
\text{Vitamin B}_{12} = 160 \text{ - } 800 \text{ pg/ml}
\]

Independent sample t-test was used to compare the difference of means. In this analysis, variables showing p-value less than 0.05 were considered to be statistically significant.

**Results:**

Serum vitamin B12 levels were significantly lower in patients with *H. pylori* positive gastritis than in those with *H. pylori* negative gastritis.

**Table 1 Vitamin B12 levels in *H. pylori* positive and *H. pylori* negative gastritis**

<table>
<thead>
<tr>
<th>Parameters</th>
<th><em>H. pylori</em> positive gastritis</th>
<th><em>H. pylori</em> negative gastritis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vitamin B12 (pg/ml)</td>
<td>Mean ± SD</td>
<td>Mean ± SD</td>
</tr>
<tr>
<td>Vitamin B12</td>
<td>261.2 ± 89.2</td>
<td>382.7 ± 164.9</td>
</tr>
</tbody>
</table>

**Discussion:** Vitamin B12 is a water-soluble molecule that functions as an essential coenzyme for two enzymes in the human body: cytoplasmic methionine synthase which catalyzes methylation of homocysteine to methionine; and methylmalonyl-CoA mutase, which catalyzes the conversion of methylmalonyl-CoA to succinyl-CoA in the mitochondrion. The methionine synthase reaction, which also involves folate is essential for a high number of methyl-transfer reactions and is also, therefore, indirectly involved in nucleotide synthesis. The methylmalonyl-CoA mutase reactions are involved in digestion of different organic compounds, including branched amino acids and odd-
chain fatty acids. Once referred to as “nature’s most beautiful cofactor” the red-coloured B12 is a tetrapyrrole that occurs in several active and inactive forms. A complex 30-step pathway of vitamin B12 biosynthesis is confined to certain prokaryotes, humans are completely dependent upon a dietary source of the vitamin. It has been suggested that H. pylori infection may play an important role in the reduction of acid production, reduced intrinsic factor secretion and therefore the development of vitamin B12 deficiency. However, development of vitamin B12 deficiency occurs slowly due to the low requirement (2 µg/day), the enterohepatic cycle of cobalamin and the liver stores of the vitamin that have been built up during life and that are about 2–3 mg of cobalamin by the age of 60 years. The classical sign of vitamin B12 deficiency is megaloblastic anemia which, however, occurs in only 50% of vitamin B12-deficient subjects. Other signs of vitamin B12 deficiency which are often overlooked are psychiatric and neurodegenerative changes.

Shuval-Sudai and Granot investigated 133 patients in Israel for H. pylori infection and cobalamin and folate status and reported a significant association of H. pylori infection and prevalence of low cobalamin and folate concentrations. In the present study, serum vitamin B12 levels were significantly lower in patients with H. pylori positive gastritis as compared to those without. The mechanisms of vitamin B12 and folic acid malabsorption by H. pylori infection are unclear, but the following explanations are possible. First, hypochlorhydria associated with atrophic gastritis may lead to failure in splitting of vitamin B12 from food binders and its subsequent transfer to R-binder (haptocorrin) in the stomach. Second, decreased secretion of ascorbic acid and secretory dysfunction of the intrinsic factor in the backdrop of H. pylori infection could possibly lead to a decrease in vitamin B12 and folate absorption.

Conclusion:
In our study serum levels of vitamin B12 were significantly lower in H. pylori positive gastritis as compared to H. pylori negative gastritis.

References:
Study of Pulmonary Functions in Smokers and Non-Smokers in Sugarcane harvesters in Rural Maharashtra

Rubeena Bano\textsuperscript{a}, Nadeem Ahmad\textsuperscript{b}, AM Mahagaonkar\textsuperscript{c}

\textsuperscript{a}Associate Professor, Dept. of Physiology, Integral Institute of Medical Sciences & Research, IIMSR, Integral University, Lucknow

\textsuperscript{b}Professor, Dept. of Community Medicine, Integral Institute of Medical Sciences & Research, IIMSR, Integral University, Lucknow

\textsuperscript{c}Professor, Dept. of Physiology, Pravara Institute of Medical Sciences PIMS, Pravara University, Loni, Maharashtra

Corresponding Author:
Dr. Rubeena Bano
Associate Prof., Dept. of Physiology, Integral Institute of Medical Sciences & Research, IIMSR, Integral University, Lucknow

Abstract

**Background:** In India smoking is a common habit prevalent in both urban and rural areas. Cigarette and bidi smoking has extensive effects on respiratory function and is clearly implicated in the etiology of a number of respiratory diseases. **Objectives:** 1. To study and compare the pulmonary function tests among smokers and non-smokers in a rural area. 2. To study the role of possible associated factors and relation of type, quantity and duration of smoking on the pulmonary function tests. **Setting:** Pravara Rural Hospital, Loni, District Ahmednagar, Maharashtra. **Study design:** Cross sectional study. **Materials & Methods:** The pulmonary function tests were assessed on computerized spirometer in 400 male sugarcane harvesters comprising of 200 smokers and 200 non-smokers and results were compared. **Statistical analysis:** SPSS Statistical Software. **Results & Conclusion:** Almost all the pulmonary function parameters were significantly reduced in smokers and obstructive pulmonary impairment was commonest. Thus by spirometry a spectrum of lung disorders may be detected at an early stage and subsequent morbidity can be minimized. **Key words:** Smoker, Spirometry, Pulmonary functions, rural area

Introduction

Cigarettes kill an estimated 5 million people annually worldwide\textsuperscript{1}. The World Health Organization reported that tobacco smoking killed 100 million people worldwide in the 20th century and warned that it could kill one billion people around the world in the 21st century\textsuperscript{2}. By the early 2030, tobacco related death would increase to about 10 millions a year\textsuperscript{3}. Tobacco smoking rates have decreased in industrialized countries since 1975, but there has been a corresponding 50% increase in smoking rates in low-income countries\textsuperscript{4}.

In India smoking is a common habit prevalent in both urban and rural areas irrespective of mode of smoking i.e. cigarettes, bidis, pipes, cigar, hookah etc. In India, tobacco is consumed mainly in the form of bidis (54%), followed by smokeless tobacco (27%) and cigarettes (9%)\textsuperscript{5}.

Bidi smoke may be more injurious because bidi contains unrefined form of tobacco as compared to cigarettes\textsuperscript{6,7}. Cigarette smoking has extensive effects on respiratory function and is clearly implicated in the etiology of a number of respiratory diseases, particularly chronic bronchitis, emphysema, and bronchial carcinoma\textsuperscript{8}.

**Materials and Methods:**
The present cross sectional study was conducted in Pravara Rural Hospital of Rural Medical College, PIMS, Loni, in district Ahmednagar, Maharashtra from January 2007.
to August 2008. The study population included 400 male sugarcane harvesters comprising of 200 smokers and 200 non smoker controls aged between 30-60 years. Individuals with history of smoking cigarettes / bidis daily for at least one year were considered as smokers. Ex-smokers or past smokers were excluded from the study. For the control group, 100 healthy non smokers of almost same age and matching other characteristics were selected. The materials used in the study were a computerized RMS Med-spirometer, weighing machine, measuring tape and Blood Pressure set. To evaluate dose and duration response relationship, quantification of tobacco smoking was performed by calculating smoking index for smokers.

**Smoking Index:** It is equal to multiplication of the average number of cigarettes/bidis smoked per day and duration (in years) of tobacco smoking.

<table>
<thead>
<tr>
<th>Habit</th>
<th>Smoking Index (Frequency x duration)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-smokers</td>
<td>0</td>
</tr>
<tr>
<td>Light smokers</td>
<td>1-100</td>
</tr>
<tr>
<td>Moderate smokers</td>
<td>101-200</td>
</tr>
<tr>
<td>Heavy smokers</td>
<td>More than 200</td>
</tr>
</tbody>
</table>

The observations of the study were analyzed by statistical methods like percentages, chi square test and t-test of significance.

**Observations:**
In the present study it was observed that there was no significant difference in the mean physical parameters like age, height, weight, body mass index and body surface area by calculating mean and standard deviation in smokers and non-smokers (Table 1). Most of the smokers smoked only bidi (62.0%) followed by both cigarette and bidi mixed (24.0%) and only cigarettes (14.0%) (Table 2). Most smokers were light smokers (42.0%) followed by moderate smokers (32.0%) and heavy smokers (26.0%) based on the criteria of smoking index (Table 3). Majority of the light smokers were in the age group of 41-50 years (51.85%), moderate smokers in 51-60 years (46.66%) and heavy smokers, 51-60 years (75.0%) (Table 4).

All Pulmonary function parameters like FVC, FEV1, FEV1/FVC, PEFR, FEF25-75%, and MVV showed statistically highly significant association between smokers and non-smokers by applying unpaired t-test of significance (p < 0.001) (Table 5). The association between smoking and impaired PFT was statistically highly significant. The smokers had 17.3 times more risk of having impaired pulmonary functions as compared to non-smokers (Table 6). The obstructive lung changes were most common and were observed predominantly in bidi smokers (72.22%) (Table 7).

**Table 1: Physical Characteristics of Smokers and Non-Smokers.**

<table>
<thead>
<tr>
<th>Variables</th>
<th>Smokers Mean ± 2 S.D.</th>
<th>Non-smokers Mean ± 2 S.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>48.26 ± 10.09</td>
<td>48.10 ± 10.54</td>
</tr>
<tr>
<td>Height (m)</td>
<td>1.66 ± 0.11</td>
<td>1.67 ± 0.12</td>
</tr>
<tr>
<td>Weight (Kg)</td>
<td>65.4 ± 8.8</td>
<td>64.4 ± 11.5</td>
</tr>
<tr>
<td>Body Mass Index (BMI)</td>
<td>23.52 ± 3.20</td>
<td>23.80 ± 3.37</td>
</tr>
<tr>
<td>Body surface area (m²)</td>
<td>1.71 ± 0.06</td>
<td>1.74 ± 0.14</td>
</tr>
</tbody>
</table>

S.D. = Standard Deviation

**Table 2: Type of Tobacco Smoking in Smokers.**

<table>
<thead>
<tr>
<th>Type of smoking</th>
<th>No.</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Only Bidi</td>
<td>124</td>
<td>62.0</td>
</tr>
<tr>
<td>Both cigarette/ bidi</td>
<td>48</td>
<td>24.0</td>
</tr>
<tr>
<td>Only Cigarette</td>
<td>28</td>
<td>14.0</td>
</tr>
<tr>
<td>Total</td>
<td>200</td>
<td>100.0</td>
</tr>
</tbody>
</table>

**Table 3: Distribution of Grade of Smoking in Smokers.**

<table>
<thead>
<tr>
<th>Grade of smoker</th>
<th>Number of smokers</th>
<th>(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Light smoker</td>
<td>108</td>
<td>54.0</td>
</tr>
<tr>
<td>Moderate smoker</td>
<td>60</td>
<td>30.0</td>
</tr>
<tr>
<td>Heavy smoker</td>
<td>32</td>
<td>16.0</td>
</tr>
<tr>
<td>Total</td>
<td>200</td>
<td>100.0</td>
</tr>
</tbody>
</table>
Walawalkar's International Medical Journal 2014 Vol:1, Issue:1

Table 4: Age Wise Distribution of Grade of Smoking.

<table>
<thead>
<tr>
<th>Age Group (years)</th>
<th>Light Smoker No. (%)</th>
<th>Moderate smoker No. (%)</th>
<th>Heavy smoker No. (%)</th>
<th>Total No. (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>31-40</td>
<td>28 (25.92)</td>
<td>8 (13.33)</td>
<td>0 (0.0)</td>
<td>36 (18.0)</td>
</tr>
<tr>
<td>41-50</td>
<td>56 (51.85)</td>
<td>24 (40.0)</td>
<td>8 (25.0)</td>
<td>88 (44.0)</td>
</tr>
<tr>
<td>51-60</td>
<td>24 (22.22)</td>
<td>28 (46.66)</td>
<td>24 (75.0)</td>
<td>76 (38.0)</td>
</tr>
<tr>
<td>Total</td>
<td>108 (100.0)</td>
<td>60 (100.0)</td>
<td>32 (100.0)</td>
<td>200 (100.0)</td>
</tr>
</tbody>
</table>

Table 5: Pulmonary Function Tests among Smokers and Non-Smokers.

<table>
<thead>
<tr>
<th>Pulmonary Function Tests (PFTs)</th>
<th>Smokers Mean ± 2 S.D</th>
<th>Non-smokers Mean ± 2 S.D</th>
<th>Significance p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>FVC</td>
<td>2.98 ± 1.06</td>
<td>3.13 ± 0.98</td>
<td>0.03242 (S)</td>
</tr>
<tr>
<td>FEV₁</td>
<td>2.48 ± 1.02</td>
<td>2.81 ± 0.86</td>
<td>0.000692 (HS)</td>
</tr>
<tr>
<td>FEV₁/FVC</td>
<td>83.93 ± 23.98</td>
<td>89.49 ± 10.54</td>
<td>0.003808 (HS)</td>
</tr>
<tr>
<td>PEFR</td>
<td>5.30 ± 3.46</td>
<td>6.80 ± 3.44</td>
<td>0.000334 (HS)</td>
</tr>
<tr>
<td>FEF₂₅⁻₇₅%</td>
<td>2.99 ± 2.02</td>
<td>3.59 ± 1.74</td>
<td>0.00196 (HS)</td>
</tr>
<tr>
<td>MVV</td>
<td>86.1 ± 44.22</td>
<td>103.6 ± 33.66</td>
<td>0.000002 (HS)</td>
</tr>
</tbody>
</table>

Significance has been calculated by unpaired t test (p < 0.001).

Table 6: Interpretation of PFT results in smokers and non-smokers.

<table>
<thead>
<tr>
<th>PFT Results</th>
<th>Smokers No. (%)</th>
<th>Non-smokers No. (%)</th>
<th>Total No. (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Obstructive</td>
<td>72 (36.0)</td>
<td>8 (4.0)</td>
<td>80 (20.0)</td>
</tr>
<tr>
<td>Restrictive</td>
<td>4 (2.0)</td>
<td>0 (0.0)</td>
<td>4 (1.0)</td>
</tr>
<tr>
<td>Mixed</td>
<td>8 (4.0)</td>
<td>0 (0.0)</td>
<td>8 (2.0)</td>
</tr>
<tr>
<td>Normal</td>
<td>116 (58.0)</td>
<td>192 (96.0)</td>
<td>308 (77.0)</td>
</tr>
<tr>
<td>Total</td>
<td>200 (100.0)</td>
<td>200 (100.0)</td>
<td>400 (100.0)</td>
</tr>
</tbody>
</table>

Chi square value = 20.84, p < 0.001, highly significant. (Odds ratio = 17.3)

Table 7: Relation of Type of smoking with Pulmonary Function tests.

<table>
<thead>
<tr>
<th>Type of smoking</th>
<th>PFT interpretation</th>
<th>Obstructive</th>
<th>Restrictive</th>
<th>Mixed</th>
<th>Normal</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Only Bidi</td>
<td>32 (72.22)</td>
<td>0 (0.0)</td>
<td>8 (100.0)</td>
<td>64 (55.1)</td>
<td>124 (62.0)</td>
<td></td>
</tr>
<tr>
<td>Both cigarette / bidi</td>
<td>16 (22.22)</td>
<td>4 (100.0)</td>
<td>0 (0.0)</td>
<td>28 (24.13)</td>
<td>48 (24.0)</td>
<td></td>
</tr>
<tr>
<td>Only Cigarette</td>
<td>4 (5.55)</td>
<td>0 (0.0)</td>
<td>0 (0.0)</td>
<td>24 (20.6)</td>
<td>28 (14.0)</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>72 (100.0)</td>
<td>4 (100.0)</td>
<td>8 (100.0)</td>
<td>116 (100.0)</td>
<td>200 (100.0)</td>
<td></td>
</tr>
</tbody>
</table>

Discussion:

In the present study it was observed that there was no significant difference in the mean physical parameters like age, height, weight, body mass index and body surface area thereby showing proper matching of smokers and non-smokers (Table 1). None of individuals smoked tobacco in any form other than bidis or cigarettes. Most smokers were bidi smokers (62.0%) (Table 2). Also the cigarette smokers usually smoked non-filter cigarettes since they are cheap and easily available in rural areas. In the present study most smokers were light smokers (Table 3) in the age group of 41-50 years (51.85%). Similarly, Burrows et al reported that there is quantitative significant relationship between impaired ventilatory function and duration and frequency of smoking (Table 4). All Pulmonary function parameters showed statistically highly significant association between smokers and non-smokers by applying unpaired t-test of significance (p < 0.001). Similar, observations showing lung function impairment in smokers were reported by Burrows et al, Pandya et al, and Gupta et al.

However, several researchers like Angelo and Mahajan et al observed no change in FVC in smokers and non-smokers (Table 5). The association between smoking and impaired PFT was statistically highly significant. The smokers had 17.3 times more risk of having impaired pulmonary functions as compared to non-smokers (Table 6). The fall in FEV₁, PEFR and other flow rates indicate obstructive lung changes and fall in FVC indicates restrictive lung changes. Padmavathy in a study concluded that the pulmonary function tests are more affected in bidi smokers than in cigarette smokers (Table 7).

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Conclusion:
The pulmonary function tests were assessed on a computerized spirometer in 400 male subjects comprising, 200 smokers and 200 non smoker controls. The present study reveals the effect of type, duration and pattern of smoking on the pulmonary functions in smokers. Bidi smoking was most common as the study setting was in rural India. Almost all the pulmonary function parameters were significantly reduced in smokers as compared to non smoker controls and obstructive pulmonary impairment was commonest in smokers. By screening smokers, by computerized pulmonary function testing, the early changes in airflow obstruction may be detected and special emphasis is to be recommended on smoking cessation strategies.

References:
8. WHO; World tobacco epidemic; 1993; 2nd Edition; p-47.
REVIEW

A TEN YEAR REVIEW OF DISEASES IN RURAL KONKAN

Dr Suvarna N. Patil

Address for correspondence:
Medical Director,
BKL Walawalkar Rural Medical College, Kasarwadi, Savarde.

Abstract:
An analysis of 11,984 cases admitted in an intensive care unit or general ward under general medicine department over a period of 10 years (2003 to 2013) at a rural secondary care Hospital in Ratnagiri was performed. Out of these 7670 (64%) were males and 4314 (36%) were females. 7294 patients got admitted in Intensive Care Unit (60.86%) and 4690 (39.13%) were admitted in wards.

Analysis showed that largest group of patients had cardio vascular system related problems 3831 (31.96%), followed by 2559 (21.35%) having central nervous system related problems. Respiratory diseases 1402 (11.69%), infections 993 (8.28%), gastrointestinal 985 (8.21%), diabetes 804 (6.70%), renal disorders 517(4.31%), poisoning 296 (2.46 %), snake bites 288 (2.40%) and scorpion bites 309 (2.57 %). Cardio vascular disease form a sizable majority of non communicable medical illness. This analysis indicates that the prevalence of coronary artery disease is increasing in rural India and there is an urgent need for development and implementation of accessible and approachable primary and secondary prevention and treatment approach for control of this epidemic. It also indicates that there is a need for development of nephrological services in rural area. Snake and scorpion bites were the diseases prevalent in this areas, but mortality was lowest in this group because of good ICU back up.

Overall mortality in 11984 patients was 6.14%.Highest mortality was seen in renal disorders that are 8.12%, in spite of having hemodialysis facility.

Introduction:
This paper discusses a need for secondary level hospitals in rural India. In rural India there is severe shortage of ICU’s for effective critical care. Because of lack of knowledge, poverty, illiteracy, low socioeconomic status, patients present very late to the hospitals and delayed presentations reduce the chance of survival. It also increases the economical burden on them. Most of the primary health centers and government hospitals in rural areas lack the facilities which are required to treat critically ill patients. So in this paper we have studied the disease pattern of the patient admitted to the hospital under general medicine department. We categorize the patients according to the final diagnosis, they were classified system wise. Overall mortality and system wise mortality was noted. This shows that burden of CAD is increasing and it is equal to urban areas. Different class of disease conditions like snake and scorpion bite were identified which were prevalent in this areas.

Aim:
To Study the pattern of various medical diseases seen during specialist medical rural practice.

Materials and Methods:
We have done retrospective analysis of 11,984 patients from their case paper records between December 2003 to December 2013. According to the severity of the disease condition patients were admitted in either wards or ICUs. Patients were classified into coronary artery disease, respiratory,Central Nervous System CNS, Poisoning, renal disorders,Diabetes Mellitus DM, Infectious disease ,snake bites and scorpion stings . System wise mortality was studied. Patients were provided with the facilities like ICU, multipara monitors, ventilators, Arterial Blood Gas analysers, temporary pace makers, haemodialysis, CT scanner, Ultrasound, 2 D echoes, pathology lab and blood bank.

Results:
Data of 11,984 patients were analyzed. Out of these 7670 patients were male (64%) and 4314 (36%) patients were females. System wise classification was done from the final diagnosis written on the case paper. They were classified in following systems.
1) Cardio vascular system (3831 patients), 2) Respiratory system (1402), 3) Gastro intestinal system (985), 4) Renal disorders (517), 5) Diabetes Mellitus (804), 6) Infections (993), 7) Poisoning (296), 8) Central Nervous System (2559), 9) Snake bite (288), 10) Scorpion stings (309).Thus percentage wise the highest morbidity was for CVS (31.96%), followed by
CNS (21.35%), Respiratory system (11.69%), Infections (8.28%), GIT (8.21%), DM (6.70%), Renal disorders (4.31%), Poisoning (2.46%), Scorpion stings (2.57%) and Snake bite (2.40%) in that order.

Out of 11,984 patients 737 patients expired thus mortality was 6.14 %.

Cardiovascular diseases mortality was found to be 7.88%, Respiratory was 5.63%, CNS (6.6%), GIT (4.46%), Infections (4.33%), Renal diseases (8.12%), DM (3.24%), Poisoning (5.74%), Snake bite is 2.77% and scorpion sting was 2.66%

Out of 11,984 patients, 7294 i.e.60.86 % patients were admitted in ICU in critical condition and 4690 i.e.39.15% were admitted in wards.

Total Pt 11,984
Mortalities 737 (6.14%)

(Graph 1): System wise classification.

(Graph 2): Overall mortality,

(Graph 3): System wise mortality

(Graph 4): Gender wise classification.

(Graph 5): ICU and Ward wise admission analysis

Out of 11,984 patients, 7294 i.e.60.86 % patients were admitted in ICU in critical condition and 4690 i.e.39.15% were admitted in wards.
It is evident from the tables that coronary artery disease patients constitute highest percentage. Snake and scorpion sting conditions though constitute smaller group of patients, these are prevalent conditions of this area and one of the reason of mortality in rural population.

**Discussion:**

Most of our countries population lives in rural areas and most of the rural people are devoid of basic necessities of life like food, water and shelter. Health is not priority at all. They are caught in the vicious cycle of poverty and illiteracy and in Kokan they are dependent on money order economy. Most of people in our country suffer from twins scourge of large population with rest numbers living in dire poverty and subhuman living conditions. Most of the population lives below the poverty line which leads to neglecting of health and most of the disease are considered physiological.

Other prevalent disadvantages are complexity of living into deep interiors of country side. Where means of transport are not existent, health care centers are far away, modern medical care is a distant dream, and mere survival is boon from the god. Villagers are often confused as to where to seek medical relief even if convinced of its effectiveness due to illiteracy, ignorant of the miracles which modern medicine can perform, suspicious of new experiments to be conducted by strangers and misguided by the indigenous quacks. All these factors leads to limited attention to health and they thus land up in complicated health problems and invariably get admitted in ICUs. In our study 60.86 % patients got admitted in ICU as they were in critical condition. Unfortunately there is a shortage of secondary and tertiary care level hospitals in rural areas, so these patients have no option than to die.

Percentage of patients getting admitted in ICU was 60.86% i.e. higher than patients admitted in wards because diseases are considered physiological and there is delay in diagnosis and seeking medical help due to poor economic status, illiteracy and difficult geographic terrain with no means of transport.

Percentage of males getting admitted to the hospital is more than female patients may be because it is a male dominant community which gives importance to males in the families with least priority to females in Konkan region.

In our study 31.96% patients had CAD. This shows that prevalence of CAD is significant in rural areas. Indian studies indicate that coronary risk factor and coronary artery prevalence are higher among wealthy communities\(^1\) \& \(^6\). Surrotham & Berry (1) reported that CAD was more prevalent among high income group without giving any explanation. Other workers emphasized that people engaged in physically demanding work such as farming were less likely to develop CAD than people with sedentary occupation\(^2\) \& \(^3\).

Raman Kutty etal. from south Indian suburban village reported that coronary disease prevalence was highest in higher socioeconomic group\(^5\). This indicates that detailed study is required to understand the risk factors of CAD in rural Indian population. Chronic kidney disease is major health problem for the under developed countries of south east Asia\(^7\). True incidence & prevalence in the region is not known but the estimate suggests that prevalence may be more than that reported in western societies. The looming epidemic of diabetes and hypertension is likely to further
add to the disease burden. A large population of patients presents late with advanced kidney failure and multiple complications. Management is hampered by lack of health care services in rural area. Facility of dialysis is not available in the rural areas and most of patients die of complications. In our study highest mortality was seen in renal patients i.e. 8.12%. This indicates that there is a urgent need to develop CKD detection and prevention program. Various etiological factors should be found out, so that prevention programs can be targeted appropriately.

Snake and scorpion sting are the conditions prevalent in this area and constitute 4.97 % and with the mortality 2.02%. This shows that while treating such conditions one needs to understand the pathophysiology and develop treatment protocols.

Our analysis gave a brief idea about the disease pattern in rural hospitals. Study indicates that prevalence of CAD is increasing in rural India and there is urgent need for development and implementation of accessible and approachable primary and secondary prevention and treatment approach for this control of this epidemic.

References:
CASE REPORT

Percutaneous Approach For Mandibular Angle Fracture Using Lag Screw.

Pavan Kohli a, Nisheet Agni b,c, Asawari Modak d, Sunil Nadkarni d, Shrikant Sangle e

a-Associate Professor, Dept. of Orthopaedics, BKL Walawalkar Rural Medical College
b,c-Department of dentistry, BKL Walawalkar Rural Medical College
d-Consultant Orthopaedic Surgeon, BKL Walawalkar Hospital
e-Resident doctor, BKL Walawalkar Rural Medical College

Address for Correspondance-
Dr Pavan Kohli
Associate Professor,
Dept. of Orthopaedics
BKL Walawalkar Rural Medical College,
Savarde

Abstract
Mandibular fracture are among the most common injuries to the facial skeleton with 6:2 proportion between mandibular and zygomatic fractures. 1 Facial injuries are clinically highly significant as the face provides anterior protection for the cranium, statistics shows that the maxillofacial injuries makes up to 48% of all forms of injuries of which road accidents and assaults are the most common causes. 2 The therapeutic goal of Mandibular fracture treatment is the restoration of anatomic form, function, with particular care to reestablishment of occlusion and facial esthetics, with least patient discomfort. This article describes the new intervention and effectiveness of lag screw in the treatment of mandibular angle fracture using extraoral percutaneous approach.

Keywords :- Mandibular angle fracture, Percutaneous approach, Lag screw.

Introduction :- Fracture of the mandibular angle are plagued with the highest rate of complication of all mandibular fracture. Over the past years various forms of treatment for this fracture were performed. Hippocrates first described direct reapproximation of fractured segments with use of circumdental wires and external bandages, splints, circummanidibular wiring, extraoral pins. Semirigid fixation with transosseous wiring to rigid fixation and more lately back to semirigid fixation with miniplates 1 In recent years the treatment of mandibular fractures has led to the use of operative as well as conservative methods. The traditional way of treating mandibular angle fracture involves either close reduction with MMF or open reduction and internal fixation with or without MMF. The current trend involves use of miniplates with monocortical screw in the treatment of mandibular angle fracture. Although many studies have shown two miniplates to be more stable than a single miniplate, whether one or two miniplates should be used at the mandibular angle fracture is still debatable. 4,5,6

Extraorally, the approach, to open reduction and internal fixation was through a skin incision in the submandibular region. It has disadvantage of leaving scar and also puts facial nerve at the greater risk, though the advantage was better exposure and direct application of fixation plate. 7 Another approach is, Transbuccal approach, the main advantage is that it result in no external scarring and also allows visualization and confirmation of desired occlusion during placement of bone plate. 8 With all these different modalities of treatment of mandibular angle fracture, the aim of our study is to evaluate the effectiveness of a new technique of minimal approach using Lag screw for stabilization by compression that relies on bony butterssing of the fracture to help stability. Other reason why mandibular body is suited to lag screw fixation is the thickness of the bony cortices which provides extremely secure fixation when screw are properly inserted, providing interframmmentary compression.

Review Of Literature
1) Paul G Tiwana et al done an analysis on 102 patients who underwent lag screw fixation of fracture of anterior mandible. Lag screw osteosynthesis of anterior mandibular fracture is a sensitive, facial, predictable and relatively in expensive method for internal fixation of indicated fractures.
2) Ellis E and Ghali GE (1991) reviewed 41 patients who had lag screw placed for anterior mandibular fractures and showed that it is provides rigid internal fixation.
3) Ellis E and Ghali GE (1991) treated 30 patients who had lag screw placed for mandibular angle fracture, showed that it is an extremely useful but technique-sensitive, method of providing rigid internal fixation.

4) Zachariades N, Mezitis M and Papademetriou I (1996) retrospectively evaluated 30 patients, treated with lag screw and concluded that 30% of patients developed complications which were minor, transient or both.

5) Ellis E (1996) showed that treating fractures of mandibular body using lag screw alone or with bony plates, concluded that it is a reliable technique when there is sufficient obliquity of fracture.

6) Kallela I, Ilzuka T, Laine, Lindquist C (1996) studied to evaluate clinical and radiological results after lag screw fixation of mandibular parasymphyseal and angular fractures, concluded that it is practical and effective way of fixing such fractures internally.

Case Report
A case of RTA reported to ER of the B.K.L.Walawalkar Hospital. Radiological and clinically the patient was diagnosed with displaced, unilateral, right side mandible angle fracture and also undisplaced intraarticular left side fracture of calvicle. While the fracture of the clavicle was managed conservatively with strapping and immobilization, the fracture of angle of mandible was managed by novel technique using a cannulated, cancellous lag screw. Complete case history was taken. General examination was done to rule out any other injury present. Local examination was done to look for jaw opening, tenderness at fracture site, teeth in line of fracture and presence of infection. Required investigation as complete blood count, random blood sugar was done. X-rays as PA mandible, lateral oblique both right and left side of mandible, CT mandible.

Surgical Technique:
Patient was taken to the operation theatre, were he was scrubbed and draped as per routine. After intubation, antibiotic ointment was put in both eyes and sterile gauze pack was placed.

The site of insertion was marked with Bonny’s ink about 1.5-2cms below and parallel to the inferior border of mandible. Surgical site was infiltrated with local anaesthetic solution containing 2% lignocaine with 1:80,000 adrenaline. Application of this technique relies on tension band principle which can be achieved by the placement of interdental wire and resistance of intercusp relationship of teeth after intermaxillary fixation.

In this case, interdental wiring was done using eyelet for intermaxillary fixation to restore primary occlusion. A 1cm long incision was made at previously anticipated location, so as to drill the cortex. Proximal segment of bone was drilled with drill bit and a guiding wire was passed through the hole to access proper insertion path of lag screw. Drilling the cortex is the most important step in this technique. The factors to be considered are that -1) Drill bit should always be intraosseous. 2) Point of drill should be equidistant from fracture line so that the threaded part of the screw engages the other fragment and produce static interfragmentary compression and satisfactory fixation of fracture. 3) Angulation and depth must be in such a way that a) should not disturb the underlying mandibular nerve and facial artery. b) Should not interfere with the bony structures such as mandibular canal, tooth roots. c) Should not breach lingual cortex beyond its limits. d) Should be always at right angle to the line of fracture.

For angle fracture an extraoral approach that is submandibular, gliding hole was made just 2mm below the apices of the posterior teeth in relation with first molar and drill was performed, selection of proper point of entry for drill bit in the buccal cortex was placed sufficiently away from fracture line so that ample amount of bone is present between the head of screw and the fracture line after drill and counter-sink. A proper care was taken not to disturb the underlying structures as mentioned above. Through the hole a guiding ‘k’ wire was inserted to guide the path of insertion of lag screw. The path of insertion is predicted by securing the terminal screw threads in bone that is dense enough to provide rigid fixation. The proper angulations and path of insertion of lag screw is determined by using ‘k’ wire and taking X-rays during procedure. Drilling through the second fragment was the next step, with the drill bit seated in near fragment to obtain some angulations as in first. A ‘k’ wire was inserted through drilled hole and screw length was determined. The hole in the far segment was tapped using long tap. After selecting the appropriate length of screw, it was inserted on a screw driver into the screw hole. The outer hole was free of threads so that screw slips through until it contacts the threads in far segment. Thus when tightened the screw would compress the two segments of bone together.
Once the adequate fixation was achieved the skin was closed with a single suture. The MMF was released and patient was maintained on soft diet.

The following X-ray was taken prior to the surgery to determine the site of fracture.

Following are the photographs that were taken during operative procedure.

Fig (1) shows the extra oral percutaneous approach used for the insertion of lag screw.

Fig(2) shows the insertion of guiding wire that would determine the path of insertion of lag screw.

Radiographic view of path of insertion of lag screw using ‘k’ wire as guiding wire.Fig (3)

X-Rays showing the proper placement of lag screw after surgery Fig. (4)

Discussion:-
Management of mandibular angle fracture is often challenging and results in the highest complication rate among fracture of the mandible. Optimal treatment for angle fracture remains controversial. Historically, treatment of mandible fracture includes intraoperative maxillomandibular fixation (MMF) along with rigid internal fixation. More recently, non compression manipulates which produces only relative stability, have gained popularity. The absolute necessity of intraoperative MMF as an adjunct to internal fixation has also became controversial. The use of single non compression miniplate for treatment for mandibular angle fracture had a high complication rate. When mandibular angle fracture, treated with two miniplates complication rates was 2.1% as
compared to treated with one mini plate with 26.3% complication rate.\textsuperscript{12}

When two mini dynamic compression plates were placed through transoral incision without MMF, complication rate found was 29% and results are unpredictable.\textsuperscript{14} Any tooth in fracture line was removed if it was infected, fractured or was interfering with reduction.\textsuperscript{16,17}

The complication rates were within acceptable limits even when treated after 24 hours of injury, proving no correlation between time, or injury and treatment given.\textsuperscript{18}

The present study describes a new intervention and management of mandible angle fracture using lag screw. The approach used was percutaneous with minimum or just a small hole type incision for insertion of screw. The various advantages that were achieved by using this technique are: 1) the most important was the cosmetic approach of no scar formation caused because of incision.2) innovative drilling and tapping lag screw ensures superior compression across the fracture site providing proper stability.3) Low profile head of the lag screw prevents soft tissues irritation and also preserves blood supply.4) Comprehensive system requires minimal instrumentation while reducing the operative time for surgeon.5) Less post-operative complication hence the hospital stay of patient is reduced. Last but not the least the technique is financially affordable.

References

8) Eric J. Dierks: Transoral approach to fracture of the mandible. Laryngoscope 1987;97:4-6
CASE REPORT

Multidisciplinary Management of Sebaceous Gland Carcinoma of Upper Eyelid with Regional Lymph Node Metastasis
Unmesh Takalkar, Shilpa Asegaonkar, Suresh Advani, Pushpa Kodlikeri, Ujwala Kulkarni

Abstract:
Sebaceous gland carcinoma (SGC) of ocular adnexa is a highly malignant, multifocal in origin seen in elderly. SGCs are known to have highly virulent course of progression with more tendency to metastasize locally and systemically resulting in poor outcome. We managed a case of SGC in 55 years old with multimodality treatment consisting of surgical excision, chemotherapy for tumor bulk reduction and radiotherapy. This offered her long disease free survival.

Aggressive behavior of SGC for early metastasis is associated with high mortality. Hence high index of suspicion for diagnosing SGC in ophthalmic practice is the key for better survival of the patient.

Key words: sebaceous gland carcinoma, eyelid, chemotherapy, radiotherapy, metastasis.

Introduction:
Sebaceous gland carcinoma (SGC) of ocular adnexa is a highly malignant but relatively rare condition. It is multifocal in origin seen in elder population with female predisposition with reported incidence less than 1% of all skin malignancies. It accounts for 1-5.5% of all eyelid malignancies with more predilections for upper eyelid. Predisposing factors reported are advanced age, female gender, Asian race, prior irradiation to head and neck, genetic predisposition to Muir-Torre syndrome or familial retinoblastoma. SGC may originate from the meibomian glands in the tarsus, zeis glands at the eyelid margin or sebaceous glands at caruncle or eyebrows. SGCs are known to have highly virulent course of progression with more tendency to metastasize locally and systemically resulting in poor outcome. Usually the condition is diagnosed in late stage because it mimics various benign ocular conditions like chalazion, chronic blepharoconjunctivitis, papilloma, keratocanthoma, dermoid cyst and benign or sessile keratosis. Herein, we describe clinical course and management of a patient with SGC of upper eyelid with metastasis and recurrence.

Case Report:
A 60 year old hypertensive woman was referred to our centre for nonhealing ulcer on right eyelid and swelling on right cheek. She gave history of excision of nodular lesion on right eyelid 6 month back at her local place. Otherwise, her personal and family history was unremarkable. But 3 months after excision of nodule, she had ulcerative lesion at the site of excision and swelling over parotid area on right side. On examination, ulcer was of 0.7 x 0.8 cm in dimension with everted edges, firm and bleeding on touching. Lymph node was palpable over parotid region. First fine needle aspiration cytology of lymph node was performed which revealed secondary deposits of poorly differentiated adenocarcinoma. So patient underwent right upper eyelid excision with lower eyelid flap reconstruction and right sided total parotidectomy. Histologically case was diagnosed as poorly differentiated sebaceous adenocarcinoma of right upper eyelid.

After healing of the wounds, 6 cycles of systemic chemotherapy (Taxol, cisplatin and 5 Fluorouracil) were administered followed by radiotherapy. Patient tolerated these therapies without any adverse events. She was on regular follow up initially every three months for 1 year, then semiannually. But after six years of disease free survival state, our patient again presented with regional submandibular and preauricular lymph node metastasis on the same side. PET scan revealed secondaries in regional lymph nodes. Again she received radiotherapy followed by chemotherapy (Carboplatin, Docitaxel and Gefitinib).
Discussion:
Present case is reported to describe clinical profile and management of a patient presented with malignant eyelid tumor. Many times SGC is mistaken as chalazion, the most common ophthalmic condition in practice. Same might have occurred in our case when she underwent excision of nodule for the first time and her diagnosis was delayed. But with multimodality approach, she had disease free survival of six years. It has been reported that about 18.6% cases of SGC have been diagnosed by general physician and 50% by ophthalmologists in practice. [5]

Present case report emphasizes thorough diagnostic work up for painless growth on eyelid with suspicion of SGC. Continuous surveillance is necessary for early detection of the secondary and recurrence of the lesion throughout the management. SGC has high tendency to metastasize locally and systemically. Husain A et al studied retrospectively clinical records of 4 patients with metastatic eyelid SGC and observed that metastasis can occur late as 5 years after treatment. In our case we discovered metastasis 6 years after completion of the treatment. [6] Our patient has time length of 84 months from initial lesion to metastasis.

Murthy R and colleagues reported role of neoadjuvant chemotherapy with radiotherapy with eyelid sparing orbital exenteration. [7] Several case reports suggested multimodality management of SGC to prevent metastasis. [8,9] Shields JA et al described their experience of 60 cases with SGC of eyelid and concluded that only 32% cases diagnosed during initial evaluation and 50% on histopathological examination. With the aid of modern therapeutic approach, procedure of exenteration can be avoided. [10]

Conclusion: Aggressive behavior of SGC for early metastasis is associated with high mortality. Hence high index of suspicion for diagnosing SGC in ophthalmic practice is the key for better survival of the patient.

References:
Instructions to the Authors

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