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CASE REPORT

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CAPACITY BUILDING TO TACKLE EMERGING AND RE-EMERGING INFECTIOUS DISEASES

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In 1963, the respected physician and anthropologist T. Aidan Cockburn, in a book called "The Evolution and Eradication of Infectious Diseases", made this statement: "We will anticipate confidently to a substantial degree of freedom from infectious diseases at a time not too far within the future. Indeed . . . it seems reasonable to anticipate that within some measurable time . . . all the main infections will have disappeared."[1]

Five years later, the U.S. surgeon general noted that it'd be possible with interventions like antimicrobials and vaccines to "close the book" on infectious diseases and shift public health resources to chronic diseases.[2]

However, even public health leaders can make mistakes. At that time, there have been scattered reports of a few very interesting pulmonary tuberculosis among Africans noticed by missionaries. We now realize that these were the earliest cases of a newly emerging infectious disease: HIV/AIDS. Today, HIV/AIDS and other infectious diseases still pose a considerable threat throughout the planet.

Although communicable diseases are often categorized in several ways, World Health Organization (WHO) uses three guiding principles for prioritization: (i) diseases with a large-scale impact on mortality, morbidities, and disability, like human immunodeficiency virus (HIV) infection and acquired immunodeficiency syndrome (AIDS), tuberculosis (TB) and malaria; (ii) diseases which will potentially cause epidemics, like influenza and cholera; and (iii) diseases which will be effectively controlled with available cost-effective interventions, like diarrhoeal diseases and TB.[3] Consistent with WHO data on the worldwide burden of diseases, among countries, communicable diseases contribute slightly more to the entire disability-adjusted life years (DALYs) lost within the region (42%) than within the world as an entire (40%).[4]

According to WHO, five low-income countries currently have a comparatively higher share of deaths from (i) HIV infection, TB and malaria, (ii) other infectious diseases, and (iii) maternal, perinatal and nutritional causes compared with high- and middle-income countries. Although these three causes combined pose a lesser burden than non-communicable diseases, they will remain important causes of mortality within the next 25 years in low-income countries. In 2004, all countries of the region apart from Indonesia,

Maldives, Sri Lanka, and Thailand were classified as low-income by the planet bank.

In our battle with microbes, we have several factors in our armamentarium. First of all, we have intellect and a will. We use these to implement public health measures, biomedical research, and technological advances. In essence, the human species uses its intelligence and can to contain, or a minimum of strike a balance with, microbial species that believe in genes, replication, and mutation.[6]

We would wish to emphasize that we've learned many lessons in the past. We have combated infectious diseases, including smallpox and poliomyelitis. Now the necessity of the hour is to form a subsequent generation of public health scientists and researchers conscious of our past. They could repose our experience as they face the challenge of outwitting the microbes that will still plague mankind.

We also got to help today's medical students understand that they're a part of a worldwide enterprise encompassing multiple facets of patient care and drug development. As we struggle to stay a step before the diseases that challenge us, it will not be sufficient to easily be an honest doctor or an honest scientist. We must develop partnerships among clinicians, researchers, government, and industry to detect and diagnose disease; to conduct basic, applied, and clinical research; to develop effective countermeasures; to manufacture vaccines and medicines to stop and treat illness, and to deliver these therapies to the patients who need them. Today's medical students will play a crucial role altogether aspects of our efforts to combat infectious diseases.

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GROWTH AND FACTORS ASSOCIATED WITH GROWTH FALTERING AMONG CHILDREN AGED UNDER 2 YEARS IN AN URBANIZED VILLAGE OF DELHI

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ABSTRACT

Introduction: Nutrition in under-five children is cause of concern hence a study was conducted to assess growth, growth faltering and determinants of growth faltering in children under 2 years of age in the current study.

Material and methods: A community based cross sectional study was conducted in Aliganj, an urbanized village of South Delhi during the period of December 2014 to May 2016. Children under two years were study participants. Mothers were interviewed using pre tested semi structured questionnaire, growth was assessed using WHO growth charts. Ethical clearance was taken from institute ethics committee. Data was entered into excel and analysed using SPSS. Chi-square was applied. Significance level was taken as $p< 0.05$.

Results: One fourth of children were underweight, one fifth were stunted and wasted. In this study, out of 210 children studied, 50 (23.8%) children were underweight, 46 (21.9%) were stunted and 37 (17.6%) children were wasted.

Conclusion: Improper complementary feeding practices, low socioeconomic status and higher birth order were associated with poor growth and higher literacy rate was associated with good nutrition.

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INTRODUCTION:

Stunting is the devastating result of poor nutrition in early childhood. Children suffering from stunting may never grow to their full height and their brains may never develop to their full cognitive potential. UNICEF / WHO / World Bank Group Joint Child Malnutrition Estimates reports that worldwide 154.8 million (22.9%) under 5 children suffered from stunting in 2016. These children begin their lives at a marked disadvantage: they face learning difficulties in school, learn less as adults, and face barriers to participation in their communities. Wasting in children is a result of chronic hunger and disease, leading to weakened immunity, susceptible to long term developmental delays, and face an increased risk of death: they require urgent treatment and care to survive. In 2016, nearly 52 million (7.7%) under 5 children were wanted and 17 million were wasted[1].Nearly half of all deaths in children under 5 are attributable to under nutrition. This translates into the unnecessary loss of about 3 million young lives a year. [3]Undernutrition puts children at greater risk of dying from common infections, increases the frequency and severity of such infections, and contributes to delayed recovery.[2] Developing countries account for a majority of this burden, with 70% of all early childhood mortality and malnutrition concentrated in sub-Saharan Africa and South Asia. Despite setting a goal of reducing malnutrition among under five children by 50% between 1990-2000 at the World Summit for Children, few countries in these

2 regions have been successful in achieving this goal by the end of the decade.[4] As per National Family Health Survey (NFHS 4 fact sheet 2015-16) data, there were 38.4%, 21% and 35.7% children were stunted, wasted and underweight respectively.[4] Nutrition in under five children is cause of concern hence a study was conducted to assess growth, growth faltering and determinants of growth faltering in children under 2 years of age in the current study.

Material and Methods:

A community based cross sectional study was conducted in Aliganj, an urbanized village of South Delhi during the period of December 2014 to May 2016. It is one of the field practice areas under the Department of Community Medicine, Vardhman Mahavir Medical College & Safdarjung Hospital (VMMC & SJH), New Delhi, India. The study population was all the he children under 2 years of age residing in Aliganj area. Mothers who did not gave consent, or houses found locked on 2 consecutive visits were excluded from the study. A pretested, semi-structured questionnaire was used and growth was assessed using WHO growth charts. The study was approved by the Institutional Ethical Committee of VMMC & SJH. Voluntary informed consent was taken from the mother/ caregiver of the children. Children who were found to be undernourished or suffering from any ailments were referred to Aliganj UHTC (Urban Health Training Centre) for appropriate management and routine follow up.

Statistical Analysis: The data was collected and entered in MS Excel and analyzed by using SPSS Version 21. Difference between the proportions was analyzed by Chi-square test/ Fisher exact test. Significance level was taken as p value <0.05.

RESULTS

A total of 210 children less than 2 yrs of age were enrolled in the study. There were 85 girls (40.5%) and 125 boys (59.5%) among the study participants. Majority of the children (123; 58.6%) belonged to the age group of 7 to 18 months; parents of most of the children were literate, belonged to lower middle socio-economic status, and joint family. (Table 1)

Table 1: Distribution of the study participants according to socio-demographic characteristics (N=210)

Socio-demographic characteristics	Number (%)
Sex	
Male	125 (59.5)
Female	85 (40.5)
Age (in completed months)	
0-6	32 (15.7)
7-12	62 (29.6)
13-18	62 (29.0)
19-24	54 (25.7)
Father's Education status	
Illiterate	4 (1.9)
Literate	206 (98.1)
Mother's Education status	
Illiterate	29 (13.8)
Literate	181 (86.2)
Socioeconomic status *	
Upper class	2 (1.0)
Upper middle class	52 (24.8)
Lower middle class	90 (42.8)
Upper lower class	66 (31.4)
Family type	
Joint	170 (81)
Nuclear	40 (19)

* SES by revised Kuppuswamy scale

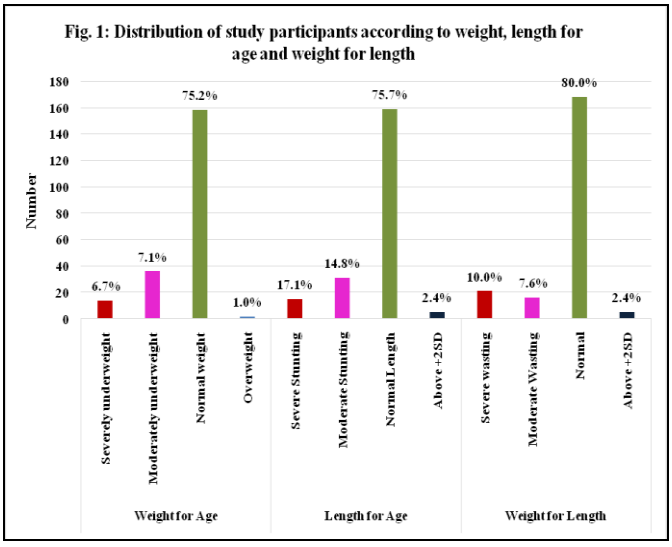
Most of the study participants were full-term (200; 95.2%). The average birth weight of the study subjects was 2.55 ± 0.35 Kg, majority of them (103; 49.0%) were of birth order 2 while only 37 (17.6%) were of birth order of 3 or more. Out of 210 mothers, 196 were able to tell the birth weight of children by recall. Of which 153 (78.1%) had normal birth weight (≥ 2.5 Kg) while 43 (21.9%) had low birth weight (<2.5 Kg) (Table 2).

Table 2: Distribution of study participants according to Birth History (N=210)

Birth history	Number (%)
Gestational Age	
< 37 weeks	10 (4.8)
≥ 37 weeks	200 (95.2)
Birth order	
1	70 (33.3)
2	103 (49.0)
≥3	37 (17.6)
Birth Weight (Kg)*	
<2500g	43 (21.9)
≥2500g	153 (78.1)

*Birth weight was known for 196 children

Out of 210 children studied, 50 (23.8%) children were underweight, 46 (21.9%) were stunted and 37 (17.6%) children were wasted (Figure 1).



Higher proportion of underweight children (12; 37.5%. p = 0.056) and wasted children (10; 31.2%, p = 0.044) were seen in 0-6 month age group, while those of age group of 19-24 months had significantly higher proportion of stunting (19; 35.2% p <0.001) indicating chronic effect of under nutrition on length for age. Boys had significantly higher prevalence of stunting as compared to girls (34; 27.2% Vs 12; 14.1%, p= 0.024). Boys also had higher prevalence of underweight (29; 58% Vs 21; 42.0, p value= 0.801) and wasting (23; 18.4% Vs 14; 16.5%, p = 0.719), though not found to be statistically significant. Increasing education of mothers was associated with decreasing prevalence of underweight, stunting and wasting, though it was not statistically significant (p =0.129, 0.434, 0.685 respectively). Education of the father was not found to be associated with underweight, stunting and wasting. Higher prevalence of stunted children was found in upper socioeconomic status (1; 50.0%, p value =0.034) but the number was too less in this category (Table 3).

Wasting was found significantly associated with children born with gestational age less than 37 weeks (preterm) as compared to those born at more than 37 weeks (5; 50.0%, Vs 32; 16.0%, p =0.016). Higher prevalence of underweight was seen among preterm as compared to those born at more than 37 weeks though not significant (4; 40.0% Vs 46; 23.0, p value= 0.254).

Table 3: Association of socio-demographic factors of study participants with underweight, stunting and wasting (N=210)

Socio-demographic factors	Underweight		Stunting		Wasting	
	n (%)	p value	n (%)	p value	n (%)	p value
Age						
0-6 (n =32)	12 (37.5)	0.056 ^	1 (3.1)	<0.001^	10 (31.2)	0.044^
7-12 (n =62)	9 (14.5)		7 (11.3)		12 (19.4)	
13-18 (n =62)	18 (29.0)		19 (30.6)		11 (17.7)	
19-24 (n =54)	11 (20.4)		19 (35.2)		4 (7.4)	
Sex						
Male (n =125)	29 (58.0)	0.801 ^	34 (27.2)	0.024 ^	23 (18.4)	0.719^
Female (n =85)	21 (42.0)		12 (14.1)		14 (16.5)	
Education of mother						
Illiterate (n =29)	7 (24.1)	0.129 ^	6 (20.7)	0.434 ^	3 (10.3)	0.685*
Primary (n =54)	20 (37.0)		16 27.8)		11 (20.4)	
Middle (n =32)	7 (21.9)		9 (28.1)		8 (25.0)	
High school (n =32)	7 (21.9)		5 (15.6)		6 (18.8)	
Intermediate (n =47)	7 (14.9)		8 (17.0)		7 (14.9)	
Graduate & post graduate (n =16)	2 (12.5)		2 (13.3)		2 (12.5)	
Education of father						
Illiterate (n =4)	2 (50.0)	0.390 ^	0 (0.0)	0.284 ^	1 (25.0)	0.707^
Primary school (n =31)	10 (32.3)		9 (29.0)		3 (9.7)	
Middle school (n =41)	10 (24.4)		9 (22.0)		7 (17.1)	
High school (n =39)	10 (25.6)		12 (30.8)		9 (23.1)	
Intermediate (11th & 12th) (n =59)	9 (15.3)		8 (13.6)		12 (20.3)	
Graduate & post graduate (n =36)	9 (25.0)		8 (22.2)		5 (13.9)	
Socioeconomic status						
Upper (n =2)	1 (50.0)	0.213 *	1 (50.0)	0.034 *	0 (0.0)	0.896*
Upper middle (n =52)	11 (21.2)		14 (26.9)		8 (15.4)	
Lower middle (n =90)	17 (18.9)		12 (13.3)		16 (17.8)	
Lower (n =66)	21 (31.8)		19 (27.3)		13 (19.7)	

*Fisher exact test, ^Chi square test

A significant association of underweight and LBW was observed (16; 37.2%, p =0.036).Birth order of 3 or more was found to be significantly associated with being underweight (14; 37.8%, p= 0.040) and marginally significant with stunting (11; 29.7%, p =0.069) as compared with birth order one and two (Table 4).

Table 4: Association of Birth history of study participants with underweight, stunting and wasting (N=210)

Birth History	Underweight		Stunting		Wasting	
	n (%)	p value	n (%)	p value	n (%)	p value
Gestational Age						
< 37 weeks (n =10)	4 (40.0)	0.254*	2 (20.0)	1.000*	5 (50.0)	0.016*
≥ 37 weeks (n =200)	46(23.0)		44 (22.0)		32 16.0)	
Birthweight (kg)						
< 2.5 (n =43)	16 (37.2)	0.036^	12 (27.9)	0.241^	11 (25.6)	0.167^
≥ 2.5 (n =153)	33 (21.6)		30 (19.6)		25 (16.3)	
Birth order						
1 (n =70)	18 (25.7)	0.040^	9 (12.9)	0.06 9^	17 (24.3)	0.079^
2 (n =103)	18 (17.5)		26 (25.2)		12 (11.7)	
≥3 (n =37)	14 (37.8)		11 (29.7)		8 (21.6)	

*Fisher exact test, ^Chi square test

DISCUSSION

In this study, out of 210 children studied, 50 (23.8%) children were underweight, 46 (21.9%) were stunted and 37 (17.6%) children were wasted. As per NFHS 4 (2015-16), there were 38.4%, 21% and 35.7% children who were stunted, wasted and underweight respectively.[4] There was a higher proportion of underweight children (37.5%) and significantly higher proportion of wasting was seen among children of 0-6 month age group (31.2%). A significantly higher proportion of stunted children (35.2%) were seen in 19-24 months age group. Islam et al (2011) in his study conducted in tribal population in Assam, found highest prevalence of underweight and stunting among 48-60 months age group while wasting was more commonly seen in 24-36 months and the variations of these factors with age was found to be statistically significant[5]. Singh et al (2013) found that malnutrition was significantly associated with age 0-12 months and 25-36 months among under five children in Bareilly district.[6] The higher prevalence of underweight, wasting and stunting among younger age group in our study may be due to improper complementary practices and also we included children under 2 years of age while other mentioned studies had study population of under five children. In our study boys had significantly higher prevalence of stunting (27.2%) as compared to girls (14.1%). As per Islam et al (2011-12) the prevalence of underweight, stunting and wasting was more common among the boys than the girls which was found to be statistically significant which is comparable to our study.[5] Similar results were found by Kumar et al (2015) in their study done among children living in Chandigarh that boys were more underweight as compared to girls.[7] Our study reported higher the level of parents education, lower was the prevalence of underweight, stunting and wasting, though it was not statistically significant. In study conducted by Islam et al, found that literacy of both the parents was associated significantly with the prevalence of under nutrition among the under 5 children. This may be due to the fact that in the rural areas of Assam, father is the sole decision maker for the family and also educated parents adopt better childcare practices.[5] In study conducted by Dhok et al (2013)[8], Bhavsar et al (2012),[9] Sonkaria et al[10]. Singh et al (2013),[6] Mittal et al,[11] Das et al[12] literacy of mother was significantly associated with the prevalence of under nutrition among the under 5 children. In the present study significant association was found between stunting and low socioeconomic status and other studies also reported similar findings.

Dhok et al[8] found that lower socioeconomic status was significantly associated with higher prevalence of stunting. Ruwali et al also found that children of household having poor socioeconomic status were almost three times more at risk of being stunted, about eight times more at risk of underweight than the children of household having rich socioeconomic status.[13] Das et al found the probability of being stunted and wasted was substantially lower for children of richest wealth quintile than the children of poorer households.[12] In our study birth order of 3 or more was found to be significantly associated with being underweight

(37.8%) and marginally significant with stunting (29.7%). Das et al found that children with birth order of 5 or more were 1.5 times more likely to be stunted and 1.4 times underweight as compared to the children having 1 or 2 birth order.[12] Kumar et al reported that birth order of more than 3 was significantly related with being underweight.[7] Nayak et al (2011) also observed that the prevalence of wasting was maximum among children with birth order of 4 and above.[14] In our study being underweight (37.2%) was significantly associated with low birth weight. Nayak et al found low birth weight to be significantly associated with stunting and underweight.[14]

Conclusions:

Improper complementary feeding practices, low socioeconomic status and higher birth order were associated with poor growth and higher literacy rate was associated with good nutrition.

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A RETROSPECTIVE ANTIBIOGRAM STUDY OF CLINICAL ISOLATES OF ENTEROCOCCUS AMONG PATIENTS ATTENDING AT THE IIMS&R HOSPITAL, LUCKNOW

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ABSTRACT

Background: Enterococci are gram-positive cocci, spectacle-shaped in appearance. They are considered relatively low virulence, but now, they are becoming critical nosocomial pathogens. They are causing various clinical manifestations like UTI, endocarditis, intra-abdominal and pelvic infections. They pose a severe threat to mankind with their ability to resist multiple drugs, with some isolates being resistant to almost all the antibiotics tested.

Materials and Methods: Two hundred clinical isolates were collected from Integral Institute of Medical Sciences and Research, Lucknow. Various samples were collected, such as urine, pus, blood, vaginal swab on the basis of clinical symptoms. Antimicrobial susceptibility pattern was performed by Modified Kirby Bauer disk diffusion method. The antibiotics tested were Penicillin, Ampicillin, Vancomycin, Linezolid, Teicoplanin, Doxycycline, Tetracycline, Ciprofloxacin, Norfloxacin, Nitrofurantoin, Erythromycin, High-level Gentamicin, High-level Streptomycin.

Results: Out of 200 clinical isolates processed, 40(80%) were from urine, 3(6%) were from pus,5(10%) were from blood,2(4%) were from a vaginal swab. Ampicillin shows the highest resistance (92%), followed by Penicillin (88%), among which 6% Enterococci were Vancomycin-resistant.

Conclusion: This study demonstrates the antimicrobial susceptibility pattern of Enterococcal isolates, with some isolates are resistant to almost all antibiotics tested, posing a severe therapeutic challenge to mankind.

Keywords: Nosocomial pathogens, virulence factors, prevalence, antibiotic resistance, antibiotic sensitivity, VRE

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INTRODUCTION

Enterococci are gram positive, non-motile cocci(except E. gallinarum, E. casseliflavus) belonging to the family Enterococcaceae and are arranged in angulated pairs(spectacle shaped). They are the normal flora of the human gastrointestinal tract and are also critical nosocomial pathogens.[1] Enterococcus have been considered as relatively low virulence[2]. Still, several reports have registered that the two most important species (E.faecium, E.faecalis) are the leading causes of opportunistic human infections[3], including UTI[4], surgical sites infections, burn wound infections[5,6], bacteremia and sepsis[7], endocarditis[8], cholecystitis[9], peritonitis[10], neonatal meningitis[11], and others. Virulence factors such as Enterococcal surface protein(ESP), aggregation substances(pheromones), capsule formation and gelatinase are involved in bacterial adherence to host cells and biofilm formation on surfaces in hospital environment[12-16]. The increasing evidence of healthcare-associated Enterococcal infections is mainly the result of bacterial features such as expression and transfer of genetic material, increasing their antimicrobial resistance and pathogenecity[17-19]. The severity of Enterococcal infections has increased due to its ability to resist antimicrobial drugs. Resistance can be of two types, it can be intrinsic such as resistance to low level of

aminoglycosides, cephalosporins and penicillin or can be acquired such as resistance to glycopeptides, e.g. vancomycin and teicoplanin[20].VRE infections are life-threatening and lead to higher mortality rates because glycopeptides are considered the last treatment available[21].VRE is mediated by a group of genes(van A, van B, van C, van D and van E)[21].

National Health Safety Network summary report, between 2009 and 2010, reported that Enterococci were the second common cause of nosocomial infections. The report showed that Enterococci were 14%, next to S. Aureus (16%), and among these,3% Enterococci were Vancomycin resistant[22]. VRE reported in Europe (4%), Asia Pacific (11.9%), America(35.5%) and Latin America(12.9%)[23].

With the above background, this study was undertaken to determine the prevalence of Enterococcus along with its antibiogram isolated from various samples in patients attending IIMS & R, Lucknow.

MATERIAL AND METHODS

This retrospective study was conducted at Integral Institute of Medical Science and Research, Hospital, Lucknow, from April 2018 to March 2019. The study was approved by the Institutional Research Committee (IRC) and the Ethical Research Committee (ERC). Samples such as pus, vaginal swabs, blood, urine delivered to the microbiology laboratory for culture and sensitivity were processed from both IPD and OPD. Direct smear microscopy of several clinical specimens was performed. Gram-positive cocci (spectacle-shaped) was seen. Then, specimens were inoculated onto Blood agar, MacConkey agar, Cystine Lactose Electrolyte-Deficient (CLED) agar, and incubated at 37°C for 24 hours. The culture plates were examined the relative numbers and types of colonies were noted and processed further. Blood agar produces non-hemolytic translucent colonies(Gamma type of hemolysis). MacConkey agar produces minute magenta pink colonies. CLED agar produces lactose fermenting colonies.

Confirmation of Enterococcus- Enterococcus growth was confirmed by biochemical tests such as the Bile aesculin hydrolysis test.

Bile Aesculin Hydrolysis Test-Enterococcus gives a positive bile aesculin hydrolysis test (they grow in the presence of 40% bile and hydrolyses aesculin into aesculetin that combines with ferric chloride to produce black coloured complex).

Antimicrobial Susceptibility Testing- Antimicrobial susceptibility test of all isolates was performed on Mueller Hinton agar by disk diffusion method (Modified Kirby Bauer disk diffusion method). The result was interpreted according to CLSI guidelines 2018 [24].

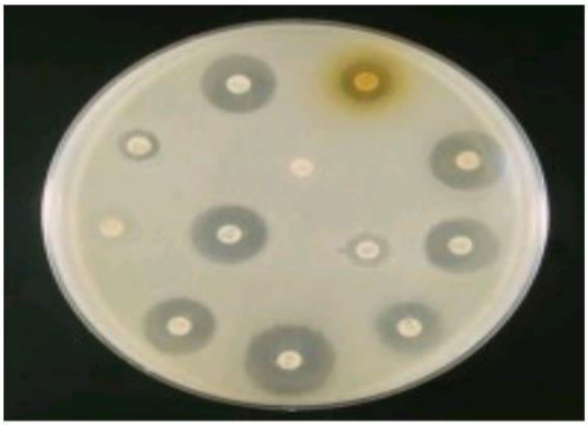

Figure: Mueller Hinton Agar (MHA) plate used for antibiotic sensitive test

Statistical Analysis**:** Data was analyzed using Ms Excel and SPSS 16 version.

RESULTS

During the study period, 200 clinical isolates were collected from patients admitted from the Integral Institute of Medical Science and Research (IIMS&R), Lucknow. Various specimens like urine, blood, pus, vaginal swab were processed. Out of which 50 enterococcal isolates, 40(80%) were from urine, 3(6%) were from blood, 5(10%) were from pus, and 2(4%) were from a vaginal swab.

Table 1: Prevalence of Enterococcus among Clinical Specimen

Samples	Total Samples	Positive Samples	% of Positive Samples
Urine	50	40	80%
Pus	50	3	6%
Blood	50	5	10%
Vaginal Swab	50	2	4%
Total	200	50	100%

Out of 50 Enterococcal isolates included in this study, 30(60%) were isolated from IPD and 20(40%) were isolated from OPD patients. Out of

50 Enterococcal isolates in the study, 35(70%) were females, and 15(30%) were male patients.

Table 2: Distribution of patients according to age groups

Age Group (yrs)	No. of Patients	% of Patients
0-10	3	6%
11-20	6	12%
21-30	12	24%
31-40	16	32%
41-50	6	12%
51-60	4	8%
61-70	3	6%
TOTAL	50	100%

Out of 50 Enterococcal isolates in the study, the maximum number of patients belonged to age group 31-40 (16), followed by age group 21-30(12), followed by age group 41-50 and 11-20(6), followed by age group 51-60(4), followed by age group 61-70 and 0-10(3). (Table 2)

Table 3: Antimicrobial Resistance Pattern of Enterococcus Isolates

Antibiotics Used	Isolates Resistance %
AMPICILLIN(AMP)	92%
PENICILLIN(P)	88%
CIPROFLOXACIN(CIP)	74%
DOXYCYCLINE(DO)	62%
HLG	60%
NORFLOXACIN(NX)	54%
ERYTHROMYCIN(E)	54%
HLS	42%
NITROFURANTOIN(NIT)	12%
TEICOPLANIN(TEI)	10%
TETRACYCLINE(TE)	10%
VANCOMYCIN(VA)	6%
LINEZOLID(LZ)	2%

Table 3 shows the resistance pattern of Enterococcus. Ampicillin (AMP) shows the highest resistance (92%), followed by Penicillin(P) 88%, followed by Ciprofloxacin(CIP) 74%, followed by Doxycycline (DO) 62%, followed by HLG 60%, followed by Norfloxacin (NX) 54%, followed by Erythromycin (E) 54%, followed by HLS 42%, followed by Nitrofurantoin (NIT) 12%, followed by Teicoplanin (TEI) 10%, followed by Tetracycline (TE) 10%, followed by Vancomycin (VA) 6% and Linezolid (LZ) 2%.

Table 4: Antimicrobial Sensitivity Pattern Of Enterococcus

Antibiotics Used	Isolates Sensitive (%)
VANCOMYCIN(VA)	94%
TEICOPLANIN(TEI)	90%
TETRACYCLINE(TE)	90%
LINEZOLID(LZ)	88%
NITROFURANTOIN(NIT)	88%
HLS	58%
ERYTHROMYCIN(E)	46%
NORFLOXACIN(NX)	46%
HLG	40%
DOXYCYCLINE(DO)	38%
CIPROFLOXACIN(CIP)	26%
PENICILLIN(P)	12%
AMPICILLIN(AMP)	8%

This table shows the sensitivity pattern of Enterococcus. Vancomycin (VA) shows the highest sensitivity (94%), followed by Teicoplanin (TEI) 90%, followed by Tetracycline (TE) 90%, followed by Linezolid (LZ) 88%, followed by Nitrofurantoin (NIT) 88%, followed by HLS 58%, followed by Erythromycin (E) 46%, followed by Norfloxacin (NX) 46%, followed by HLG 40%, followed by Doxycycline (DO) 38%, followed by Ciprofloxacin (CIP) 26%, followed by Penicillin (P) 12%, followed by Ampicillin (AMP) 8%. The prevalence of Vancomycin Sensitive Isolates was 94%, and Vancomycin-Resistant Enterococcus was 6%.

DISCUSSION

The overall prevalence of Enterococcus was 25% which is similar to the results reported by Kamalasekaran et al. (2016) and Khanal et al. (2018). The highest prevalence of Enterococcus was in urine (80%), followed by blood 10%, followed by pus 6%, followed by vaginal swab 4%, which is similar to the results reported by Khanal et al. (2018).

Out of 50 Enterococcal isolates, 30(60%) were isolated from inpatients, and 20(40%) were isolated from the outpatients' department (OPD), which is

similar to the results reported by Khanal et al. (2018).

The distribution of positive Enterococcal isolates based on gender showed that more than half of the patients were females 35(70%), and only 15(30%) were males, which is similar to the results reported by Toru et al. (2018).

Distribution of positive Enterococcal isolates based on age group showed that the highest no. of patients were in the age-group of 31-40, 16 patients out of 50.

Distribution based on antibiotic resistance pattern of Enterococcus reported that Ampicillin showed the highest resistance 92%, similar to the results reported by Kamalasekaran et al. (2016), Penicillin 88% similar to the results reported by Khanal et al. (2018), Ciprofloxacin 74% identical to the results reported by Kamalasekaran et al. (2016).

Antimicrobial susceptibility testing of Enterococcus showed that the highest sensitivity was in Vancomycin (94%), Teicoplanin and Tetracycline (90%), Linezolid(88%). In the study, VRE was found to be 6% similar to the results reported by Khanal et al.

CONCLUSION

This study demonstrates that Enterococcus was considered low virulence earlier, but now they are becoming an important nosocomial pathogen. Due to the increased prevalence of multi drug resistant Enterococci with few isolates being resistant to almost all antibiotics tested, Vancomycin is the last drug of choice left to treat Enterococcal infections, but now days increased prevalence of VRE posing a serious therapeutic challenge. This condition warrants the implementation of an efficient infection control program and regular surveillance of Enterococci's antimicrobial resistance to establish a rational antibiotic policy for better management of Enterococcal infections.

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KNOWLEDGE, ATTITUDE AND BEHAVIOUR (KAB) STUDY ON AWARENESS ABOUT SUNSCREENS AMONG MEDICAL INTERNS IN A TERTIARY CARE HOSPITAL

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ABSTRACT

Introduction: Ultraviolet radiation (UVR) composes only a part ofelectromagnetic radiation spectrum and is divided intoUVC, UVB and UVA.Ozone layer around the earth helps to filter out UVC radiations completely, a part of UVB and none of UVA.Even if regulated amount of sun exposure is beneficial for humans, excessive sun exposure leads to development of skin damage, ageing, DNA mutations eventually leading to skin cancers aggravation of multiple dermatoses. This study was undertaken to assess the knowledge, attitude and behaviour about use of sunscreens among medical undergraduates

Materials and Methods: The study was a single point cross-sectional study conducted at a tertiary care hospital. Interns of the medical college were included in the study. The questionnaire was made of twenty four questions regarding the participant's knowledge, attitude and behaviour regarding the sunscreens which was approved by ethical committee of the hospital.Data was collected in the form of answers to the questionnaire and later statistical analysis was done.

Results: Out of total 100 individuals, 48 were females and 52 males. Only 60% of total sample size use sunscreens. But it was noted that 47% of females use sunscreen whereas only 34% of males use sunscreens regularly. Results were deduced from various questions asked in survey.

Conclusion: This study demonstrates that the usage of sunscreen and other forms of sun protection is reasonable amongst medical interns. The usage was seen more common in females than males. The knowledge of proper method of use of sunscreens is good but there was lapse in knowledge about amount of sunscreens needed per application and the way of usage. It was also highlighted that attitude towards the sunscreen needs to be corrected which will improve behaviour also eventually helping in reducing the harmful effects of the sun exposure.

Keywords: DNA damage, photo-protection, sun exposure, skin cancer

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INTRODUCTION

Ultraviolet radiation (UVR) composes only a part ofelectromagnetic radiation spectrum and is divided into three subdivisions, UVC, UVB and UVA. Spectrum under wavelength 200-290 nm is UVC, Spectrum under wavelength 290-320 nm is UVB, and spectrum under wavelength 320-400 nm is UVA. Out of which, UVA1 is 340-400nm and UVA2 is 320-340. Ozone layer around the earth helps to filter out UVC completely, part of UVB and none of UVA. Thus, most of UVA reaches earth directly. Even if regulated amount of sunexposure is beneficial for humans in the way of Vitamin D3 synthesis, excessive sun exposure leads to development of skin damage, ageing, DNA mutations eventually leading to skin cancers aggravation of multiple dermatoses like lupus erythematosus, actinic keratosis and pigmentary changes like melasma, freckles. [1] Even certain types of skin especially Fitzpatrick type 1 and 2 tend to burn in excessive sunlight.All of the complications of chronic sun exposure are likely avoidable if appropriate measures are taken which can be avoidance of going out in prime

time of sunlight, using proper full clothes, hats, sunglasses. [2] Even better approach for photoprotection is avoiding sun exposure. Sunscreens reduce the transmission of UV radiation into the skin. It reflects, absorbs or disperse the emissions so that less amount reaches the skin. There are certain adverse reactions with sunscreens too which are, stinging, burning, itching, contact urticaria, irritant contact dermatitis, allergic contact dermatitis, photosensitivity, acnegenicity (induce or exacerbate acne), folliculitis, exacerbation of pre-existing acne which causes decrease use of sunscreens but appropriate choice of the vehicle and correct use will reduce all such instances. [3,4]

MATERIAL AND METHODS

Study type: Single point cross-sectional study (KAB study)

Study population:Compulsory Rotatory Residential Interns (C.R.R.I.) of the medical college.

Study area: Sree Balaji Medical College and hospital, Chennai (A tertiary care hospital)

Study duration: 1 month

Sample size calculation:

$N = (Z^{2(1-\alpha/2)}\ pq) / d^2$

N = 100

$Z^{21-\alpha/2}$ = Level of confidence i.e., 95 % =1.96

p = proportion of outcome i.e., 7.5%

q=1-p

d= precision i.e., 10%

Minimum sample size required is 100

Sample size was calculated with reference to previously done study.[10]

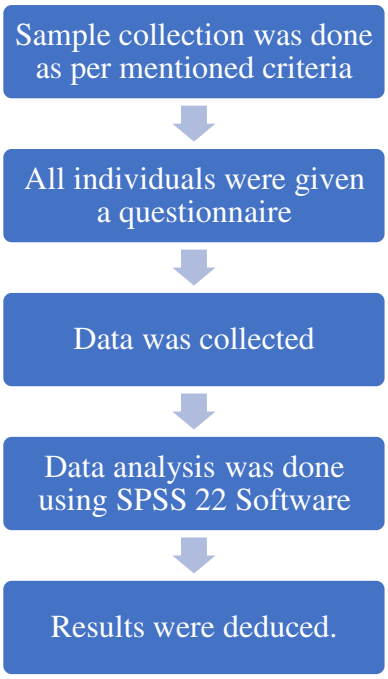
Inclusion criteria: Medical interns students above the age of 18 years.

Exclusion criteria: Medical Interns not consenting for the study.

Strategy for collection: Random selection of medical interns who were undergoing compulsory rotatory residential internship in the above mentioned medical college who were above 18 years of age was done.

Working definition: The questionnaire was made of twenty four questions regarding the participant's knowledge, attitude and behaviour regarding the sunscreens which was approved by ethical committee of the hospital. (Ref. no. 002/SBMC/IHEC/2021/1516). Data was collected in the form of answers to the questionnaire and later statistical analysis was done in software SPSS 22.

Flow diagram:



RESULTS

Out of total 100 individuals included in this study, 48 were females and 52 males. Out of them only 60% use sunscreens.But it was noted that the use of sunscreen is more in females as compared to males. 47% of females use sunscreen whereas only 34% of males use sunscreens regularly.The questionnaire used was mainly divided into three sets of question as knowledge, attitude and practises. Table 1 shows the questions assessing the knowledge of sunscreens use and the percentages of correct or incorrect answers given by the individuals. It was noted that individuals had fair knowledge regarding the purpose of the use of sunscreensabout prevention of skin cancers, prevention of sunburn, and effect on ageing.But knowledge about tanning as well as the need of sunscreens indoors was less as shown in Table 1. Individuals had fair knowledge regarding timings of sunscreens to be applied, significance of Sun protection factor, relation of UVA and UVB with cancers. There was significant lack of knowledge about the quantity of sunscreen needed per application.

Attitude towards the use of sunscreens was assessed by asking questions given in Table 2. It was seen that maximum number of individuals (50%) use sunscreens as per health professionals' advice. Rest individuals were using sunscreens due to influence from friends and family. 85.7% of the individuals agreed that they would recommend use of sunscreens to others. 14.3% individuals were reluctant as most of them were the ones who were not using themselves. 78.4% individuals had an attitude that more the SPF (Sun

Protection Factor); more is the protection from sunlight. 14.9% of the individuals were of the opinion that they will not get any adverse effects at all after using sunscreens. 34.5% were against that opinion whereas 50.6% were not sure about it.

Questions given in table 2 were used to know the practices individuals are following regarding the use of sunscreens.It was seen 60% individuals use sunscreen but out of them 47% of individuals use sunscreens only occasionally, 24.1% use once a day, 19.3% use twice a day whereas rest use more than twice per day. 75.3% of the individuals use sunscreens only when they are outdoors and 24.7% use when they are indoors as well. 68.2% of the individuals apply sunscreens 20 to 30 minutes before sun exposure. Only 23.5% individuals apply sunscreens immediately before sun exposure. 70% of them apply sunscreens on the exposed parts of the body and 27% of them apply only on the face. 68% of individuals choose their sunscreens based of SPF, 23.3% choose according to the type of skin, and 10 % chose depending on the brand. 28% of individuals don't use sunscreens because it's oily while 20% consider that sunscreens are not necessary. While rest of 10%, 12% of individuals avoid sunscreens because of allergic and high cost reasons respectively.

Table 1: Questions for assessing the knowledge

Question	Correct answers (%)	Incorrect answers (%)
Sunscreen is effective at preventing sunburn	91.6	8.4
Sunscreen is effective at enhancing a tan	41.3	58.7
Sunscreen is effective at preventing skin cancer	72	28
Sunscreen is effective at preventing signs of aging	57.6	42.4
Sunscreen is effective at reversing the signs of aging	75.3	24.7
Sunscreen is needed on a cloudy/rainy day	60.4	39.6
Before going out on a sunny day, when should you apply sunscreen?	85.9	14.1
For an adult to cover the entire body with sunscreen, how much sunscreen do you think is needed?	4	96
What do you think SPF stands for?	45	55
Product A has an SPF of 30 while product B has SPF of 15. Which product is more effective as protection?	85.9	14.1
UVA has more risk of causing skin cancer or UVB?	52.9	47.1
Do you feel you need to use sunscreen indoors?	42	58

Table 2: Questions assessing attitude and behaviour

Questions assessing attitude :

1) Influence to use sunscreens?
Family/ Friends/ Media/ Health care professionals/ Others

2)Do you recommend the usage of sunscreen to others
Yes/No

3) Attitude towards SPF? More the SPF, more is the protection from sunlight?
Yes/No

4)Do you feel if you use sunscreens, you will not get any adverse effects at all afterusing sunscreens?
Yes/ No

Questions assessing behaviour :

1) Do you use sunscreen?
Yes/ No

2) How frequent do you use sunscreen?
Every 4 hourly/ Every 2 hourly/Once a day/Twice in a day/Occasionally

3) You use sunscreens when you are?
Indoors/ outdoors/ Indoors and outdoors both times

4) When do you apply the sunscreen?
Immediately before exposure to sunlight
/ 30 min before exposure to sunlight
/1 h before exposure to sunlight
/ 2 h before exposure to sunlight

5) How do you apply the sunscreen?
On the whole body
/On the face only
/On the hands only
/On the exposed part only

6) You would choose your sunscreen based on?
Type of skin
/SPF value
/Price
/Brand

7) If you don't use sunscreens, what make/makes you not want to use sunscreen?
Oily
/Not effective for my skin
/Allergic
/Costly
/I don't think it's necessary

8) How do you protect your skin from sunlight?
Using moisturizer
/lotion powder
/Wearing hat/cap/ umbrella
/No protection at all
Others

Figure1: You would choose your sunscreen based on?

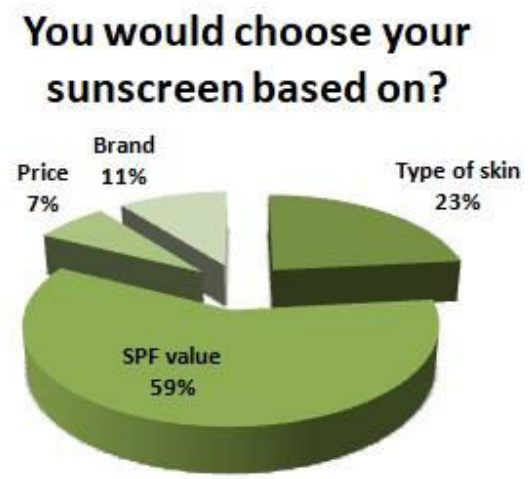
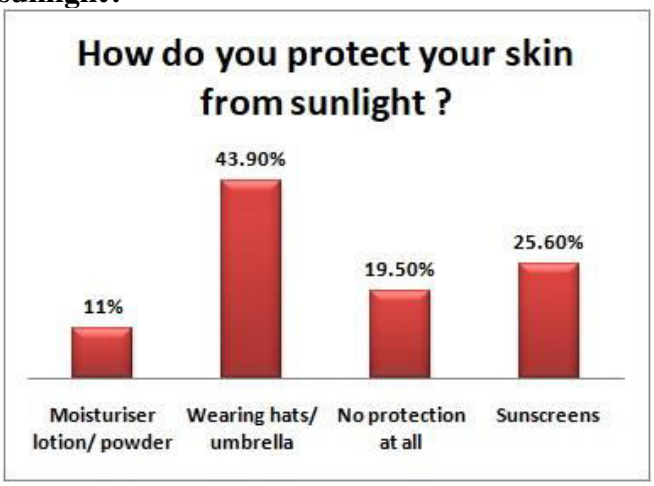


Figure 2: How do you protect your skin from sunlight?



DISCUSSION

Sunscreens are the compounds which reduce the harmful effects of sun radiations by reflecting, absorbing or scattering the radiations. An ideal way to protect oneself from the sunlight is to avoid sunlight. [5] Avoidance of going into the sunlight, using umbrellas, using fully covered clothes remain always superior to use of sunscreens for photo protection. [6] The ozone layer, which is about 10 to 50 kilometres above the surface of earth, absorbs whole amount of UVC and most of UVB and very little of UVA. [7] When the sun is at its highest above the earth, the distance for UV radiations is less, thus it penetrates into the atmosphere more. Ill effects due to UVA normally appear after a lengthy period of time, even if the levels are minimal. [8] Thus, use of various means of photoprotectionbetween 10:00 AM and 2:00 PM is highly recommended. There are various types of sunscreens. Sunscreens can either be inorganic filters (earlier referred to as physical filters) or organic filters (earlier referred to as chemical filters). The inorganic filtersdirectly reflect maximum part of radiations. Titanium dioxide and zinc oxide constitute major inorganic filters. These are photostable, snowy white in colour and insoluble in water. Organic filters absorb the radiations thus, the harmful effects are reduced. These can be UVA filters or UVB filters. Organic UVA filters are Padimate o, Octinoxate, salicylates, octocrylene, ensulizole whereas, UVA filters areoxybenzone, avobenzone, meramidate. A sunscreen could be considered an ideal one when it has a combination of physical and chemical agents having a protection from broad spectrum radiation, which is cosmetically acceptable, which is water resistant, which does not cause any irritation, which is hypoallergenic, non comedogenic and which is affordable.[9]

There are few studies in the literature about medical students' awareness of sunscreen use, so this study of medical undergraduates' awareness of sunscreen was carried out. It was seen that the percentage of individuals using sunscreens was around similar to the previous study done amongst medical students which was done amongst medical students.[10] But it was significantly more as compared to the use of sunscreens in general population as shown in study. [11] The use was significantly more in females than males which were seen in multiple studies. [12,13,14]On comparing knowledge of medical students about role of sunscreens in sunburns, tanning and about preventing skin cancers it was seen that knowledge was better in this study as compared to previous study by Awadh et al. [10] Similar notion was made when knowledge about role of sunscreens in preventing and reversing ageing was compared. [11,12] It was acknowledged that there was significant lapse in knowledge when amount of sunscreen needed per application was considered as compared to study done by Tilwani et al. [15]

When questions about attitude were considered, it was noted that the major influence to use sunscreens was by health professionals with 50% whereas it was by media as seen in study done by Awadh et al. [10] Eighty five percentage of individuals agreed that they would recommend the use of sunscreens to others but it was drastically less in other studies made which ranged from 54% to 60%. [15] More the SPF, more the protection was the attitude seen in our study which was similarly seen in other studies too. Forty seven percentages of individuals reported that they use sunscreens only occasionally which was followed by 24% who

apply once a day and 19.3 who apply twice a day. This was different than the study done by Awadh et al who reported occasional use by 38% and once a day by 11% [10]

Behaviour regarding the use of sunscreens was compared which showed, 75.3% use sunscreens outside while only 24.7% individuals use sunscreens indoors as well. This was a similar finding made by Awadh [10] In our study, 69.4% individuals use sunscreens only on exposed sites which was very less in other studies. [13,14] The reasons for not using sunscreens were similar in both research, with the most common being undesirable cosmetic effect. [15] The ways of photo protection people are using constitutes majorly by hats, caps and umbrella which was 43.9% in our study which was a similar finding seen in studies done by Tilwani et al [15] and Awadh et al [10]

CONCLUSION

This study demonstrates that the usage of sunscreen and other forms of sun protection is reasonable amongst medical interns. The usage was seen more common in females than males. The knowledge of proper method of use of sunscreens is good but there was lapse in knowledge about few aspects about the amount of sunscreens needed per application and the way of usage. It suggests the need of proper training to medical interns about sunscreens and their usage. It was also highlighted that attitude towards the sunscreen needs to be corrected by more awareness which will improve behaviour also eventually helping in reducing the harmful effects of the sun exposure.

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CLINICAL AND LABORATORY PROFILE IN PATIENTS HAVING SEROPOSITIVE DENGUE IN A TERTIARY CARE HOSPITAL IN MYSURU, KARNATAKA

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ABSTRACT

Introduction: Dengue is a self-limiting acute febrile illness caused by dengue virus (DENV 1,2,3,4 & 5 serotypes). Dengue fever was first recorded in 1780 by Benjamin Rush, who named it "break bone fever" [(1)]. Dengue infection has increased over the last few decades globally. About 50–80 million dengue cases are reported annually and more than 500,000 cases develop dengue haemorrhagic fever (DHF) and 12,000–24,000 result in fatalities [(2)]. The occurrence of nonspecific febrile illness during the early stages of dengue infection makes accurate diagnosis very complex, resulting in ineffective treatment and potentially higher morbidity and mortality [(3)]. The aim of this study was to delineate the clinical and laboratory profile of dengue infections.

Material and Methods: This retrospective study was conducted in a tertiary care hospital in Mysuru, Karnataka, India, from January 2020 to December 2020. Total of 150 NS1 or IgM positive and both positive samples were included in this study. Clinical and laboratory data were collected from Medical Record Department (MRD) from the hospital in a proforma. The data were entered into MS Excel, the demographic characteristics were represented using arithmetic mean, standard deviation and percentages. Based on the registered dengue cases, taluks of Mysuru were plotted through Arc/Geographic information system (GIS) software to know the hot spots of Dengue.

Results: Most common clinical symptom was fever (98.67%) followed by vomiting (37.33%), myalgia (36%), abdominal pain (32%) and rashes (28%). Males were most commonly infected with dengue infections than females, male: female ratio was 1.44:1 and 31–50 age groups were most susceptible to dengue. Thrombocytopenia and raised PCV were noted in 85.33% and 45.33% of the cases with dengue infections respectively.

Conclusion: Thrombocytopenia and raised PCV, leukopenia, elevated liver enzymes, proteinuria, hyponatremia, raised creatinine level, pleural effusion and ascites could be used as helpful markers for careful monitoring and early management of Dengue.

Keywords: Dengue infection, DF, Thrombocytopenia, ELISA, Eosinopenia, PCV, DHF, DSS

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INTRODUCTION

Dengue infection has increased over the last few years globally. It is spread by infected Aedes aegypti mosquito and Aedes albopictus, both of which are found in close proximity to human habitation [(1,2,3)]. People who live in mainly tropical and subtropical climates are mostly infected by dengue virus. Dengue Fever (DF), Dengue Hemorrhagic Fever (DHF), and Dengue Shock Syndrome (DSS) are the major public health issues in the current climate, particularly in tropical and subtropical countries with urban and semi-urban areas **[(4)]**. Initial dengue infection can be asymptomatic, leading to non-specific febrile diseases or can develop a classical dengue fever with complex symptoms. Patients with a history of previous infection with one of the four serotypes have a significantly higher risk of developing DHF and DSS [(5)]. The loss of plasma normally happens with altered hemostasis and thrombocytopenia. Leakage can be intensive, particularly in children and can leads to DSS. Other serious complications, such as major liver, heart, or neurological involvement, may occur, but they are less common [(6)]. In the absence of vaccines and specific treatments for dengue infection, successful vector management programs based on epidemiological monitoring that

provides an accurate estimation of the outbreak is the mainstay of disease prevention and control [7]. Understanding the clinical and laboratory profile helps in early prediction of complications and taking appropriate measures to reduce morbidity and mortality.

MATERIAL AND METHODS

This retrospective hospital-based study was conducted in a tertiary care hospital in Mysuru, Karnataka, India, from January 2020 to December 2020 for a period of 1 year. The study was approved by the institutional ethical committee on 27 January 2020 (JSS/MC/PG/6929/2019-20). Total 150 patients who presented with fever and found positive Dengue NS1 and/or Dengue IgM MAC-ELISA were included in this study. From the Medical Records department, basic information such as age, gender, address, admission date, clinical profile and other details were collected. The patients' progressive data on laboratory parameters including haemoglobin, Red Blood Cell (RBC) count, Pack cell volume (PCV)/hematocrit, platelet count, White Blood Cell (WBC) count, liver enzyme levels, electrolytes level, uric acid, creatinine and others were noted in the proforma. The data was entered into MS Excel, the demographic characteristics such as age and gender were represented using arithmetic mean, standard deviation and percentages. Taluks of Mysuru were plotted through Arc/Geographic information system (GIS) software. Based on the registered dengue cases, Spatial statistical analysis was performed to identify hot spots of dengue infection in Mysuru district in Karnataka. Clinical and laboratory parameters were analyzed from the data collected.

RESULTS

Mysuru city had the highest number of dengue cases (109 cases, 72.67%) in 2020 followed by Hunsur (18 cases, 12%) and Heggadadevanakote (17 cases, 11.33%) in Mysuru district. (Figure 1).

Males were predominantly infected with the dengue virus with 88 (58.67%) cases compared to females 62 (41.4%) (Figure 2). The male: female ratio was 1.44: 1. Dengue infection was most prevalent in the 31-50 years age group with 45 (30%) dengue cases (Table 1). The results of the serology tests revealed that 61 (40.66%) cases tested positive for Dengue NS1 antigen by ELISA. Out of 150 dengue cases, 87 (58%) cases were DF, 53 (35.33%) were DHF and 10 (6.67%) cases were DSS. In this study, O with Rh (+) was the most common blood group in dengue infected patients, accounting for 46% (69) of the dengue cases (Figure 3).

The highest number of dengue cases, 87 (58%) were reported in the months of June to September, with a peak in July with 31(20.67%) cases. In this study, general physical examination revealed increased pulse rate in 113 (75.33%), systolic BP of 112 (74.67%) and diastolic blood pressure of 94 (62.67%) in dengue seropositive patients. The most common clinical symptom was fever 148 (98.67%), followed by vomiting 57 (37.33%), myalgia 54 (36%), abdominal pain 48 (32%) and rash 42 (28%) (Table-2).

Laboratory parameters: (Table 3) Platelet count of <50,000/cumm was noted in 79 (52.67%) cases, while RBC count of >4.8 million/cumm and raised PCV were observed in 59 (39.33%) and 68 (45.33%) cases respectively (Table 3 and Figure 5).

In differential leukocyte counts, eosinopenia was found in 92 (61.33%) cases, while lymphocytosis was seen in 34 (22.67%) cases. Cases with proteinuria in urine were documented in 54 (36%) cases. According to ultrasonography findings, pleural effusion, ascites and hepatomegaly were seen in 40 (26.67 %) cases, 30 (25.33%) cases and 29 (19.33%) cases in seropositive dengue patients. In terms of liver enzymes, there were 78 (52%) cases of elevated levels of alkaline phosphatase enzyme, along with AST and ALT. Increased creatinine level (>1.1 mg/dl) was documented in 49 (32.67%) cases, and hyponatremia was seen in 73 (48.67%) cases. Liver enzymes and electrolyte levels are shown in Table-4 and Figure 4.

Figure 1: Distribution of dengue cases in Mysore and its neighbouring districts

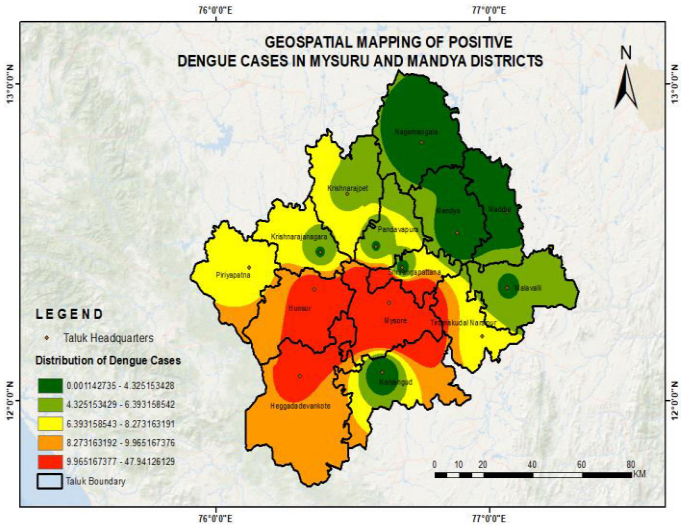


Figure 2: Gender wise distribution of dengue patients

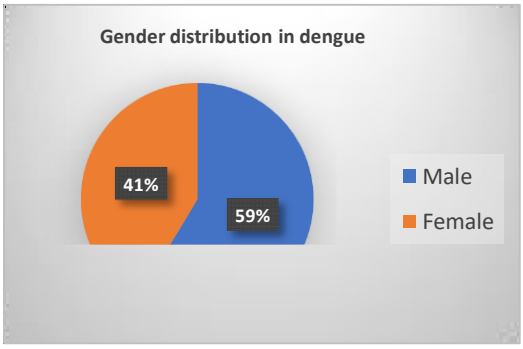


Table 1: Age wise distribution of dengue patients

Age	Cases	%
0 – 5 yrs	11	7.33%
06 – 15 yrs	31	20.66%
16 – 30 yrs	42	27.33%
31 – 50 yrs	45	30%
50 – above yrs	21	14%

Figure 3: Blood group distribution in dengue cases

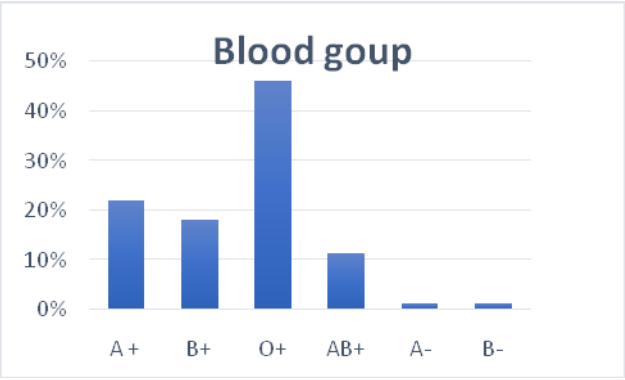


Table 2: Distribution of clinical symptoms, pulse rate and blood pressure among dengue patients

Symptoms	DF (n=87)	DHF (n=53)	DSS (n=10)	TOTAL (n=150)	%
Fever	87	51	10	148	98.67%
Myalgia	25	23	6	54	36%
Vomiting	27	22	7	57	37.33%
Rash	24	11	7	42	28%
Abdominal Pain	18	22	8	48	32%
Chills	18	13	1	32	21.33%
Petechia	0	24	6	30	20%
Fatigue	14	11	2	27	18%
Loose Stool	8	11	3	22	14.67%
Headache	12	8	2	22	14.67%
Cough	9	9	1	19	12.66%
Loss Of Appetite	10	5	3	18	12%
Arthralgia	8	4	4	16	10.66%
Musculoskeletal Pain	3	8	3	14	9.33%
Breathlessness	8	2	3	13	8.67%
Encephalopathy	4	8	0	12	8%
Pruritus	9	2	0	11	7.33%
Bleeding Manifestations	0	6	5	11	7.33%
Lethargy	5	3	0	8	5.33%
Nausea	4	2	0	6	4%
Sore Throat	5	1	0	6	4%
Shock	0	2	4	6	4%
Restlessness	0	0	2	2	1.33%
Cardiac Arrest	0	0	2	2	1.33%

Table 3: Distribution of laboratory parameters among dengue patients

Laboratory Parameters	DF (n=87)	DHF (n=53)	DSS (n=10)	Total (n=150)	%
Haemoglobin(<12gm/dl)	22	8	5	35	23.33%
Haemoglobin(>17gm/dl)	4	5	3	12	8%
RBC Count (<3.8million/cumm)	5	12	5	22	14.67%
RBC Count (>4.8million/cumm)	23	32	4	59	39.33%
TLC (<4000 cells/cumm)	14	23	2	39	26%
TLC (>11000 cells/cumm)	10	8	6	24	16%
Platelet count (<1.5lahs/cumm)	14	5	0	19	12.67%
Platelet count (<1 lakh/cumm)	17	13	0	30	20%
Platelet count (<50000/cumm)	29	40	10	79	52.67%
Platelet count (>4 lakhs/cumm)	1	1	0	2	1.33%
PCV (<30%)	9	6	0	15	10%
PCV (>40%)	16	42	10	68	45.33%
Neutrophils (<40%)	29	9	2	40	26.67%
Lymphocytes (>50 %)	23	10	1	34	22.67%
Eosinophils (<1%)	40	45	7	92	61.33%
Leukopenia	18	24	2	44	29.33%
Thrombocytopenia	50	50	10	110	73.33%
Urine albumin	27	23	4	54	36%
Pleural effusion	7	30	3	40	26.67%
Ascites	10	26	2	38	25.33%
Hepatomegaly	1	20	8	29	19.33%

Table 4: Distribution of liver enzymes and electrolyte level in dengue

AST (>32 U/L)	**23**	**8**	**2**	**33**	**22%**
AST (>100 U/L)	**33**	**38**	**3**	**74**	**49.33%**
ALT (>33 U/L)	**29**	**17**	**2**	**48**	**32%**
ALT (>100 U/L)	**9**	**30**	**5**	**44**	**29.33%**
Alkaline phosphatase (>104 U/L)	**30**	**42**	**6**	**78**	**52%**
Creatinine (>1.1 mg/dl)	**31**	**16**	**2**	**49**	**32.67%**
Sodium (<136 mEq/dl)	**28**	**38**	**7**	**73**	**48.67%**
Chloride (<98 mEq/dl)	**26**	**26**	**7**	**59**	**39.33%**

Figure 4: Distribution of electrolytes levels in dengue

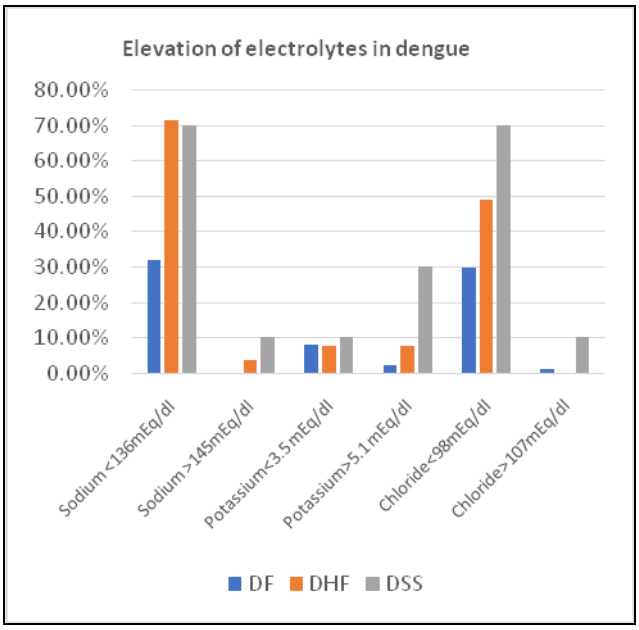
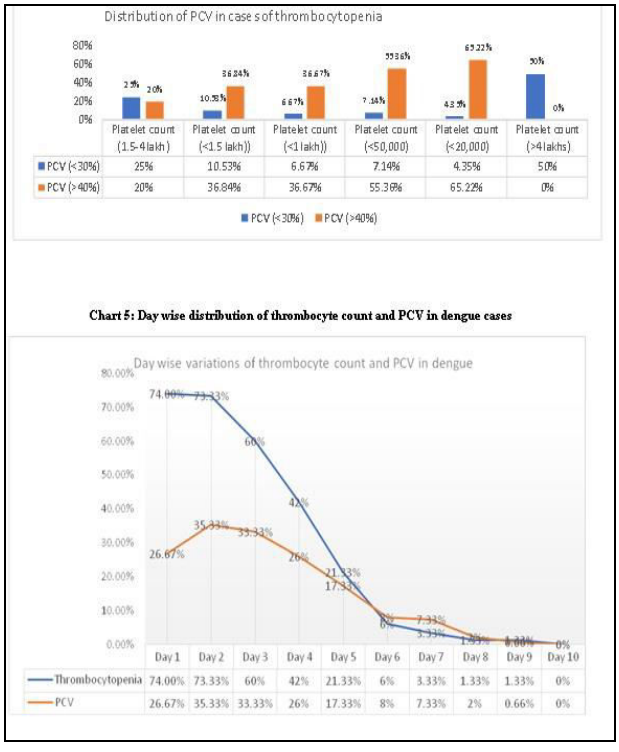


Figure 5: Distribution of PCV in cases of thrombocytopenia



DISCUSSION

Total 150 dengue NS1 and/or IgM MAC-ELISA positive cases were included in this study. We have reported the highest number of Dengue cases from Mysuru city with 109 (72.67%) cases in 2020, followed by Hunsur with 18 (12%) cases and Heggadadevanakote with 17 (11.33%) cases. Urban predominance could be due to location of hospital in Mysuru city. A study conducted by Ashwini M et al. [10] in Mysuru, Karnataka identified three hotspot taluks, where they recorded 492 (55.16%) cases in Mysore city, 118 (13.23%) cases in Mysore rural, and 83 (9.30%) cases in T. Narasipura during 2017-2018.

The data showed that out of 150 seropositive dengue patients, 87 (58%) had DF, 53 (35.33%) had DHF and 10 (6.67%) had DSS. Mohan Kashinkunti et al. [1] also reported majority of the cases with DF than DHF and DSS in their study. Age group 31–50 constituted for 30% of infections (45 of 150). According to a study conducted in Karnataka by Kachigere Siddegowda et al. [11], majority of dengue patients were aged between 30 and 40 years. Another study conducted in Karnataka by Pooja Rao et al [7] found 21–30 age group (36 cases) more susceptible to dengue cases followed by 31–50 years which had 29 cases. In North Karnataka, Mohan Kashinkunti et al. [1] also found similar results with 61% dengue cases in the age group of 16-40.

More males were infected with dengue virus compared to females in the current study, males accounted for 88 (58.67%) cases, while females accounted for 62 (41.33%) cases. Male:female ratio was 1.44:1. Exposure to A. *agypti* mosquito in the work places and travelling to endemic areas could be the reasons for higher rate of dengue cases in males. Kachigere Siddegowda et al. [11] found that males (106 cases, 67.95%) were more affected by dengue than females in their study. Pooja Rao et al. [7] in Karnataka conducted another study and found the same result with 68 (64.15%) cases in males. The present study reported the highest cases of dengue infection between June and September with 87 (58%) cases. Because of the rainy season, July is the peak month for dengue infection with 31 (20.66%)

cases. A research conducted in North Karnataka by Mohan Kashinkunti et al. [1] found similar results, with dengue cases occurring between June and September. Avinash Kumar et al. [6] reported peak incidence of dengue in the month of October with 100 (11%) dengue seropositive cases in their study.

According to the findings of this study, Dengue NS1 was positive in 61 (40.66%) cases, Dengue IgM was positive in 35 (23.30%) cases and both Dengue NS1 and IgM were positive in 54 (36%) cases. In another study conducted by Juthatip Chaloemwong et al. [12] 57.79% (89/154) of cases were positive for NS1 antigen test, dengue IgM antibody test was positive in 27.92 % (43/154) cases, and both were positive in 14.29 % (22/154) of cases. Md. Abdur Rafi et al. [5] conducted another study on 319 patients, with 304 (95.3%) positive cases for dengue NS1 antigen test and 15 (4.7%) positive cases for dengue specific IgM antibody test. According to this study, blood group O with Rh (+) was linked to a higher rate of dengue infections. The O (+) blood group was predominant in 69 (46%) of 150 dengue cases. Kashyap et al. [13] conducted a study in Bihar and noted that out of 400 cases, blood group O was present in 230 (57.50%), blood group A in 65 (16.25%), blood group B in 88 (22%) and blood group AB in 17 (4.25%). Erna Sari et al. [14] noted in their study that 16 (41%) patients in the case group and 8 (20.5 %) in the control group belonged to O blood group.

Fever (148/150- 98.67%) was found to be the most common clinical symptom in this study, followed by vomiting (57, 37.33%), myalgia (54, 36%), abdominal pain (48, 32%), and rash (42, 28%) which were significantly associated with the warning signs of severe dengue. Sanjay Kumar Mandal et al. [15] conducted a study with 74 patients in Kolkata- West Bengal, and found fever (100%) in all the cases, headache in 42, (62.16%) and rash in 28, (37.84%). In a rural hospital-based study in Karnataka, Kachigere Siddegowda et al. [11] found fever in 100% of patients (Total of 156 cases), with myalgia in 89.10% and headache in 81.41% as the most common symptoms. Another study, conducted in North Karnataka by Mohan Kashinkunti et al. [1] found that out of 100 dengue patients, fever (100%) was present in all cases, with headache in 90% cases, myalgia in 81% cases, vomiting in 56% cases, abdominal pain in 48% cases, breathlessness in 25%, skin rash in 21%, and altered sensorium in 13% cases as common clinical symptoms.

Thrombocytopenia is a common and important finding in dengue. Dengue virus demolishes and reduces the platelet production which leads to thrombocytopenia. Platelet count of <50,000/cumm was observed in 79 (52.67%) cases, haemoglobin level of <12 gm/dl in 35 (23.33%) cases, TLC of <4000cells/cumm in 39 (26%) cases, and increased RBC count (>4.8 million/cumm) was found in 32 (21.33%) cases. Platelet counts of <50,000/cumm was found in 103 (66.02%) of patients in a study conducted by Kachigere Siddegowda et al. [11] in Karnataka. In a separate study conducted in Agra by Rajesh Deshwal et al. [16], decreased platelet counts (<50,000/cumm) and Leucopenia were found in 358 (69.51%) and 104 (20.19%) cases respectively. Shashwati Nema et al. [9] also reported thrombocytopenia in 75 cases (42.61%) and leucopenia in 69 cases (39.20%). Measurement of PCV level is a common laboratory parameter in dengue fever. Raised PCV level is a warning sign for DHF/DSS leading to shock. In our study raised PCV (>40%) was observed in 68 (45.33%) dengue cases. Kachigere Siddegowda et al. [11] found increased PCV in 56(35.89%) patients. Rajesh Deshwal et al. [16] also reported increased PCV in 107 (20.77%) cases in their study.

Differential leucocyte count (DLC) is an important hematological parameter for monitoring the WBCs levels in dengue. The present study revealed that eosinopenia, neutropenia and lymphocytosis were the common findings in DLC in dengue infected patients, eosinopenia was noted in 92 (61.33%), neutropenia in 40 (26.67%) and lymphocytosis in 34 (22.67%) cases in this study. Chaloemwong et al. [12] observed Monocytosis in 60–70% of the cases, eosinopenia in 28%, and a higher neutrophil percentage was observed in the first 5 days of the fever. Thrombocytopenia and leukopenia were the most common finding in peripheral blood smear. There were 110 cases of

thrombocytopenia (73.33%) and 44 cases of leukopenia (29.33%) in this study. In Bhopal, Shashwati Nema et al. [9] reported thrombocytopenia and leucopenia in 75 (42.61%) cases and 69 (39.20%) seropositive cases respectively. Md. Abdur Rafi et al. [5], reported leukopenia (< 5000) and thrombocytopenia (< 1,00,000) in 202 (63.3%) and 97 (30.4%) of the cases which were the most common hematological finding on admission. In the current study, proteinuria and glucosuria were reported in 54 (36%) and 21 (14%) cases. Proteinuria was developed in patients with impending DHF and DSS. In a Singapore based study by Vasanwala et al. [17], reported 69% of cases with proteinuria in dengue patients. Lizarraga KJ et al. [18] also reported proteinuria in 74% of cases with DHF in their study.

Dengue virus multiplies in the hepatic cells and destroys them and causes liver injury, therefore abnormalities of liver enzymes can be found in DHF and DSS. There were 78 (52%) cases with raised alkaline phosphatase enzyme level, 74 (49.33%) cases with raised AST level (>100 U/L), and 48 (32%) cases with raised ALT level (>33 U/L) noted in this study. Kachigere Siddegowda et al. [11] reported higher levels of SGOT (41.02%) and SGPT (37.17%) in their study. ALT level >42 IU/L and AST level >37 IU/L were observed in 40 (12.5%) cases and 16 (5.0%) cases respectively by Abdur Rafi et al. [5] in Bangladesh. Sanjay Kumar Mandal et al. [15] noted increased ALT and AST levels in 70.27% and in 83.78% of the patients in their study. In this study, increased creatinine, urea and uric acid levels were noticed in 49 (32.67%), 28 (18.67%) and 17 (11.33%) cases, respectively. Abdur Rafi et al. [5] also reported increased serum creatinine levels in 21 (6.6 percent) of the cases in their study. Hyponatremia was the most common electrolyte disturbance in dengue infections with 73 (48.67%) in this study. In another study on pediatric patients in Jakarta, Natharina Yolanda et al. [19] reported hypernatremia in 73 (75%) cases with mild dengue fever and 24 (25%) cases with severe dengue. Pleural effusion and ascites are the common findings in DHF/DSS due to plasma leakage. Pleural effusion was found in the highest number of dengue cases (40 cases, 26.67%) followed by ascites in (38 cases, 25.33%) and hepatomegaly (29 cases, 19.33%) in this study. Sanjay Kumar Mandal et al. [15] found ascites and pleural effusion in 8.1 percent and 18.9 percent of cases, respectively. Rajesh Deshwal et al [16], documented pleural effusion in 103 (20%) of patients on chest radiography, ascites in 84 (16.31%) and hepatomegaly in 76 (14.80%) of patients on an ultrasound.

Thrombocytopenia and raised PCV were the most common warning signs in dengue fever. Thrombocytopenia was present in 74% of the dengue cases on the 1st day of fever and gradually decreased up to 21.33% on day 5 of fever. PCV showed a variation between 1st to 6th day of fever. In our study it was noted that raised PCV and platelet count should be monitored from 1st to 5th day of fever in dengue seropositive patients. In a Shri Lanka based study by SAM Kularatne et al. [4], found a normalization of platelet counts in 88% of cases between the 2nd and 6th day of fever and PCV showed a variation during the early fever period. Chaloemwong et al. [12] noted that 50% of the patients had thrombocytopenia on 4th day which had increased up to 80% of cases on day 6 and raised hematocrit was also observed from day 3 to day 10 of fever.

CONCLUSION

This study helps to highlight the importance of taking anti-dengue measures in the endemic areas during water stagnation periods following the initial rainy seasons and at the end of the monsoon. Our findings correspond to the all the criteria for dengue warning signs given by WHO. This study assists to determine the clinical and laboratory parameters to predict dengue severity and help the clinicians for careful monitoring and early management of Dengue that can help to reduce the hospital costs, morbidity and mortality.

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ASSESSMENT OF HOME BASED NEWBORN CARE BY ASHA IN A RURAL AREA OF DISTRICT PANIPAT

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ABSTRACT

Introduction: In cases of institutional delivery, where the baby and mother are discharged after 48 hours according to current guidelines, it is expected that care for the newborn during this period is provided in the institution. When the mother and baby return home, although the newborn has crossed the critical first day, there is still the remainder of the first week and month during which neonatal mortality could be as high as 54%, and for which care has to be provided. Any illness during this period could result in the newborn dying at home, unless the baby is provided with appropriate care or referred to a facility equipped to treat sick newborns.
Material & Methods: A community based cross-sectional survey will be done in Madlauda block of district Panipat on recently delivered women residing in the study area during the period of study. The data were collected with the help of a semi-structured interview schedule. Direct observations of ongoing visits will also be done along with interviews. The data will be entered in MS Excel 2010 and statistical analysis will be done using MS Excel 2010 and IBM SPSS v 20.0.0.
Results: Crucial skill for baby examination i.e. handwashing was either missing or only with water in case of almost half (44%) of the study participants. advice given by ASHA regarding various components was 100% regarding exclusive breastfeeding and was least (13.6%) regarding family planning. Majority of the ASHAs have made the required number of visits.
Conclusion: Though it had made a significant improvement in the health of the mother and the baby, skill based components still lack among the ASHA workers in the study area.
Key words: Antenatal, Pregnancy, Birth, delivery, HBNC

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INTRODUCTION

Home Based Newborn Care is well articulated in Government policy aimed at improving newborn survival. The major objective of HBNC is to decrease neonatal mortality and morbidity through the provision of essential newborn care to all newborns and the prevention of complications. The key activities in HBNC constitute a series of home visits by an ASHA in the first six weeks of life and till 42 days after delivery.[1] This has been achieved all over the country through repeated trainings of the ASHA workers and the efficiency of the same will be the direct measure of this study.[2] Before the initiation of Home Based Newborn Care program in the year 2011 in India the scenario revealed a very tense situation in terms of the health and survival of newborn and under 5. United Nations (UN) estimated about 23.5 Lakh child deaths in India in the year 2005 just 5 years back to the initiation of this new intervention. At that time this corresponded to over 1/5thof the world's total Under 5 deaths, more than any other country in the world.[3,4]

A study published in The Lancet revealed the under-5 mortality rate (U5MR) and neonatal mortality rate (NMR) from 2000 to 2017.Under 5Mortality Rate in India decreased from 83·1in the year 2000 to 42·4 per 1000 livebirths in in the year 2017 and similarly Neonatal Mortality Rate reduced from 38·0 to 23·5 per 1000 livebirths from the year 2000 to 2017.[5]

This improvement has been recorded due to introduction of not only one but many child survival programs and policies and Home based newborn care has been one of theses.

Major Home Based newborn care interventions include:[1]

-Performing home visits to the neonates and mothers.

-Performing physical and systemic examination of the baby and providing advice to the mothers regarding essential components of newborn, infant and post-natal mother care.

-Basic elements of child care like hand-hygiene before handling the baby and wrapping the baby in blanket for hypothermia prevention.

-Tracking and recording the growth of the baby till 42 days of life in terms of record of birth weight.

-Identifying any danger signs and symptoms and prompt referral

-Identifying any congenital disorders or defects as per the Rashtriya Bal Swasthya Karyakaram Guidelines[6]

Rationale for The Study

Though trainings have been done intensively for the ASHA workers to function effectively in provision of these home based services many of regions have reported the knowledge and skills of the ASHA workers to be questionable. So this study was planned to assess the same in view of the beneficiaries' feedback regarding these services in the Madlauda block of Distract Panipat Haryana where limited information regarding this exits as of now. This study was undertaken to assess the provision of Home Based Newborn Care by ASHA. The objectives of study were to evaluate the knowledge and skills of ASHAs in providing HBNC services and to appraise the quality of visits in terms of response given by the beneficiaries.

MATERIAL & METHODS

Study Design: This study was a community based cross -sectional study done from 1st August 2019 to 31st January 2020 in Madlauda block of District Panipat having a population of 1.43 lakhs. multistage sampling technique was used to select villages.

Inclusion Criteria: Mothers who gave birth to a live baby in the past 6 months from period of study and who had given consent to participate.

Those who could not be contacted even after three visits and who didn't give consent to participate in the study were excluded.

Sample Size: Minimum sample size of 243 was calculated using the following formula[7]

$N=3.84PQ/L^2$

Where P=80.6 (Considering delivery rate of rural Haryana) 80.4% as per NFHS-IV[8];

Q= 19.6 (100-P)

L^2= 25 (5X5 absolute error 5%)

This was rounded off to 250 so as to include equal number of study participants from 10 selected villages.

Study Tool: It was a pre-designed and pre-tested interview schedule prepared prior to the start of the study and tested as a pilot project on 25 study subjects. All the objectives were fulfilled.

Data Collection: Villages were selected from a list of villages in the Madlauda block by multistage stratified sampling. Data were collected through house to house survey involving face to face interviews with recently delivered women fulfilling inclusion criteria in the selected study villages. Verbal informed consent was obtained before interviewing the women. The data were entered in MS Excel 2010 and statistical analysis was done using MS Excel 2010 and IBM SPSS v 20.0.0.

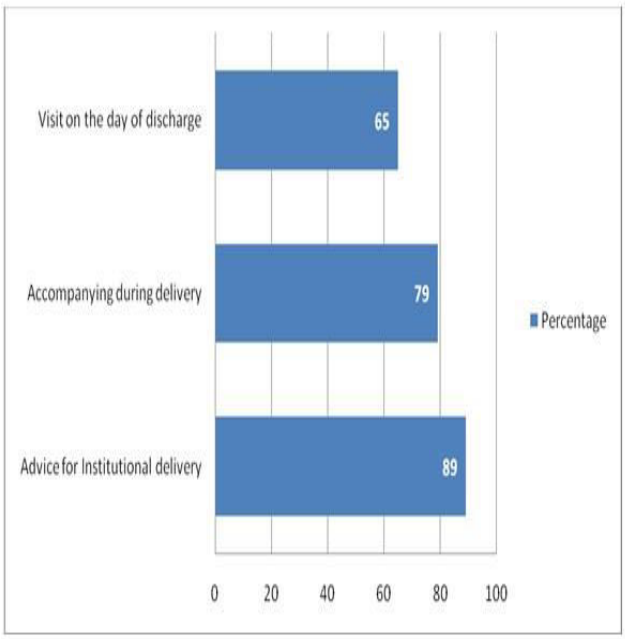
RESULTS

The socio-demographic characteristics of the study participants represented the majority groups to be 25-30 years of age belonging to joint families, Hindu by religion of general caste. Majority were having low level of schooling, were house-makers and of lower socio-economic status. (Table:1)

Table: 1 Socio-demographic characteristics of the study participants. (N=250)

Socio-demographic Variables	Number (N)	Percentage (%)
I. Age distribution (in years)		
<25	76	30.4
25-30	115	46
>30	59	23.6
Total	250	100
II. Type of family		
Nuclear	77	30.8
Joint	173	69.2
Total	250	100
III. Religion		
Hindu	221	88.4
Muslim	29	11.6
Total	250	100
IV. Caste		
General	141	56.4
OBC	92	36.8
SC/ST	17	6.8
Total	250	100
V. Educational status		
Illiterate	81	32.4
Primary	59	23.6
Junior High school	51	20.4
High school	34	13.6
Intermediate	18	7.2
Graduate or above	7	2.8
Total	250	100
VI. Occupation		
Unskilled labor	13	5.2
Semi-skilled labor	23	9.2
Skilled	18	7.2
Shopkeeper/Clerical	8	3.2
Semi-Professional	0	0
Professional	0	0
Housewife	188	75.2
Total	250	100
VII.Socio-economic class		
Upper class	6	2.4
Upper middle class	11	4.4
Middle class	59	23.6
Lower middle class	126	50.4
Lower class	48	19.2
Total	250	100

Figure 1: Services provided by ASHAs before delivery. (N=250) (Multiple Response)



Majority (79%) of the study participants were accompanied during their delivery to the health center, also 2/3rd were visited on the day of discharge. A vast number (89%) were counselled for provision of institutional deliveries by ASHA workers during their ante-natal period. (Figure: 1)

Figure 2: Pie chart showing number of HBNC visits made by ASHAs (N=250)

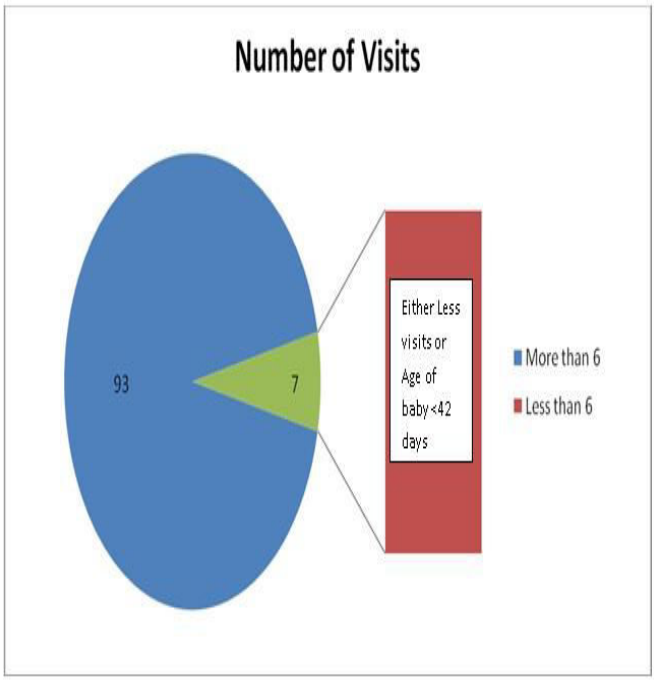
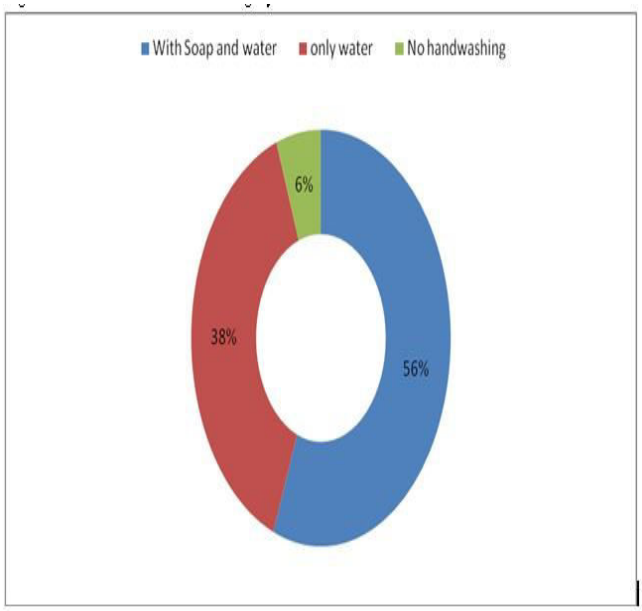


Table 2: Response of the study participants regarding pre-requisites of HBNC visits: (Percentage)(N=250)

Component	Number	Percentage
Greetings by ASHA	250	100
Visit information provided by ASHA	165	66
Hand washing by ASHA	235	94
Removing baby clothes before examination (if any)	72	28.8

All the study participants responded that they were greeted by ASHA worker. However only 66% informed why they were making the visit. Majority had performed hand washing 94%. And only one third of the ASHAs actually removed the baby clothes for examination during one or more visits. (Table 2)

Figure 3: Practice of hand washing by ASHA



Crucial skill for baby examination i.e. handwashing was either missing or only with water in case of almost half (44%) of the study participants. (Figure 3)

Table 3: Response of the study participants regarding core components of HBNC

Component	Number	Percentage
Weighing of newborn	246	98.4
Record of body temperature	235	94
Breath count of newborn	41	16.4
Securing baby in blanket	176	70.4

Baby weight was recorded in almost all the cases (98.4%) but the point to be marked is that a lesser number i.e. 201 (81.7%) out of 246 were informed about weight changes i.e. gain or loss and the rest were not informed anything at all.

Body temperature was also recorded in majority of the study participants 235(94%) while in cases where weight was not recorded either the respondent did not know about or responded with lack of thermometer from the ASHA end to be the cause for no record of baby temperature in the latest visit.

Breath count was surprisingly recorded in very less number of study participants 41(16%) which might reflect the ASHAs ability to measure the breath counts correctly. To this majority of the respondents replied about unawareness of the record of breath counts while a few told about lack of a working watch possessed by ASHAs in the latest visit.

Way to secure the baby in blanket were demonstrated to three-fourth of the study participants by ASHAs. This number seems to be a good one but upon asking for demonstration only about 52 (30%)out of those taught demonstrated correctly. (Table 3)

Table 4: Advice given by ASHA after completion of the examination

Component	Number	Percentage
Exclusive breastfeeding	250	100
Prevention of hypothermia	188	75.2
Danger Signs	170	68
Immunization	202	80.8
Family Planning	34	13.6

Table 4 shows that the advice given by ASHA regarding exclusive breastfeeding was 100% and was least regarding family planning (13.6%).

DISCUSSION

The present study had observed that the Home based newborn care provided in the study area is not up to the mark. There have been several parameters on which the services lack on part of the ASHA workers. Various key components like record of weight and of body temperature had been adequate but the record of breath counts is drastically low which could be due to potential

skill based gaps. Similar findings have been previously documented in various studies.[9,10]

When talking of the number of visits observed in this study majority 93% reported to be visited by ASHAs for home visits regarding Home based newborn care. Also in 7% of the respondents either the baby age was less than 42 days or totals visit numbers were unsatisfactory i.e. less than 6.(Figure 2) In a similar study 85 percent of the children (aged 3-23 months) received at leastone infant care home visit in the intervention districts.[11]

Also in a study conducted in Haryana state only similar thing was observed that majority of ASHA workers were not able to record temperature and weight of the baby correctly.[12]

In 96% of the recordings had washing was done but was poor in case of almost half (44%) of the study participants as they only washed hands with plain water and no soap was used. While a study conducted in Lucknow city of Uttar Pradesh showed these hand washing numbers with soap and water before examining the baby to be in 75% of the cases as reported.[13]

Same study also revealed that 74% of mothers got counselling on newborn care in postnatal period and the maximum counselling were given on Breastfeeding (66.5%), Immunization (66.5%), and the danger signs of Newborn (51%) and the least was given on Eye care (4%) and the 102 Ambulance services (3.5%).[13] While in the present study majority of the ASHA had correctly provided the advice regarding first Exclusive breastfeeding, Prevention of hypothermia, Danger Signs, Immunization and Family Planning. These findings correspond to the studies from Maharashtra and West Bengal[14,15]

This advice has actually helped raise the number of exclusive and early breastfeeding in the country.[16]

Inappropriate breastfeeding practices and delayed complementary feeding are two of the most common factors causing malnutrition in children up to 2 years of age.[11]

The findings from the Gadchiroli trial had also shown that the feasibility and effectiveness of frontline health workers in providing Home based newborn care several years back.[17]

The present study has effectively elaborated what is the perception of mothers towards the Home based newborn care visits conducted by ASHAs in their homes after delivery. Some limitations like recall of the services provided due to forgetfulness might be there. Moreover, some of the study participants might not be able to percept the technical skill based services like recording of birth weight, breath counts, etc.

Conclusion: The knowledge and skill of ASHA workers as perceived by the study participants is very well but the skill based components in provision of home based newborn care needs to reviewed with repetitive trainings and hands on demonstrations.

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INTRALESIONAL THERAPY IN MANAGEMENT OF POTT'S SPINE

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ABSTRACT

Introduction: Some Tuberculosis patients with paravertebral abscess (PA) do not respond to treatment. In this study we have analysed the influence of intracavitary streptomycin infusion therapy in addition to image-guided percutaneous drainage of PA and standard ATT regime in cases of spinal TB with PA.

Material and Methods: Forty such patients were prospectively evaluated and divided into 2 equal groups. Group 1, Aspiration Only group (AO), received treatment in the form of USG or CT guided Pig tail catheter drainage of pus and continuous drainage for 15 days with standard chemotherapy.

Group 2, aspiration and local streptomycin infusion group (ALST), received treatment by image guided pig tail catheter placement and daily aspiration and streptomycin infusion in abscess cavity for 5 days.

Results: Follow up was 18 months. In AO group, re-aspirations were required in 40% (8/20) of the cases with average number of re-aspirations 1.63. In ALST group re-aspiration was required in only 10% (2/20) of the cases (p value of 0.028) which is statistically significant. No significant difference was found in average number of re-aspirations required in both groups (1.63 in AO Vs 1.5 in ALST).All the patients in ALST group showed complete resolution of the abscess at the completion of treatment while only 70 % of the patients (14/20) in AO group showed complete resolution

Conclusion: Local infusion of Streptomycin in addition to image guided percutaneous aspiration of paraspinal abscess and oral ATT is a safe and effective method for management of spinal TB with PA.

Key words: Tuberculosis, intracavitary streptomycin, paravertebral abscess

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INTRODUCTION

According to the World Health Organization's (WHO 2015) Global Tuberculosis (TB) Report, newly emerging multidrug-resistant TB and TB alongside HIV have become a leading cause of death worldwide (1). Skeletal TB contributes to around 10% of extra pulmonary TB, and spine has been the most common site, adding up to half of skeletal TB (2,3). India contributes around 23% of the global TB burden and among them 22% cases have spinal TB (4). Psoas or paravertebral abscesses (PAs), which were first reported by Mynter in 1881 (5), is a common complication associated with spinal TB. It results from local myositis secondary to infection and present in 75-83 % of the cases of spinal tuberculosis. Currently, preferred modality for management of PA in spinal TB is image guided percutaneous drainage along with oral antitubercular chemotherapy (ATT). A high local drug concentration is the key factor for optimal control of infection and prevent recurrence(6). Only few patients of PA respond to percutaneous aspiration alone because poor blood supply and acidic environment inside the abscess cavity prevent effective local delivery of ATT thereby increases the chances of recurrence (6,7). Direct instillation of drug inside abscess cavity after percutaneous drainage can have better outcome as it reduces bacterial load and provide adequate concentration of drug in the cavity. Local infusion therapy with percutaneous aspiration of PA along with oral ATT has been tried in very few studies in past with some success (8,9,10). In this study we have analysed the influence of intracavitary streptomycin infusion therapy in addition to

image-guided percutaneous drainage of PAs and standard ATT regime in cases of spinal TB with PA.

MATERIAL & METHODS

In this study, total 40 patients who presented to our institute between June 2015 to May 2018 with radiological an clinical diagnosis of thoracic and/or lumbar tuberculosis with paraspinal abscess were prospectively evaluated. All the patients were evaluated with gadolinium enhanced MRI and USG of paraspinal abscess. Mean age of the patients was 29.6 years (Range 16 years to 48 years).

Inclusion criteria:
1) Radiological and clinical diagnosis of Dorsal and/or Lumbar tuberculosis with para spinal abscess
2) Size of abscess =/>3cm on its maximum diameter.
Exclusion criteria:
(1) Patients with significant spinal instability, Kyphosis and vertebral collapse.
(2) Patients with significant neural compression and progressive neurological deficit
(3) Patients who didn't cooperate for the study.
(4) Patients with military TB, severe immunocompromised state.

All these patients were randomized into two groups on the basis of random number sequence generated by the computer. Thus, each group had 20 patients. Both groups were similar in demographic characteristics, disease burden, abscess size, previous ATT treatments and comorbidities. All patients received standard ATT for 18 months as per regime, i.e. HRZE for first 2 months (intensive phase) and HR for remaining 16 months (continuation phase).
The first group, we named it aspiration only group (AO), received treatment in the form of USG or CT guided Pig tail catheter drainage of pus and continuous drainage for 15 days with standard chemotherapy. Local USG used to monitor abscess size and if required repeat aspirations were done. Patients also evaluated clinically during follow up period for resolution of local signs like reduced swelling and tenderness.

The second group, aspiration and local streptomycin infusion group (ALST), received treatment in the form of image guided Pig tail catheter placement and daily aspiration and streptomycin infusion in abscess cavity for 5 days. This group of patients also received similar chemotherapy and follow up with that of AO group.

Both group of patients were kept in regular follow up and were evaluated with CEMRI and USG of PA at 3 months, 6 month, one year and at the completion of the treatment.

Outcome was analysed based on number of aspirations required, symptomatic relief and extent of resolution of abscess cavity evident on contrast MRI. Statistical analysis of outcome was done using STATA 2 software.

Intervention and technique:

Group 1 (AO)- All patients in this group underwent image guided insertion of pigtail catheter in abscess cavity. Part was prepared, painted with standard disinfectant solution and draped. The location of maximum diameter of pus cavity was confirmed by ultrasound. Patients, in whom abscess could not be localised distinctly on USG, Contrast enhanced CT scan was used to localise the abscess cavity and placement of catheter. Subcutaneous local anaesthesia was injected after sensitivity checking and puncture needle was inserted. The correct position of tip of puncture needle was confirmed with USG and needle core was removed. Pigtail drainage catheter was inserted into the abscess cavity. Pus was extracted and sent for microscopic test to detect acid-fast bacilli. After fixing the catheter it was connected to a drainage bag. This was kept in situ for about 15 days in all the patients in this group. ATT were continued and patients were discharged from the hospital on day 2 after confirming the correct position of catheter tip on USG. All patients were re-evaluated with USG on 15th day to see the extent of evacuation of pus and regression of size of abscess cavity. Drainage tube was removed in all the patients on 15th day irrespective of residual collection as passive drainage had stopped in all the patients.

Group 2 ALST- All the steps till insertion of drainage tube in these patients were similar to that of Group 1. After confirming the correct position of catheter, pus was aspirated actively by creating negative pressure with 5 ml syringe. After maximum possible aspiration we instilled streptomycin solution (constituted by diluting 1.0 gm of streptomycin powder in 50 ml of 0.9 % normal saline) into the abscess cavity. Drainage catheter was blocked for next 24 hr and same step was repeated for continuous 5 days. On day 6th catheter was removed after aspiration of abscess

under USG guidance. Systemic ATT was continued and patients were discharged on day 6th.

RESULTS

All 40 patients completed the final follow up period of 18 months and were included in outcome analysis. There were no statistically significant differences of age, sex, involved levels and size of abscess at start of treatment in both the groups. **(Table-1)**

In AO group, re-aspirations were required in 40% (8/20) of the cases during course of treatment with average number of re-aspirations 1.63. In ALST group re-aspiration was required in only 10% (2/20) of the cases (p value of 0.028) which is statistically significant. No significant difference was found in average number of re-aspirations required in both groups (1.63 in AO Vs 1.5 in ALST).

All the patients (20/20) in ALST group showed complete resolution of the abscess at the completion of treatment while only 70 % of the patients (14/20) in AO group showed complete resolution, which is statistically significant (p-value 0.008).**(Table-2)**

All patients in study received ATT according to standard treatment protocol mentioned above and compliance of treatment was ensured on routine follow up. None of the patients in either group developed any complication, directly related to the intervention.

One patient in AO group developed progression of symptoms and spinal instability during the course of treatment and underwent surgical intervention.

DISCUSSION

Thoracolumbar spinal tuberculosis commonly presents with paraspinal and psoas abscesses (PAs). Percutaneous drainage of PA along with oral chemotherapy has been proved to be safe and effective method of treatment in spinal TB (11,12,13) . Percutaneous drainage of abscess reduces the Mycobacterium load and cytokines burden and thus enhances the effect of chemotherapy, promotes faster recovery and prevents recurrence. (14,15)

It has been corroborated by various studies as well that the patients in whom there is no neurological deficit or vertebral instability, percutaneous drainage (16,17,18,19) or endoscopic drainage with or without debridement (8,20) are recommended treatment options in addition to standard four drug antitubercular chemotherapy.

A high local drug concentration is the key factor for optimal control of infection and prevents recurrence (6). Poor blood supply and acidic environment inside the abscess cavity prevent effective local delivery of ATT thereby increases the chances of recurrence (6,7). Direct instillation of drug inside the abscess cavity after percutaneous drainage leads to adequate concentration of drug inside the cavity as well as removes remnant tubercular bacilli and thus leads to improved outcome.

Local infusion therapy with isoniazid along with minimally invasive percutaneous drainage of PA has been tried in the past with some success but due to lack of control group, a convincing conclusion couldn't be drawn (7,21).

We had used Streptomycin for intracavitary infusion because it has strong bactericidal action against extracellular bacilli and due to its infrequent use as primary ATT, it has lesser chances of drug resistance. In addition, local infusion also eliminates its systemic side effects like vestibular and nephrotoxicity which enables it to be used even in elderly and in those with renal compromise. Due to its local irritant nature, Streptomycin also enhances fibrosis and promotes rapid healing of wound (22).

Tuli, in his series of management with "middle path" regimen, reported successful healing of PA by aspiration and local instillation of streptomycin in 85 % of the patients. But there was no control group to compare the additional effect of local streptomycin along with percutaneous drainage (23).

In another study, the role of local streptomycin in addition to oral ATT was assessed to prevent surgical site infection (SSI) and it was noticed that patients in whom local Streptomycin was used, had lower incidence of SSI, however it was not statistically significant (24).

In our study, we have compared two groups of similar demographic characteristics, disease burden, abscess size and comorbidities. The results has clearly shown that local infusion of streptomycin in addition to percutaneous aspiration has significantly improved outcome as compare to only aspiration of abscess. It corroborates previous studies and validate our

assumption before the start of study that local infusion therapy in addition to image-guided percutaneous aspiration and conventional ATT is a safe and effective treatment for spinal tuberculosis with Paraspinal or PA and it should be the first choice in case of spinal TB with PA where there is no spinal instability or any neurological deficit.

CONCLUSION

Local infusion of Streptomycin in addition to image guided percutaneous aspiration of paraspinal abscess and oral ATT is a safe and effective method for management of spinal TB with PA in those patients where there is no neurological deficit or spinal instability and has significantly improved outcome.

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EFFECT OF COVID-19 PANDEMIC ON MENTAL HEALTH OF HEALTH CARE PROFESSIONALS OF TERTIARY CARE CENTER IN NORTH INDIA

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ABSTRACT

Introduction- COVID-19 pandemic has made the existing health care system in the world highly questionable. The health care givers are facing a highly challenging situation and are putting their best efforts to save lives. Simultaneously, they are getting subjected to huge physical and mental exhaustion with increased workload. The present study is aimed to understand the mental health status of frontline workers in a tertiary care center of North India (State- Uttarakhand) during the COVID pandemic.

Material and Methods- Anonymous questionnaire based survey was conducted on the employees (n= 238) of a medical college of North India during the first wave of COVID pandemic. All the participants were physically and mentally healthy and comprised of doctors, nursing staff, hospital attendants/ward boys, housekeeping staff and guards working in the medical college and its associated hospital.

Results-The study revealed that female primary health care providers who were deployed in high risk areas revealed mild to moderate grade of anxiety and depression as compared to their male colleagues and those working in low risk areas.

Conclusion-The study revealed the burden on mental health due to the present pandemic on the health care workers acting on the forefront.

Key words- Pandemics; Primary health care providers; Ancillary staff; Mental health; Anxiety; Depression.

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INTRODUCTION

Coronavirus disease (COVID-19) is an infectious disease caused by a newly discovered coronavirus known as severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). The viral infection erupted in December 2019 and epicenter of the infection was Wuhan City, China [1]. With a high infective rate, the disease flared within no time throughout China and crossed its borders to emerge as a pandemic disease to grip the entire world. Most people infected with the COVID-19 virus experience mild to moderate respiratory illness and recover without special treatment. Older people and those with underlying medical problems like cardiovascular disease, diabetes, chronic respiratory disease, and cancer are more likely to develop serious illness [2]. The virus spreads primarily through droplets of saliva or discharge from the nose when an infected person coughs or sneezes, facilitating the community spread of the virus. At present, there are no specific vaccines or treatments

for COVID-19. However, many ongoing clinical trials are evaluating potential treatments [3].

The unavailability of any specific treatment or vaccine against the virus has put the global health care system on its toes. The frontline workers are putting forth their best efforts to combat the disease. However, with an increasing number of patients with every passing moment, these frontline workers are overburdened. Coronavirus disease (COVID-19) is an infectious disease caused by a newly discovered novel coronavirus, also known as severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). The viral infection erupted in December 2019 and epicenter of the infection was Wuhan City, China [1]. With a high infective rate, the disease flared within no time throughout China and crossed its borders to emerge as a pandemic disease to grip the entire world. Most people infected with the COVID-19 virus experience mild to moderate respiratory illness and recover without special treatment.

Older people and those with underlying medical problems like cardiovascular disease, diabetes, chronic respiratory disease, and cancer are more likely to develop serious illness [2]. The virus spreads primarily through droplets of saliva or discharge from the nose when an infected person coughs or sneezes, facilitating the community spread of the virus. At present, there are no specific vaccines or treatments for COVID-19. However, many ongoing clinical trials are evaluating potential treatments [3].

The unavailability of any specific treatment or vaccine against the virus has put the health care system across the globe on its toes. The frontline workers are putting forth their best efforts to combat the disease. However, with an increasing number of patients with every passing moment, these frontline workers are overburdened. Further shortage of technical and skilled manpower, personal protective equipment, and testing kits has worsened the situation. Hospitals are getting flooded by patients and deaths in immune-compromised and other high-risk patients infected with COVID are inevitable. The frontline health care professionals are deputed 24 × 7 for these patients and are mandated to stay away from their family members to prevent the spread of infection. This has led to huge toll on physical and emotional well being of workers who are directly or indirectly involved in the prevention and cure of the disease [4]. Many of them have tested positive which has further burdened the health care system. The escalated number of patients with varied disease presentation, risk of getting infected, the agony of staying away from family, physical exhaustion, impolite behaviour of patients, non-cooperation of common people contribute to huge mental fatigue of these caregivers.

A few studies from other countries have reported the mental stress of healthcare professionals working on the frontline during this pandemic [5-7]. Since the pandemic has put every individual in an unexpected situation, the health care workers are being affected by the pandemic. The present study is undertaken to find the effect of a pandemic on the mental health of doctors, nurses, paramedical staff, housekeeping staff, attendants, clerical staff and guards employed in a tertiary care centre in North India. They have constantly been treating the COVID patients with success in the state from the beginning and claim to admit and successfully treat the first Corona positive case of Uttarakhand (India).

MATERIAL & METHODS

The present study is a questionnaire based study conducted from mid June-July 2020. It was undertaken after seeking approval from Ethical Clearance committee of Government Doon Medical College, Dehradun (letter no.- IEC/GDMC/2020/97).

The study participants (n= 238; males-153, females- 85) comprised of physically and mentally healthy doctors, nursing staff, hospital attendants/ward boys, housekeeping staff and guards working in the medical college and its associated hospital. Informed consent was obtained from each participant.

Employees suffering from any systemic or psychiatric disorder or under treatment for mental/systemic disease were excluded from the study. Those who were not willing to participate in survey were also excluded from the study.

The study participants were divided into different subcategories based on gender, age, marital status, designated role in occupation (Primary health care providers, ancillary staff) and departments (High risk, low risk)

The participants were categorized according to following age groups -18-25,25-30, 30-40, 40-50, > 50 as there were employees of various ages who voluntarily participated in the study.

Doctors, nursing staff, paramedical staff constituted the primary health care providers whereas housekeeping staff, ward attendants, pharmacist, clerical staff were categorized under ancillary staff.

The primary health care providers and ancillary staff who were deployed for active COVID patient care were categorized into high risk group whereas those who were posted in areas other than active patient care were categorized into low risk group.

All the participants were provided with pre-validated questionnaire for depression (PHQ-9) [8] and anxiety (GAD-7) [9,10] which was in English and also translated in regional language (Hindi). They were advised to answer the questionnaire individually so that their individual perception could be recorded. The responses of these questionnaires were analyzed to assess the results.

Sample Size

There are 618 employees in our institute. After using this Sample size formula, we get 238 sample size by considering 5% margin of error. Here

N = population size

• e = Margin of error (percentage in decimal form)

• z = z-score= 1.96

$$sample\ size = \frac{\frac{z^2 p(1-p)}{e^2}}{1 + \frac{\frac{z^2 p(1-p)}{e^2}}{N}}$$

Statistical analysis

The data was analyzed on basis of socio-demographic and clinical variables which was subjected to multivariable linear regression analysis. SPSS software was used for the analysis. p-value <0.05 was considered to be statistically significant.

RESULTS

Table 1: PHQ and GAD Analysis by Socio- Demographic / Clinical Variables

Variables	Sub Categories	Number	%	PHQ (Mean ±SD)	p value	GAD (Mean ±SD)	p valve
Total		238	100.00	5.03±5.37		1.17±2.70	
Gender	**Male**	153	64.29	4.67±5.27	0.158	0.89±2.38	**0.034**
	Female	85	35.71	5.69±5.53		1.67±3.16	
Age	**18-25**	25	10.50	5.32±5.65	0.403	1.76±3.55	0.145
	25-30	53	22.27	5.09±5.69		0.66±2.26	
	30-40	74	31.09	4.08±4.91		1.35±2.70	
	40-50	61	25.63	5.57±5.53		1.50±3.05	
	>50	25	10.50	6.12±5.34		0.32±0.90	
Marriage	**Unmarried or Divorcee**	19	7.98	0.06±0.25	**0.000**	0.12±0.34	0.106
	Married	219	92.02	5.46±5.39		1.26±2.80	
Occupation	**Primary Health Care Providers***	77	32.4	6.27±4.81	**0.014**	2.46±3.63	**0.000**
	Ancillary Staff**	161	67.6	4.44±5.54		0.55±1.84	
Department	**High Risk**	133	55.88	5.70±5.18	**0.031**	1.72±3.22	**0.000**
	Low risk	105	44.12	4.19±5.52		0.47±1.63	

*Doctors/Nurses/Technical Staff

** Pharmacist/ Clerical Staff/ Attendant/ Cleaning, Ward boy/ Ayah

Table 2: Multivariable Linear Regression Model of GAD-7 anxiety symptom scores and socio-demographic/clinical variables

Variables	B (95% Confidence Interval)	p- Value
Age	-0.010(-0.046-0.025)	0.566
Gender		
Male ("Female " Reference category)	0.110(-0.644-0.863)	0.774
Occupation		
Primary Health Care Providers ("Ancillary Staff" Reference category)	-1.627(-2.498- -0.756)	0.000
Department		
High Risk ("Low risk" Reference category)	-0.308(-1.131-0.514)	0.461
Marital Status		
Married ("Unmarried or Divorcee" Reference category)	-0501(-1.943-0.941)	0.494

Table 3: Multivariable Linear Regression Model of PHQ-9 Depressive symptom scores and socio-demographic/clinical variables

Variables	B (95% Confidence Interval)	p- Value
Age	-0.004(-0.075-0.068)	0.922
Gender		
Male ("Female " Reference category)	0.516(-1.004-2.037)	0.504
Occupation		
Primary Health Care Providers ("Ancillary Staff" Reference category)	-1.047(-2.806-0.711)	0.242
Department		
High Risk ("Low risk" Reference category)	-0.615(-4.325- -1.259)	0.003
Marital Status		
Married ("Unmarried or Divorcee" Reference category)	-4.981(-7.981 - -2.070)	0.001

PHQ-9 mean difference was found to be significant in context to marital status (married vs non-married or divorcee), occupation (Primary health care providers vs ancillary staff) and department (High risk vs low risk) while GAD 7 mean difference was found to be significant for gender, occupation and department (Table 1). Our results reveal that females were more likely to be in depressive and anxious state as compared to their male counterparts. Older age group, married, primary health care providers and participants who were working in high risk areas had high mean PHQ-9 and GAD -7 score (Table 1).

Further, results of multivariable regression models for GAD-7 and PHQ-9 as dependent variables revealed that occupation (Primary health care providers vs ancillary staff) (β= -1.627; 95% CI (-2.498, -0.756) had significant contribution to anxiety (Table 2) whereas depression was significant in married employees (β= -4.981; 95% CI (-7.981,-2.070) working in high risk areas (β= -0.615; 95% CI (-4.325, -1.259) (Table 3)

The level of anxiety and depression was found to range between mild to moderate grade according to GAD-7 and PHQ-9 scoring respectively. Only one female housekeeping staff was analyzed to have moderately severe grade of depression.

DISCUSSION

COVID 19 pandemic has brought with it several challenges and hardships for everyone. For a developing and overtly populated country like India with a healthcare system with limited facilities, the pandemic has put the entire health care providers in a precarious situation. The health care system's challenges are restricted to cater to huge population size. Still, it is further challenging to manage the patient in this gruesome pandemic with wide diversity in religious and cultural practices. In such a scenario, the health care professionals not only have to deal with patient care but also with other challenges like shortage of personal protective equipments and testing kits [11], active policy development to cater for patient care according to geographic regions, continuous interaction with government officials, implementation of lockdown regulations and several other factors additionally leading to escalating mental exhaustion.

Despite odds, health care professionals are rendering their services to combat the pandemic. In this effort, they are staying away from their loved ones and have not visited them since months [12]. The workers actively deployed in high-risk areas prefer staying within hospital premises. Their services are unhindered and pose less risk for the spread of infection to others.

In such a situation, these workers likely face mental exhaustion with time. The present study Government Doon Medical College, Dehradun employees (Uttarakhand, India), is the first to report the state of the mental burden on these workers. The hospital associated with the medical college exclusively manages positive corona cases and suspected cases from the pandemic's beginning in the state. The employees are working dedicatedly to manage the patient inflow efficiently.

The study results show that the primary health care providers who were actively involved in patient care in high-risk areas were more anxious and depressed than the ancillary staff. The severity of both anxiety and depression ranged from mild to moderate grade. The work of the ancillary staff comprised of clerical work, housekeeping, security, dispensing the drugs from the store. These activities did not involve active patient interaction. On the contrary, the primary health care providers in high risk areas were actively engaged in managing COVID patients. Hence the level of psychological burden was higher in these workers.

Further, married people deployed in high-risk areas were facing more difficulties than unmarried/divorcee employees. This statistically significant difference could have been possible as married people were much higher than unmarried/divorcee staff (219 vs 19). Moreover, staying away from family in this pandemic and being concerned about their welfare might have contributed to the mental burden of married employees. Further discrimination of the caregivers in society by people has complicated the situation. Their landlords often ask the health care workers and their family to vacate their residence due to fear of pandemic [13]. Several episodes of untoward incidents of abusive behaviour with health care staff by patients perpetuate the problem leading to their demotivation [14].

While analyzing the data, we could realize that majority of the employees had a feeling of pride as they were able to serve society and their nation in this time of emergency, as documented by the workers in the "comments" section of the form. Many of the employees working in high-risk areas raised concerns about the shortage of PPE kits during the initial phase of the pandemic.

The limitation of the present study is that it is based solely on individual's perceptions with no supportive stress marker studies or psychological assessment tests. However, in the current situation of a global pandemic where the health care system is already overburdened and understaffed, a questionnaire-based survey was conducted to understand the status of mental health in the medical college employees.

Thus the present study provides an insight into the psychological burden on the health care team in our scenario. It is pertinent to understand that healthcare providers face myriad problems due to this pandemic variously affecting their mental well-being and working efficiency.

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A KNOWLEDGE ATTITUDE AND BEHAVIOUR STUDY ABOUT HAIR COSMETICS IN MBBS STUDENTS

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ABSTRACT

Background- Misbeliefs about hair care that still exist in the mind of young students can be corrected by imparting useful scientific knowledge of hair care in the target population. There are many harmful products being used only because of lack of knowledge and awareness. Due to the paucity of KAB studies regarding hair care, we decided to undertake this study so as to assess the impact of hair-related knowledge during undergraduate medical training. This study was undertaken to assess the student's knowledge, attitude and behaviour towards hair cosmetics.

Materials and Methods- A detailed questionnaire which included various open-ended, semi-open-ended, and close-ended questions covering various aspects of hair care was prepared and validated. This questionnaire was given to MBBS students of Sree Balaji Medical College and Hospital, Chennai to do a Study of Knowledge, Attitude, and behaviour of Hair Cosmetics. The data was analyzed. A KAB score for each KAB variable was defined as percentage of respondents who gave appropriate response.

Results-Nearly, 60% of students felt that graying of hair is usually because of nutritional deficiency, followed by the attribution of graying to a hereditary component in 27% of the students. Nearly 75% of students looked for lather formation as an important determining factor while selecting a shampoo, followed by appealing fragrance as the next determining factor. Only 25% of the medical students felt that it was essential to use hair conditioner after shampooing every time after hair wash. Majority (76%) of them were not satisfied with their hair.

Conclusion- We could find significant differences between medical students as regard to KAB of hair cosmetics. This study may provide the knowledge to pharmaceutical and hair care industries to manufacture or synthesize particular products that can fulfil certain demands in specific age groups.

Key words- Chemicals, conditioner, dandruff, hair fixing spray, greying, medications

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INTRODUCTION:

Hair is an integrated system with a peculiar chemical and physical behaviour.[1] Hair care and styling has been gaining a lot of importance in recent years, especially among teenagers. It has been seen that modern-day styling methods and the use of different hair care products have resulted in hair loss and also cause hair damage.[2,3] Maintenance of hair is a daily routine for many, and it is common to see people investing a huge amount of time and money on hair care which has led to a huge industry producing and selling a multitude of hair care products to fulfil these demands. India is undergoing a hair revolution with markets flooded with products that promise instant beautification of hair. The practice of hair care is essentially based on the knowledge and attributes regarding the hair structure and physiology of hair. Student knowledge, attitude, and behaviour (KAB) study

is important because they are susceptible to health education and change of behaviour. Due to the paucity of KAB studies regarding hair care, we decided to undertake this study by taking final year medical students as cohort so as to assess the impact of hair-related knowledge during undergraduate medical training. In this study, a detailed questionnaire which included various open-ended, semi-open-ended, and close-ended questions covering various aspects of hair care and hair cosmetics was prepared and validated.

MATERIALS AND METHODS:

Study Type- Single point cross sectional study

Study Population and Area- MBBS students of Sree Balaji Medical College and Hospital, Chennai

Study Duration- 1 month

Sample Size Calculation- Using the following formula

$N = (Z\ 2(1- \alpha/2)\ pq) / d\ 2$

$N = 100$

$Z\ 21- \alpha/2$ = Level of confidence i.e., 95 % =1.96

p = proportion of outcome i.e., 7.5%

q=1-p

d= precision i.e., 10%

Minimum sample size required is 100

Sample size was calculated with reference to previously done study.[4]

Strategy for Collection- Medical students above the age of 18 years and who gave consent for the study were included. Random selection of medical students was done who were undergoing MBBS in the above-mentioned medical college. In this cross-sectional study, a detailed questionnaire with a total of 24 questions which included various open-ended, semi-open-ended, and close-ended questions covering various aspects of hair care was prepared and validated by ethical committee of the hospital (Ref. no. 002/SBMC/IHEC/2021/1538). This questionnaire was given to MBBS students.

A KAB score for each KAB variable was defined as percentage of respondents who gave appropriate response.

Data was collected in the form of answers to the questionnaire and later statistical analysis was done in software SPSS 22.0.

RESULTS:

All subjects completed the questionnaires giving 100% response rate. A total number of 100 students were studied, the mean age of study population being 21.70 years ± 1.093 standard deviation. Some interesting answers about KAB of hair cosmetics were observed. Regarding the knowledge of hair cosmetics, a total of four questions were studied [Table 1]. Out of those, 98% of the medical students felt that diet has relation with hair whereas 2% were not sure. A fair number of medical students (81%) thought that certain medications taken orally or as injections can cause hair fall. Nearly, 60% of students felt that greying of hair is usually because of nutritional deficiency, followed by the attribution of greying to a hereditary component in 27% of the students. Interestingly, 11% of the medical students felt that a conditioner provides cleaning effect and 4% of the same felt that it provided nutritive effect. In relation to attitude regarding hair cosmetics, as depicted in Table 2, a total of 12 questions were asked. A vast majority of medical students (93%) felt that sharing of towels could transfer dandruff from one person to another. About 32% of the medical students dry their hair naturally and a vast number of medical students (65%) were using a towel to dry their hair. Majority of medical students (82%) believed that exfoliate scrub or massage for the scalp is necessary for good hair. When asked regarding which specialty of medicine dealt with the treatment of hair problems majority of medical (86%) students replied as dermatologist or skin specialist. However, 7% of the students felt that gynaecologist needs to be consulted for hair-related problems. A vast number of the medical (75%) students looked for lather formation as an important determining factor while selecting a shampoo, followed by appealing fragrance as the next determining factor. Only 25% of the medical students felt that it was essential to use a hair conditioner after shampooing every time after hair wash. Approximately, a total of 14% of the medical students were colouring their hair by artificial colours or mehendi biweekly. About 70% of the medical students were applying hair-fixing sprays or gels for hair styles.

Five percent of the medical students would undergo for hair straightening or perming procedures bimonthly. A majority of medical students felt that the claims made in the advertisements of hair products in popular newspaper are genuine. However, a vast majority of medical (88%) students felt that there should be governing authority that should test or validate the product claims before they are advertised on television. About an average (57%) of the medical students felt that the more expensive the hair care product, the better it was. A total of 8 questions were asked regarding behaviour concerning hair care among medical students, as depicted in Table 3. Majority (76%) of them were not satisfied with their hair. About 47% of the medical students washed their hair on daily basis, followed by 43% of the medical students washed their hair twice a week and nearly 60% of medical students trimmed or cut their hair once a month. Majority of medical students (66%) had a habit of vigorous shaking of wet hairs by towel. The use of traditional shikakai for hair wash was in fairly a smaller number of medical students (12%). Hair oil was the most common homemade remedies used by both medical (87%) students. This was followed by the use of eggs (6%), lemon (4%), and yogurt (3%) among the medical students. About 62% of the medical students agreed to using shampoos & conditioners advertised in television, magazines, or newspapers.

Table 1: Knowledge about Hair Cosmetics

Questions	Options	Percentage
Awareness regarding relation of diet with hair	Yes	98%
	No	Nil
	Not sure	2%
Awareness regarding certain medications taken orally or injections that can cause hair falls	Yes	81%
	No	10%
	Not sure	9%
Greying of hair is usually because of?	Nutritional deficiency	60%
	Smoking	3%
	Hormonal imbalance	10%
	Hereditary	27%
Type of effect of conditioner on hair?	Cleaning effect	11%
	Moisturizing effect	85%
	Nutritive effect	4%
	Don't know	Nil

Table 2: Attitude towards Hair Cosmetics

Questions	Options	Percentage
Sharing of towels can transfer dandruff from one person to another	Agree	93%
	Somewhat agree	1%
	Somewhat disagree	3%
	Completely disagree	3%
How to dry wet hair?	Towel	65%
	Fan	Nil
	Naturally	32%
	Hair drier	3%
Exfoliate scrub or massage for scalp is necessary for good hair	Yes	82%
	No	18%
Specialty of medicine dealing with treatment of hair problems?	Physician	Nil
	Gynaecologist	7%
	Dermatologist	86%
	Plastic surgeon	7%
Type of qualities to look for while selecting a shampoo?	Good fragrance	20%
	Good lather (foam)	75%
	Good colour	5%
	NA	Nil
Is it essential every time to use a hair conditioner after shampooing?	Yes	25%
	No	75%
	Don't know	Nil
Frequency of colouring hair by artificial colours or mehendi	Weekly	Nil
	Monthly	20%
	Bimonthly	14%
	NA	66%
Frequency of applying hair-fixing sprays or gels for hair styles	Daily	12%
	Weekly	50%
	Monthly	8%
	NA	30%
Frequency going for hair straightening, perming procedures?	Weekly	2%
	Monthly	4%
	Bimonthly	15%
	NA	79%
A governing authority should test or validate the product claims before advertising on television	Yes	88%
	No	12%
The claims made in the advertisement of hair care services or products in newspapers are genuine	True	70%
	Somewhat true	2%
	False	28%
More expensive the hair care product, better it is	Completely	50%
	Somewhat agree	7%
	Disagree	43%
	Somewhat disagree	Nil

Table 3: Behaviour towards Hair Cosmetics

Questions	Options	Percentage
Are you satisfied with your hair?	Yes	24%
	No	76%
Frequency of taking hair bath	Once a week	10%
	Daily	47%
	Twice a week	43%
	Once in 15 days	Nil
Frequency of trimming/cutting hair	Weekly	Nil
	Monthly	60%
	Bimonthly	40%
Habit of vigorous shaking of wet hairs by towel or hands	Yes	66%
	No	34%
Use of Shikakai routinely for hair	Yes	12%
	No	88%
Applying any of the homemade remedies for hair	Hair oil	87%
	Lemon	4%
	Yogurt	3%
	Eggs	6%
Reason for deciding to buy a new hair care product	Friend told about it	30%
	Advertisement on TV	20%
	On your own	50%
Using shampoos and conditioners advertised in television, magazines, or newspapers?	Yes	62%
	No	38%

DISCUSSION:

In a study done about the knowledge of hair care in medical students and engineering students [4], hundred percent of the medical students felt that diet has relation with hair versus 87.5% of the engineering students. Similar to our study, a vast majority of both medical and engineering students felt that sharing of towels could transfer dandruff from one person to another. Hair oil was the most common homemade remedies used by both medical and engineering students which coincided with our study. In contrast to our study, only 25% of the medical and 31.25% of the engineering students felt that it was essential to use an air conditioner after shampooing every time after hair wash. In a Study done on Scalp Hair Health and Hair Care Practices among Malaysian Medical Students[3], Chinese and Indians colored their hair and used various styling methods; while among the Malays, this percentage was very less. Regarding hair care practices, males used only shampoo and females used shampoo and conditioner for hair wash. Students also faced dietary and examination-related stress. Much of gender difference was not seen in our study.

In a knowledge, attitude and practice study about trends in hair care and cleansing in Karnataka [5], they found that about 65% of participants washed their hair once a week where as in our study only 10% washed once a week and almost 47% washed daily. Hair conditioners were used by 20%. Egg and other substances, such as hibiscus and soap nut, were used by 20% before cleansing. Oil before cleansing was used by 9%. About 48% of participants felt the need for a change of a cleanser after 6 months. The whole scalp hair was cleansed by 48% of the participants, whereas 14% concentrated more on the front of the scalp, followed by 6% who cleansed their hair ends more than the centre or front. It is desirable that whatever may the disease or condition be (dermatitis, seborrhea, alopecia, psoriasis), the hair strands should be kept aesthetically presentable, preserving its softness, combability and shine while treating the scalp.[6-11]

Studies from India[12-14] have shown that the herbal preparations are as effective as synthetic substances in controlling dandruff both by in vitro and in vivo studies. Minimal irritation of scalp due to over shampooing, frequent combing, use of certain cosmetic products, dusts and dirt also, to some extent, cause dandruff. However, there is no sufficient experimental evidence to the above assumptions.[15]

CONCLUSION:

It was interesting to find these significant differences among medical students as regard knowledge of hair cosmetics. This study also helps in understanding the expectations of the young students regarding hair. This study may provide the knowledge to pharmaceutical and hair care industries to manufacture or synthesize particular products that can fulfil certain demands in specific age groups. Misbeliefs about hair care that still exist in the mind of young students can

be corrected by imparting useful scientific knowledge of hair care in the target population. Knowledge about trichology needs to be emphasized by dermatology faculty in undergraduate medical teaching and students should be encouraged to adopt more healthy behaviour by the introduction of basic knowledge of trichology in the curriculum.

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A RARE CASE OF GRANULOMATOUS INTERSTITIAL NEPHRITIS SECONDARY TO TUBERCULOSIS

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ABSTRACT

Granulomatous interstitial nephritis (GIN) is a rare entity and a form of acute interstitial nephritis. We report a case of acute renal failure with massive proteinuria, granulomatous inflammation of cervical lymph node and GIN on renal biopsy with negative acid fast bacilli (AFB) in biopsy and urine samples. The patient was started on anti-tuberculous therapy and recovered and is currently doing well. This case highlights an uncommon manifestation of renal tuberculosis as massive proteinuria, renal impairment and granulomatous interstitial lesions.

Keywords: GIN, Proteinuria, Tuberculosis, CBNAAT

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INTRODUCTION

Granulomatous interstitial nephritis (GIN) is most commonly due to drugs such as nonsteroidal anti-inflammatory agents or antibiotics, infections or immunological disease. GIN is uncommon form of AIN[1]. GIN occurs in only 0.5–0.9% of kidney biopsies [2] Tuberculosis remains the most common infectious etiology of GIN. Most commonly it is reported in patients of Asian Indian or African descent.[3] Renal involvement in mycobacterial infection occurs most commonly due to hematogenous spread from a primary focus in the lungs. Tubercular interstitial nephritis with no extra-renal involvement is difficult to diagnose. Symptoms related to renal involvement appear quite late in the course of the disease, when chronic damage has already begin. The urine culture is usually negative, unless bacilli are shed in urine. On renal biopsy granuloma may be missed and if present, may not show any typical features of necrosis or presence of acid-fast bacilli. Utility of molecular tests for the detection of tubercular DNA has a higher sensitivity and specificity for the diagnosis of tubercular infection.[4] High threshold of suspicion might lead to appropriate timely diagnosis and early initiation of treatment, thus preserving renal function.

CASE REPORT

A 23 year old male patient presented with history of low grade fever of 3 months duration with evening rise of temperature associated with history of significant weight loss and loss of appetite. No history of hematuria, dysuria, rash, joint pains or cough was found. No history of any chronic drug intake or exposure to tuberculosis in past was

found. General physical examination showed left anterior group of cervical lymph node enlargement, 1cm in size non tender and mobile. Pallor was present. Other systemic examination was non contributory. Lab investigations showed Hb 7.2 mg/dl microcytic hypochromic picture, significantly raised ESR of 90 mm/hr, Deranged renal function test urea 112mg/dl and creatinine 2.9mg/dl. Liver function tests and serum electrolytes were normal.

Table 1: Laboratory investigations

Haemoglobin	7.2 mg/dL
Total leucocyte count	8000 /mm^3
Platelet count	1.41 lakh/mm^3
ESR	90 mm/hr
Urea	112 mg/dl
S.Creatinine	2.9 mg/dl
Urine Routine	Albumin: 2+ Pus cells: 4-6 No RBCs or Casts
S.Sodium S.Potassium	124 mg/dL 3.5 mg/dL

Urine analysis showed 2+ proteinuria and 4-6 pus cells spot urine and protein creatinine ratio 2.7.

An ultrasonography showed normal Right and left kidney (Right kidney – 10.3 × 5.0 cm, Left kidney – 10.9 × 5.2) and features suggestive of cystitis with enlarged mesenteric lymphadenopathy. Urine cultures did not yield any growth. Three consecutive urine samples taken for AFB were negative. Renal biopsy was performed.

On histopathology, specimen revealed normal glomeruli with Moderate degree of interstitial sclerosis and tubular atrophy occupying < 50% of cortex .Interstitial inflammation with lymhocytes, plasma cells and few non-caseating epithelioid granulomas. Tubulitis and tubular destruction noted. No acid fast bacilli after Z-N Staining.

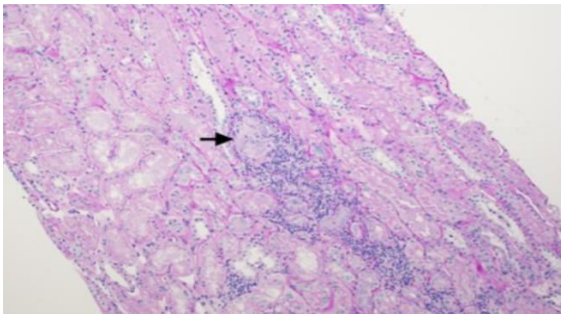

Figure 1: GIN with granulomas

The differential diagnosis for GIN was considered. Work-up for Brucella, typhoid and malaria parasites was negative. His serum calcium and uric acid were in normal limits. There was no evidence of vasculitis or uveitis. ANA (anti nuclear antibody) profile done was normal. Excision biopsy of cervical lymph node was done showed caseating granulomatous necrosis.

Follow up details: Patient was initiated on anti tubercular drugs and was monitored. Renal functions improved over 2 weeks. Patient completed full course of anti tubercular therapy with normal renal function.

DISCUSSION

Renal TB is rare presentation in patients <25 years of age and is more often seen along with primary infection or pulmonary reactivation. If there is past history of pulmonary tuberculosis, the latency period ranges from 5 to 40 years from the time of the initial infection to diagnosis with renal disease. [5]

Many features are unusual in this case. Nephritic range proteinuria with normal sized kidney is rarely seen in tuberculosis. In a study done by Mignon et al out of 32 total cases only 3 cases with GIN were secondary to tuberculosis.[6]

A study done by Javaud *et al.* in which 40 consecutive renal biopsies were done with GIN defined as the presence of at least one epithelioid granuloma in the interstitium of which majority were sarcoidosis (50%) followed by medications (17.5%) and tuberculosis (7.5%).[7] Tuberculous granuloma are further more commonly detected in renal allograft.[8,9] Tuberculosis most commonly affects the lungs, and other extrapulmonary tuberculosis are the lymph nodes and genitourinary tract, which accounts for 27% of nonpulmonary cases.[10] Detection of tuberculous interstitial nephritis is not easy. Three urine cultures considered to be the "gold standard" for diagnosis of renal tuberculosis are often negative. PCR for tuberculosis has been shown to have an overall sensitivity, specificity, positive predictive value and negative predictive value of 97.87%, 100%, 100%, and 94.73%, respectively.[11] Anti-tuberculous drug regimens (ATT) are effective in the treatment of tuberculous GIN, which includes 2 months of intensive therapy consisting of isoniazid, rifampicin, ethambutol and pyrazinamide followed by 4 months of isoniazid and rifampicin. Reduction in dosage is not required in renal failure except ethambutol whose dose has to be reduced as there is a risk of irreversible optic neuritis.[9]

CONCLUSION

This case had uncommon presentation in form of massive proteinuria, acute renal failure and GIN. Henceforth renal biopsy should be considered in patients with suspected AIN, because it can be of great help in initiating appropriate and early treatment and also be useful in prognostication.

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A CASE REPORT OF MOYAMOYA DISEASE IN A 32 YEARS OLD FEMALE PATIENT

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ABSTRACT

Moyamoya disease is a rare idiopathic chronic, progressive occlusion of the arteries mainly of circle of Willis that leads to the characteristic collateral vessels seen on angiography. The disease may occur in children and young adults, but the clinical features may differ. Moyamoya disease is seen commonly in Japanese individuals but can be seen in all races with varying age distributions and clinical features. Moyamoya disease is one of the rare causes of stroke in the Indian subcontinent. At present, there is no known cure, and existing treatment options are controversial. We here describe the case of a 32-year-old Indian female presenting as right-sided hemiparesis with accelerated hypertension later diagnosed as Moyamoya disease.

Keywords- Idiopathic, Stroke, Moyamoya disease

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INTRODUCTION

Moyamoya disease was first reported by Takeuchi and Shimizu in 1957 in Japan[1]. Though the disease is most common in Japan, other cases have been reported subsequently elsewhere, including America, Europian countries and India[2]. Moyamoya disease is rare idiopathic progressive occlusive disease at terminal portions of the bilateral internal carotid arteries with the development of collateral channels of circulation mainly in the circle of Willis[3]. There are two peaks of onset of the disease, one is in childhood and the other is in adulthood. Moyamoya disease may manifest as transient ischemic attack (TIA), ischaemic and haemorrhagic stroke and aneurysm[4]. The disease is more commonly seen in female patients as compared to male patients.

Associated conditions with Moyamoya disese are Sickle cell disease, Down's syndrome and Neurofibromatosis[5].

CASE REPORT

A 32 years old young female presented to the emergency with complains of headache, vomiting, one episode of convulsion and weakness involving left upper and lower limbs which was sudden in onset during the work. She did not have bowel or bladder involvement. Patient did not have history similar episodes in the past. There is no significant family history of recurrent hypoglycaemia. No history of smoking, alcohol consumption and drug abuse. On general physical examination, the patient was conscious but not oriented to time, place and

person, blood pressure was 190/102 mm Hg in the right arm supine position. On CNS examination, the cranial nerves were normal. Power was decreased in left upper and lower limb (3/5) and the tone was increased in left upper and lower limb, superficial reflexes were absent and deep tendon reflexes were exaggerated in left upper and lower limb. The neurological examination on the right was normal and the sensory and cerebellar system examination was normal. The complete blood cell count was normal. Coagulation studies were normal, and work up for hypercoagulable state was within normal limits. Specific tests for hypercoagulability disorders included activated protein C resistance, anticardiolipin antibody, AT III, homocysteine, complete blood count (with examination of the peripheral smear), D-dimer, Factor V Leiden, fibrinogen, lupus anticoagulant, protein S and antinuclear antibody were normal. A CT brain was done which shows carpus callosal bleed (Figure 1). MRI of the brain with and without gadolinium contrast revealed corpus callosal bleed with intraventricular hemorrhage. MR angiography was done which revealed severe stenosis of internal carotid artery, bilateral middle cerebral arteries and left anterior cerebral arteries with multiple collaterals, which was suggestive of moyamoya disease.

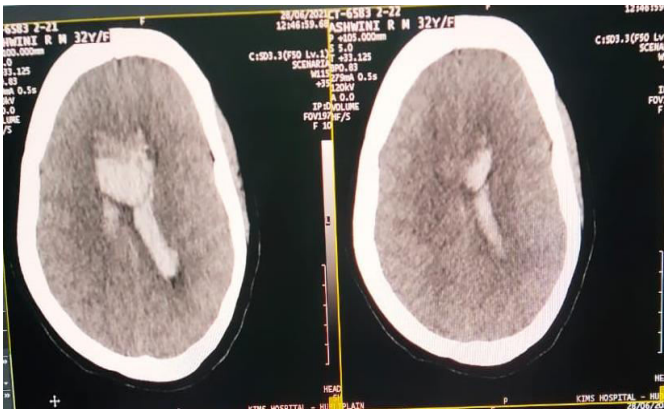

Figure 1: CT image suggestive of haemorrhagic stroke

Our patient had haemorrhagic stroke, started her on anti-edema measures and atorvastatin. Consciousness of the patient deteriorated over the period of 4 days. Patient was intubated and patient succumbed to death even after best possible efforts after 3 days

DISCUSSION

Moyamoya disease is a rare, idiopathic progressive vascular disorder in which arteries mainly of the circle of Willis become obstructed or stenosed causing reduction of the blood flow to the brain[6]. The prevalence rate of moyamoya disease in 1995 in Japan was 3.16 per lac with an incidence rate of 0.35 per lac. The male to female ratio was 1.8:1, and a family history of moyamoya was recorded in 10% of cases[7].

Collateral vessels develop at the base of the brain to compensate the blood supply to brain.The meaning of the word “moyamoya” means “puff of smoke” in Japanese language, a term describing the appearance of net-like collateral vessels[8]. Ischemic stroke is more in common in children and hemorrhagic stroke is more in adults. In autopsy, findings like intimal hyperplasia, atrophic media, and widening of the internal elastic lamina are common[9]. Moyamoya disease may cause TIA, ischaemic and haemorrhagic stroke amd aneurysm. It can also cause cognitive and developmental disability[10]. Cerebral angiography in moyamoya disease shows stenosis and also occlusion of arteries in the circle of Willis. Medications are prescribed to decrease the risk of stroke or to control seizure[11]. Antiplatelet drugs are recommended to prevent strokes. Calcium channel blockers may relieve headaches. Anti-seizure medications should be prescribed if the patient has seizure disorder[12].

If symptoms become worse or if tests show evidence of low blood flow, revascularization surgery is recommended[13].

CONCLUSION

Moyamoya disease is rare and also a rare cause of ischaemic and haemorrhagic stroke. Antiplatelet drugs, antiseizure drugs and calcium channel blockers are used in its treatment. Cerebral revascularization helps in preventing the disease progression. Physicians should have awareness of the disease, so that early diagnosis is possible and further progression can be prevented.

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A RARE CASE REPORT OF NESIDIOBLASTOSIS IN AN ADULT PATIENT

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ABSTRACT

Moyamoya disease is a rare idiopathic chronic, progressive occlusion of the arteries mainly of circle of Willis that leads to the characteristic collateral vessels seen on angiography. The disease may occur in children and young adults, but the clinical features may differ. Moyamoya disease is seen commonly in Japanese individuals but can be seen in all races with varying age distributions and clinical features. Moyamoya disease is one of the rare causes of stroke in the Indian subcontinent. At present, there is no known cure, and existing treatment options are controversial. We here describe the case of a 32-year-old Indian female presenting as right-sided hemiparesis with accelerated hypertension later diagnosed as Moyamoya disease.

Keywords: Nesidioblastosis, hypoglycaemia, adult

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INTRODUCTION

The term 'Nesidioblastosis' is derived from the Greek words nesidion meaning islet, and blastos meaning germ. The word Nesidioblastosis was first described in 1938 by George F Laidlaw and is common cause of hypoglycaemia in infants[1]. Onset of adult nesidioblastosis is rare, with the incidence of 0.3 cases per million[2]. Most common cause of persistent recurrent hypoglycaemia in adults, due to hyperinsulinemia is commonly caused by insulinoma. Some of the rarer causes like nesidioblastosis have been implicated in causing recurrent persistent hypoglycaemia, and the first adult case of nesidioblastosis was described in 1975[3]. Clinically, it is very difficult to distinguish nesidioblastosis from insulinoma.

Here presenting case report of adult onset nesidioblastosis diagnosed noninvasively using 68Ga DOTANOC PET, started on medical treatment, as the patient was not ready for surgery, which is the preferred treatment of choice[4].

CASE REPORT

A 52 years old female, who was nondiabetic with no comorbid conditions presented to the emergency with altered sensorium, excessive sweating and an episode of generalized tonic clonic seizures. On examination GRBS was 40, immediately patient was administered with intravenous 25% Dextrose, following which patient's consciousness improved and no further episode of seizure was recorded. The patient recovered completely without any

neurological deficits. Patient attendant gave history of similar episodes of seizures and altered sensorium for which patient was admitted in different hospitals and after administration of 25% dextrose patient recovered completely since 3 months. No history of any regular use of medications was found. No history of similar complaints in the family was present. On examination, patient's vitals were stable and systemic examination was clinically within normal limits. During period of hospitalization patient developed symptomatic documented hypoglycaemia which was corrected with 25% dextrose. Regular GRBS monitoring was done to look for hypoglycaemia. Patient was educated about symptoms of hypoglycaemia and instructed to consume frequent meals. At this point of time, differential diagnoses were Addisons disease, Insulinoma and Non insulinoma pancreatogenous hypoglycaemic syndrome (NIPHS). Routine investigations done including serum electrolytes, thyroid function tests, renal function tests, liver function tests, serum calcium levels and MRI brain were within normal limits. Patient was evaluated by using following algorithm given in Figure 1, which elaborates approach to hypoglycaemia. Fasting Insulin and C-peptide levels done were elevated, with a positive 72-hour fast test. Presence of elevated C- peptide levels and insulin levels and also presence of whipples trad suggested diagnosis of insulinoma. To confirm the diagnosis of insulinoma imaging studies like USG abdomen and pelvis and CECT abdomen were done, which were found normal (Figure 2). Non invasive imaging to localise insulinoma like DOTANOC PET CT was done, which showed ill-defined diffuse expression of somatostatin receptor in the pancreatic head and tail, which is the classical of nesidioblastosis.(Figure 3)

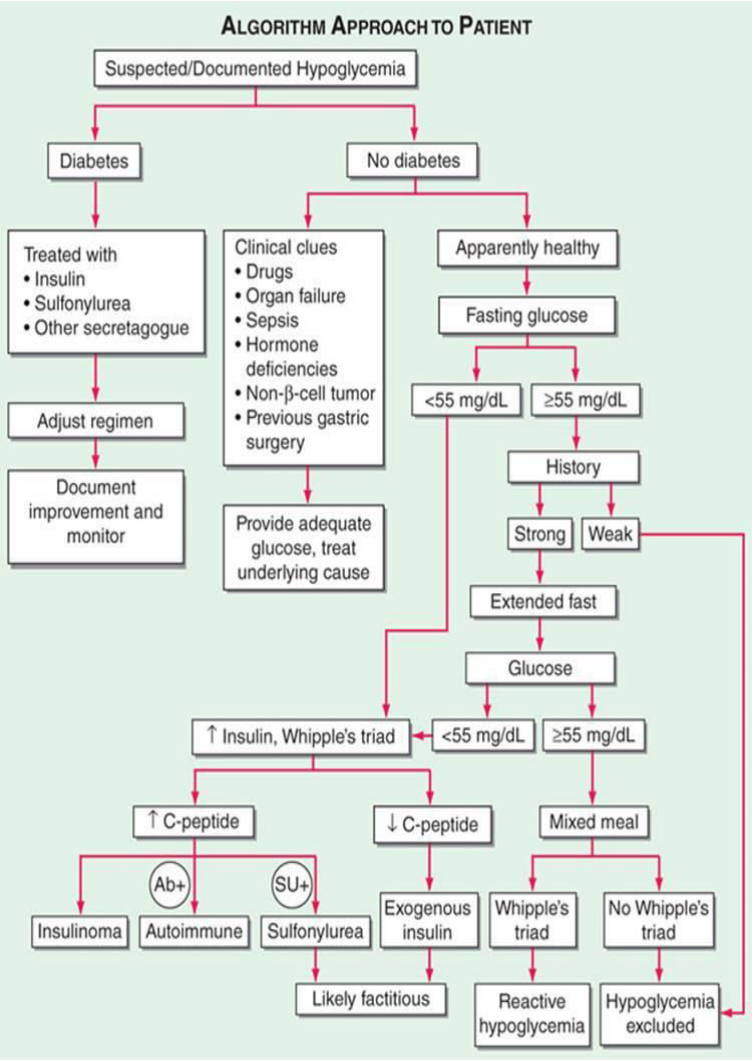

Figure 1: Approach to a patient with hypoglycaemia[8]

Figure 2: Normal CECT abdomen

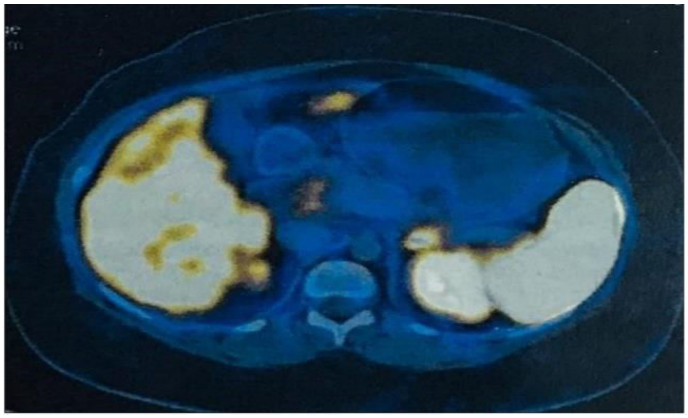

Figure 3: DOTANOC PET CT image suggestive of Nesidioblastosis

Patient was advised surgical treatment for nesidioblastosis but patient was not willing for the surgical procedure and patient was started on calcium channel blocker, nifedipine in lower doses i.e. 20mg per day and gradually increased to 40 mg per day. Frequencies of hypoglycaemic episodes were decreased. Patient was educated about the consumption of frequent small meals and about symptoms of hypoglycaemia. Family members were also educated about early recognition of symptoms of hypoglycaemia and its correction. Need of surgical treatment explained to the patient and patient attendants.

DISCUSSION

Nesidioblastosis is reported commonly in infants as neoformation of Langerhans islets from the pancreatic ductal epithelium, which leads to hyperinsulinemic hypoglycaemia. Similar clinical situation in adults is commonly seen in insulin[5]. Other causes like noninsulinoma pancreatogenous hypoglycemia syndrome and factitious hypoglycaemia are usually very rare and other possible etiologies of hyperinsulinemic hypoglycemia include drug induced hypoglycaemia, gastric dumping syndrome and exogenous insulin administration[6]. The cause for nesidioblastosis in adult is usually idiopathic, although few cases of nesidioblastosis reported following gastric bypass surgery. Insulinoma is one of the differential diagnosis for nesidioblastosis, and it is often difficult to clinically distinguish NIPHS from insulinoma[7].

Several studies have shown the high diagnostic accuracy of 68Ga-DOTATATE PET/CT in diagnosis of primary NETs compared with conventional imaging modalities[8]. The sst 2,3,5-specific radiotracer 68Ga-DOTANOC detected more lesions than sst2-specific radiotracer 68Ga-DOTATATE in with GEP-NETs. A study using F18-fluorodihydroxyphenylalanine (F-DOPA) PET scan has been used to detect the hyper functional pancreatic islet tissue and to differentiate between focal and diffuse variants of nesidioblastosis with a reported accuracy of 96% in diagnosing focal or diffuse disease[9].

Literature search was done to look for the available options for medical therapy. Various Pharmacological therapy tried in nesidioblastosis which include diazoxide, acarbose, octreotide or calcium-channel antagonists[10]. Diazoxide, which is a potassium channel blocker, was tried in few patients who had hypoglycaemic symptoms after surgery, variable success seen.patients had the prominent side effects like water retention, nausea, vomiting, dizziness, hirsutism and hypertrichosis[11].Acarbose was also tried in few patients with post gastric bypass hypoglycaemia with good success rate, but the role in adult onset nesidioblastosis is not well defined. Octreotide and pasreotide were also tried[12]. Calcium channel blockers (CCBs) were also used like verapamil, nifedipine and amlodipine, since insulin release is a

calcium dependent process and blockage of calcium channels can disrupt the insulin secretion from beta cells of pancreas[13]. CCBs are started at lower doses and increased slowly to minimise the side effects.

CONCLUSION

Adult-onset nesidioblastosis is a rare but an important cause of no insulinoma hyperinsulinemic hypoglycaemia, and very few cases have been reported till today. In this case the diagnosis was made using Ga68 DOTANOC PET CT. Surgery is considered the preferred treatment of choice and the available information regarding medical management is very limited. In this case patient was treated successfully with oral nifedipine.

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