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- [1] J. van der Geer, J.A.J. Hanraads, R.A. Lupton, The art of writing a scientific article, J. Sci. Commun. 163 (2010) 51-59.

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Volume 7, Number 2, Issue 13, July-December 2018, i-iii

Editorial**Dietary management of Omega-3 fatty acids: should two more be declared as semi essential?****Arambam Giridhari Singh****Professor, Department of Biochemistry**DOI: <https://doi.org/10.3126/jonmc.v7i2.22263>

Amidst the emergence of coronary artery disease (CAD) and stroke as number 1 and number 2 ranker among the latest world's top 10 killer diseases [1,2], researchers started exploring the facts regarding the involvement of omega-3 fatty acids in controlling the risk factors of these diseases. They observed that fish eating communities had very low prevalence rates of both CAD and Stroke. This was later found to be partially due to consumption of omega-3 fatty acids present in those fishes [3]. The benefits reported earlier as being rendered by omega-3 fatty acids for heart health are justified by their involvement in (a) the reduction of the level of **triglycerides**, (b) reduction of **blood pressure** among people with hypertension, (c) raising **HDL (good) cholesterol** level, (d) **stopping blood platelets from clumping** together and thus, preventing formation of harmful **clots**, (e) prevention of the **plaque** from **hardening** of arteries, (f) minimizing the production of substances released during the **inflammatory response**. Over and above these beneficial effects, fatty acids of this family are also found to be involved in, **fighting depression and anxiety**, improving **eye health**, promoting **brain health** during pregnancy and early life, reducing symptoms of "**Attention deficit hyper activity disorder**"(ADHD) in children, reduction of **metabolic syndrome** via improving insulin resistance, inflammation and heart disease risk factors, fighting of **autoimmune diseases**, improving **mental disorders**, preventing **cancer & asthma** in children, reducing fats in liver, improving **bone and joint health**, alleviating **menstrual pain**, improving **sleep**, maintaining **skin health** and many others which are on their clinical trials[4].

Omega-3 fatty acids which are important in human nutrition are three in number. They are alpha linolenic acid (ALA), eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA). Human body does not have any precursor molecules for synthesis of omega-3 fatty acids but, DHA and EPA can be synthesized from alpha linolenic acid (ALA). Therefore, only ALA has been listed as essential omega-3 fatty acid. ALA is purely of plant origin and its specific function still remained a matter of debate. Whereas, EPA and DHA are the acids having important physiological and biological roles in human health and development but, their dietary sources are mostly fatty fishes. Studies demonstrated that majority of ALA is β oxidized and only approximately 5% of ALA is converted to EPA and less than 0.5% to DHA. Even, very high intakes of dietary ALA failed to effectively modulate plasma and tissue level of DHA. Conversion of ALA to EPA and DHA is greater in women due possibly to the regulatory effect of estrogen. Again, partitioning of ALA towards β oxidation was also lower in women than in men; some ALA being spared for synthesis of EPA and DHA.

Keeping aside this slight gender variation, the overall outcome is that very little quantity of ALA appears to be the real source of EPA and DHA in both the sexes. **Considering all the above facts, professional organizations emphasized direct supplementation of EPA and DHA in the diet for optimal health and disease risk reduction [5]**

Are we getting omega-6 to omega-3 fatty acids as per the desired ratio (4:1) in our diet?

'The real answer from more than 95% of population in a developing country will be "No". We are getting enough omega-6 fatty acids from our day today foods for which no discussion will be inserted in this editorial. But, more than 75% of our population might be living with a very low level of omega-3 fatty acids in their blood and tissues. Because of this, the ratio of omega-6 to omega-3 might be always on the higher side. Scientist believes omega-6 is pro inflammatory and omega-3 is anti-inflammatory. Chronic inflammation may be one of the leading driver of most serious modern diseases including heart disease, metabolic syndrome, diabetes mellitus, arthritis, Alzheimers and many types of cancer. So, increasing omega-3 quantity in our diet is the only option left for optimizing the ratio hence, for a better health. Fishes rich in omega -3 fatty acids are salmon, mackerel, herring, sardines, tuna etc and are mostly of marine origin. Other non-fish food options that do contain more omega-3 fatty acids include flaxseeds, flaxseed oils, walnuts, canola oil, soybean and soybean oil. However, the heart healthy benefits from eating these foods are not as strong as it is from eating fish. The non-fish foods listed above provide only ALA and as explained, we get very little amount of EPA and DHA synthesized from it [6].

The author's own feeling why we may face consequences of omega-3 deficiency is as listed:

Lack of awareness: None of us is consuming flaxseed the richest source of ALA, chiaseed, soybean seed regularly as being known to be good sources of ALA. Even if we consume, we know that the quantity of EPA and DHA will be very less (as explained). Everybody around us seems to be unaware of the list of those sea fishes identified as rich sources of EPA and DHA.

Vegetarian foods: In some developing countries, a large percentage of the populations are living on vegetarian foods only. It has already been reported that EPA and DHA level may be dangerously low in vegans and vegetarians. For them, the only option left for correction could be harvesting of a type of marine algae rich in EPA and DHA [7].

Geographical location: Most of the omega-3 rich fishes listed being of marine origin, people staying far away from sea will never bother of taking those fishes unless they know the importance of these fatty acids.

Last message The most important message to be conveyed to all the medicos and to those, occupying important positions in the health care delivery system of the country is that, awareness campaign for all types health related messages/ issues be kept continued as for example omega-3 fatty acids. One can go up to the country's top office for submission of list of demands inclusive of implementation of a system for regular supply of fishes rich in omega-3 to all corners of the country, installation of competent laboratories for analysis of food stuffs like locally available fishes for estimation of EPA and DHA, distribution of supplements like omega-3 rich fish oils etc. Just to enable the demands mentioned be enforced, **declaration of Eicosapentaenoic acid(EPA) and Docosahexaenoic acid (DHA) as semi-essential fatty acids may be a reasonable decision because, alpha linolenic acid (ALA) cannot produce both the acids as per the need of the body. To**

support this, we can cite the explanation given while declaring arginine and histidine as semi essential amino acids.

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Original Article**Knowledge of dietary habit and behavior-related determinants of non-communicable disease in women of urban setting of Eastern Nepal**

Dharanidhar Baral*, Sailesh Bhattarai, Abha Shrestha, Nisha Manandhar and Nilambar Jha

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Received: 4th February, 2018; Revised after peer-review: 22th March, 2018; Accepted: 14th April, 2018DOI: <https://doi.org/10.3126/jonmc.v7i2.22264>**Abstract:****Background**

The non-communicable diseases (NCDs) are one of the leading causes of death globally which accounts for 68% out of world's 56 million deaths in 2012. Around 82% of the premature deaths due to NCDs occur in the low-and middle-income countries and 40% of global NCD-related deaths take place before the age of 70. The study aimed to assess knowledge of dietary habits and behaviour-related determinants of NCD in urban Nepalese women of Eastern Nepal.

Materials & methods

A cross-sectional study was designed by using interviewer-administered questionnaire regarding knowledge on NCD. The definitions used for the study adopted the WHO STEP wise approach to chronic disease risk factor surveillance (STEPS) survey. A total 706 women aged 20–59 years were selected randomly from Inaruwa Municipality of Eastern Nepal.

Results

The overall knowledge scores was found to be 62.14% with standard deviation 14.93% and it build up that the diet- and behaviour-related causes (mean score 75.25%), diet quality (mean score 45.27%) fruit and vegetable link (mean score 30.02%), health consequences of obesity (mean score 76.82%), causes of cardiovascular disease (mean score 77.08%) and causes of certain cancers (mean score 36.10%) were calculated. The total score of knowledge regarding NCD was found to be significant with caste/ethnicity, education level, occupation, socioeconomic status, physical activity and fruit intake.

Conclusions

Findings revealed the population had good overall knowledge concerning diet and nutrition related to NCD in the relatively new context of the obesity epidemic in urban set up of Nepal. However, there was poor knowledge of the benefit of eating fruit and vegetables and other preventable causes of certain cancers. Nutrition education messages need to be communicated within the general population of women. Education targeting the benefits of vegetables and fruit may have the positive impact on NCD prevention.

Key words: *Hypertension, Prevalence, Socio-demographic factors***Introduction**

The non-communicable diseases (NCDs) are one of the leading causes of death globally which accounts for 68% out of

world's 56 million deaths in 2012. Around 82% of the premature deaths due to NCDs occur in the low-and middle-income countries and 40% of global NCD-related

deaths take place before the age of 70[1]. Non-communicable diseases, also known as chronic diseases, are not passed from person to person. They are of long duration and generally of slow progression [2]. WHO identifies cardiovascular diseases, cancers, diabetes and chronic lung diseases as the main four leading Non-communicable disease. The burden of NCDs is rising along with the communicable and re-emerging diseases in the low- and middle-income countries.

According to the Steps Survey done in Nepal, Nepal is also facing triple burden of diseases, namely communicable diseases, re-emerging diseases and non-communicable diseases. Rising trend of NCD prevalence has led to the estimated death of 60% of total deaths. For the age group between ages 30 and 70 years, the probability of dying from the four leading NCDs is 22% [3], [4].

There are different modifiable and non-modifiable risk factors viz. Age, Sex, Genetic factors, Ethnicity, Obesity, Higher salt intake, High saturated fatty acids food intake, low dietary foods, Alcohol, Lower physical activity and sedentary life style and Others environmental factors [5]. Most of the premature deaths caused by these NCDs are linked by common preventable risk factors related to lifestyle such as tobacco use, unhealthy diet, physical inactivity and harmful use of alcohol [6]. Exposure and vulnerability to these risk factors is being driven by rapid urbanization, economic development and market globalization [7]. The knowledge of the diseases and its risk factors among the individuals itself affects the disease pattern in the community.

Prevention and control of such preventable diseases should be done by the intervention at the family and community level.

People with the increased sedentary life style are also prone to consumption of

energy dense food that contains high sugar, fat and salt. Educating the people regarding the benefits of increased vegetables and fruit intake as well as physical activity is necessary. At the same time, implementation of such strategy by the government is important which has been recommended by World Health Organization (WHO) Global Strategy on Diet, Physical Activity and Health.

The social and economic development is severely affected by the global burden of non-communicable disease and it is the major threat to public health at present. The morbidity due to the chronic disease has posed a threat to the countries and this has caused a big impact in the low-and middle-income countries. The morbidity and mortality from non-communicable diseases mainly occur in adulthood but the exposure to risk factors begins in early life. Children can die from treatable non-communicable diseases (such as rheumatic heart disease, type 1 diabetes, asthma and leukemia) and health promotion, disease prevention and comprehensive care are important steps to avoid it. According to WHO, the total annual number of deaths from non-communicable diseases will increase to 55 million by 2030 if "business as usual" continues.

Scientific knowledge demonstrates that the non-communicable disease burden can be greatly reduced if cost-effective preventive and curative actions, along with interventions for prevention and control of non-communicable diseases already available, are implemented in an effective and balanced manner [8]. In many low and middle-income countries, the low socio-economic, legal and political status of girls and women is increasing their exposure and vulnerability to the risk factors of NCDs [7]. The knowledge of the risk factor and its effect on health if known by the individual can prevent the disease and its consequences.

The increasing trend in the prevalence of the non-communicable diseases can be decreased only with the prevention of the risk factors and this can be achieved with the healthy lifestyle. The knowledge of the disease and its behaviors, diet and physical activity plays an important role in achieving the healthy life and this can be done through community health promotion [9]. The scenario is similar in Nepal like the other developing countries where the morbidity and mortality due to non-communicable disease is high. NCDs risk factors are highly prevalent among the Nepalese population, which is a serious public health problem. Unless urgent and targeted interventions are made to prevent, treat and control non communicable diseases and their risk factors, the burden of NCDs could become unbearable in Nepal [4]. The community based studies on knowledge of the diet and behavior are few in Eastern Nepal. The prevalence of the knowledge regarding the non-communicable disease and its risk factors like diet and behavior if known can help plan the approach method to bring changes in the community. The objectives of this study were, to assess the knowledge of dietary and behavior-related determinants of NCD and identify gaps in knowledge that could be the target for future public health nutrition programs.

Methodology

This was a community based descriptive study to find out the knowledge of dietary and behavior related determinants of non-communicable disease in women of urban setting of eastern Nepal. This study was carried out from March 2015 to February 2016. Women, those who prepare food at their homes in the Inaruwa Municipality of Eastern Nepal were included in this study. Out of 10 wards of Inaruwa municipality, 4 wards (ward no. 2, 7, 8, 9) were selected randomly by lottery method. The

population proportionate sampling was done to collect the number of sample of each ward. A total 706 women were interviewed between the age group of 20 – 60 years. The definitions used for the study adopted the WHO STEP wise approach to chronic disease risk factor surveillance (STEPS) survey [23]. The ethical approval was taken from institutional review committee of BPKIHS.

For the socioeconomic status, modification of Kuppaswamy's Socioeconomic Status Scale in context to Nepal [24] was used and the ethnic groups were classified according to the National Central Bureau of Statistics of Nepal [25].

- a) Current drinkers: respondents who consumed alcohol in the previous 30 days.
- b) One serving of vegetable: one cup of raw, leafy green vegetables (spinach, salad, etc.), one half cup of other vegetables, cooked or raw (tomatoes, pumpkin, beans etc.), or half cup of vegetable juice;
- c) One serving of fruit: one medium-sized piece of fruit (banana, apple, etc.) or half cup of raw, cooked or canned fruit, or a half cup of juice from a fruit (not artificially flavored).
- d) Physical activity: it included questions on number of days and time spent on vigorous and/or moderate activities at work; travel to and from places, and recreational activities. The responses were converted to MET minutes/week. The respondents were labeled as having vigorous activity or moderate activity if they achieved certain MET minutes as given in the WHO steps manual. If s/he did not fulfill the criteria of having vigorous or moderate activity Low physical activity were considered.
- e) Tobacco use: Current smokers were the ones who smoke daily. The average pack year was calculated. Ex-

smokers were the ones who have not been smoking for the past 1 year.

Data Collection Tools and Techniques:

Data collection was carried out at community of Inaruwa Municipality. A validated standard questionnaire developed by Michelle Holds worth, Francis Delpeuch et al in their study done in Senegal was used and face to face interview was done systematically.²⁶ The questionnaire was pretested after it was translated into the local language (or Nepali) and the linguistic validity was done by back translation.

The reliability of each set of items in the pretested questionnaire in measuring each item-to-item correlation is Cronbach's α of 0.703 and for each domain from our study indicated that items-to-items correlation is >0.2 with Cronbach's α of 0.926.

Modification of Kuppuswamy's Socioeconomic Status Scale in context to Nepal was used to assess the socioeconomic status of the community [24].

Data entry and analysis

All interviewed questionnaires were indexed and kept on file. Data was entered in Microsoft Excel 2007 and converted into SPSS (statistical package for social science) 11.5 version for statistical analysis. For descriptive statistics, percentage, proportion, mean and standard deviation were calculated. For inferential statistics, χ^2 test was applied to find out the significant difference between knowledge of dietary and behavioral-related determinants of NCD in women of urban setting of Eastern Nepal and socio-demographic characteristics at 95% confidence interval where $p = 0.05$.

Results

All the participants were willing to participate. Out of 706 participants, majority of the responders belonged to age group of 30-39 years (34%) and the mean age in years is 35.42 years. Approximately

94.3% of the responders were married. The sample population comprised 97.5% of Hindu women and 50.6% of the responders belonged to the ethnic group Madhesi followed by Brahman/Chhetri (25.4%), Out of total 34.8% women were illiterate. Majority of them were house wives (51.7%).

Among total participants 25.6% of head of household had received high school education. Out of 706 households, 258 (36.5%) of the head of household were found to be involved in one of the three occupation namely clerical, shop-owner, farmer. Approximately, 28.6% of the family had income in the range of NRs 11451 – 17150 per month. Socio economic status of upper and middle upper middle class comprised 39.1% of the total households. Of the total women interviewed, 98.2% of them never smoked and none of them were alcoholic, similarly, 46.3% of them did moderate physical activity. When asked about the vegetable and fruit intake habit, 58.5% were taking one half cup of vegetable in cooked or raw form while 80.5% of people were observed to be taking half cup of raw, cooked or canned fruit during our study.

The scores developed suggest that knowledge of dietary and behavior related determinants of non-communicable disease was not associated with age, religion, tobacco smoking, vegetable intake ($p=0.991$) while caste/ethnicity, education, occupation, socioeconomic status, physical activity and fruit intake were found to be significantly (p -value <0.05) influencing the knowledge of dietary and behavior related determinants of non-communicable disease of women.

Our study showed Brahman/Chhetri to have more knowledge of dietary and behavior related determinants of non-communicable diseases compared to other groups suggesting that there is significant

association ($p < 0.001$) between caste/ethnicity and knowledge. There is significant association ($p < 0.001$) between education and knowledge highlighting to the fact that those women who have got higher education know more about the dietary and behavior related determinants of non-communicable diseases.

Women involved in occupation (such as profession/semi profession) are more

knowledgeable than those who are unskilled or unemployed which suggests that there is a distinct relation ($p < 0.001$) between occupation and knowledge. Likewise, the socioeconomic status (Table no. 2) suggests that higher the class of living, higher is the standard of knowledge among the responders ($p < 0.001$).

Table 1: Knowledge of the dietary and behavioral-related risk factors of the participants (n = 706)

Questions	Yes	No	Don't Know
1 Eating a lot of fat can contribute to heart problems	635(89.9%)	35(5%)	36(5.1%)
2 Eating a lot of fat can contribute to obesity	496(70.3%)	174(24.6%)	36(5.4%)
3 Eating a lot of fat can contribute to certain cancer	339(48%)	72(10.2%)	295(41.8%)
4 Eating a lot of sugar can contribute to heart problems	474(67.15%)	95(13.5%)	137(19.4%)
5 Eating a lot of sugar can contribute to obesity	359(50.8%)	252(35.7%)	95(13.5%)
6 Eating a lot of salt can contribute to heart problems	510(72.2%)	90(12.7%)	106(15%)
7 Eating a lot of salt can contribute to certain cancers	184(26.1%)	143(23.3%)	379(53.7%)
8 Low intake of fruit can contribute to heart problems	400(56.7%)	173(24.5%)	133(18.85%)
9 Low intake of fruit can contribute to obesity	122(17.3%)	494(70%)	90(12.7%)
10 Low intake of fruit can contribute to certain cancers	173(24.5%)	181(25.6%)	352(49.9%)
11 Low intake of vegetables can contribute to heart problems	414(58.6%)	181(25.6%)	111(15.7%)
12 Low intake of vegetables can contribute to obesity	126(17.8%)	498(70.5%)	82(11.6%)
13 Low intake of vegetables can contribute to certain cancers	164(23.2%)	176(24.9%)	366(51.8%)
14 Eating too much food can contribute to obesity	604(85.6%)	85(12%)	17(2.4%)
15 Obesity increases the risk of developing diabetes	653(92.5%)	20(2.8%)	33(4.7%)
16 Obesity increases risk of breast cancer after the menopause	329(46.6%)	33(4.7%)	344(48.7%)
17 Obesity increases the risk of developing bowel cancer	340(48.2%)	43(6.1%)	323(45.8%)
18 Obesity increases risk of developing hypertension	639(90.5%)	32(4.5%)	35(5%)
19 Weight increase gradually increases risk of heart problems	655(92.8%)	11(1.6%)	40(5.7%)
20 Lack of physical activity can contribute to obesity	653(92.5%)	43(6.1%)	10(1.4%)
21 Lack of physical activity can contribute to heart problems	600(85.0%)	58(8.2%)	48(6.8%)
22 Obesity can contribute to heart problems	630(90.4%)	20(2.8%)	48(6.8%)
23 High blood cholesterol can contribute to heart problems	580(82.2%)	13(1.8%)	113(16%)
24 Smoking can contribute to heart disease	684(96.9%)	9(1.3%)	13(1.8%)
On an average total	449(63.52)	122(17.29)	135(19.13)

The analysis done relating the physical exercise and knowledge showed a significant association ($p = 0.002$)

illustrating those performing exercise have a better knowledge regarding determinants of non-communicable disease. Those

taking fruits regularly also showed a promising knowledge regarding the dietary and behavior related determinants of non-communicable disease with a very significant association ($p < 0.001$). Although the participants consuming vegetables is appreciable but their association with knowledge is quite insignificant.

Discussion

NCDs can refer to chronic diseases which last for long periods of time and progress slowly. The different non-modifiable risk factors are age, sex, genetic factors and ethnicity and the modifiable risk factors are obesity, higher salt intake, low dietary foods, alcohol, lower physical activity and sedentary life style. Evidences demonstrate that it is possible to prevent NCDs in the family and community if women have proper knowledge about risk factors of NCDs [1].

This study was carried out to find out knowledge of dietary and behavior related determinants of NCDs in women of urban setting of Eastern Nepal.

According to American journal of health research, in a study of assessment of knowledge of Nigerian female undergraduates on obesity as a risk factor for cardiovascular disease in women, less than half of the female undergraduates at a Nigerian university community had good knowledge of obesity as a risk factor for cardiovascular disease in women [15]. While 51.1 % of the responders of the same age group from our study considered obesity as a risk factor of cardiovascular diseases.

According to cross-sectional, population study done on "Knowledge of dietary and behavior-related determinants of non-communicable disease in urban Senegalese women", subjects scored least for their knowledge of the protective effect of fruit and vegetables (mean score of 19.9%)

knowledge of causes of certain cancers (mean score of 36.1%) was also low [10]. According to our research, the knowledge that low intake of vegetables can contribute to cardiovascular diseases was found to be insignificant (p value=0.991) whereas the knowledge about impact of fruit intake over the causation of CVDs was found to be significant (p value=0.001) among the responders. 70 % of the responders disagree that low intake of fruit and vegetables can contribute to obesity. Less than half responders have the knowledge that eating a lot of fat can contribute to cancer. More than half of the responders (53.7%) did not know that eating a lot of salt can contribute to certain cancer; similarly, 51.8% did not know that low intake of vegetables can contribute to certain cancer. Less than half responders did not know that low intake of fruit can contribute to certain cancers. Less than 50 % responders did not know that obesity as a risk factor of certain cancers.

Another study conducted as part of the Heart-Health-Associated Research and Dissemination in the Community project in the Jhaukhel – Duwakot Health Demographic Surveillance Site in two urbanizing villages near Kathmandu, where women participants were predominant where only 11% of the population identified overweight and physical activity as causes of CVDs.¹³ But according to our study 85 % of the respondents have the knowledge that physical inactivity can lead to heart diseases in women and 90.4% of the participants have knowledge that obesity can cause heart diseases.

A research article on public knowledge of CVDs and its risk factors in Kuwait showed that respondents were much better knowledgeable of CVD risk factors, nearly half of them were aware of eight or nine risk factors and the knowledge was significantly higher among females [18].

The commonest risk factors identified were smoking, obesity, unhealthy diet and physical activity. While in our study 90% of women knew that increased fat diet can contribute to CVD and 85% know that lack of physical activity can lead to CVD. Similarly, 90.4% of women knew that obesity can contribute to CVD and 96.9% of women know that smoking can contribute to CVD.

Limitation:

The study was conducted for short period of time i.e., 2 weeks due to which we could not cover all the houses of all the wards of Inaruwa Municipality. Due to the time limitation, the study was done taking 4 wards randomly out of 10 wards of Inaruwa Municipality. As a result, the study couldn't be generalized.

The person who is suffering from the disease may have the knowledge regarding the concerned disease and risk factors. But in our study, we did not assess the disease status of the participants which might limit us on generalizing the knowledge status of the individual in the community.

Conclusion

Women's knowledge was assessed through different questionnaire framed on dietary and behavior related risk factors of NCDs in urban setting of Eastern Nepal. Through this study, the study observed that only 53.3% of responders have the knowledge of dietary and behavior related determinants of NCDs. We also observed that there was significant association between knowledge and following socio-demographic characteristics namely caste/ethnicity, education, occupation, income, education of head of the household and socioeconomic condition. But it was observed that there was no significant association between knowledge and following socio-demographic characteristics namely age, marital status

and religion. Though there is significant association between physical activity and knowledge, the women performing vigorous activity are doing it without having adequate knowledge on it; this might be due to the illiteracy where they do labor work. The women having adequate fruit intake are having sufficient knowledge regarding risk factors of NCDs. These gaps of the knowledge regarding the risk factors emphasizes that the nutrition recommendation should be done in appropriately in the community.

Recommendation

Awareness of the benefits of fruit and vegetables should be given to the general population of women. Nutrition education messages need to be communicated within the general population of women. Practical education strategies such as cooking, tasting and eating may be most effective, as education without associated skills development is likely to result in limited behavior change.

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Original Article

Biochemical Findings and outcomes of the treatment of the Patients with pancreatitis admitted in Nobel Medical College Teaching Hospital, Biratnagar, Nepal

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Abstract

Background

Pancreatitis is well known for its painful state of illness causing a severe impact on the quality of life which can be followed by life-threatening long-term sequelae of diabetes mellitus and pancreatic cancer as its complications. The present study was conducted to evaluate biochemical findings and outcomes following treatment of ICU admitted patients suffering from pancreatitis in Nobel Medical College Teaching Hospital (NMCTH).

Materials and Methods

All the patients admitted in the ICU of NMCTH from 15th January 2017 to 14th January 2018 having been diagnosed as suffering from pancreatitis were enrolled in this study. Age, sex, differential diagnosis, blood amylase, lipase level and outcomes of the treatment of the patients were measured as major variables. Blood amylase and lipase level of these patients were estimated in the department of Biochemistry, NMCTH by the standard protocols using Randox kits, provided by the manufacturer. The study was carried out after getting the approval from Institutional review committee (IRC). Statistical significance was compared using Student's two-tailed t-test. Results were considered significant if $p \leq 0.05$.

Results

The number of patients admitted in ICU and suffering from pancreatitis was 136 out of 2204 total admission in ICU within a period of 1 year. Out of 136 pancreatitis patients, 44 were of biliary pancreatitis, 40 of alcoholic and 52 were patients of pancreatitis suffered from some other unknown factors. The mean age of the patients was 41.5 ± 14.2 year. While analyzing the pancreatitis cases gender wise, it was found that male (N=80) were more sufferers than females (N=56). The mean \pm SD value of blood amylase and lipase of these patients with pancreatitis were 1040 ± 1062 IU/L & 442 ± 425 IU/L respectively, which was significantly higher than the normal range. The maximum numbers of pancreatitis cases were seen in age group (30-39), (44 patients). It was found in our study that male patients were more sufferers of alcoholic pancreatitis than females; where as female patients were more in number among patients with biliary pancreatitis than males. The patients after getting the proper line of treatment, 88 of them recovered completely without any complication, 38 patients developed some complication, in which 26 got recovered fully and 12 were referred. Mortality was seen in 10 patients.

Conclusion

The results shows a very high prevalence rate of pancreatitis, the highest number being shared by those suffering from unknown factors followed by biliary pancreatitis and

alcoholic pancreatitis in the descending order. In biliary pancreatitis, female patients are more whereas, the males are taking the major share among alcoholic pancreatitis. The level of the marker enzymes (amylase & lipase) are significantly higher than the normal confirming the cases to be of pancreatitis. Out of 136 patients, except for 12 cases referred and 10 patients died, all are fully recovered and discharged.

Key Words: *Pancreatitis, Amylase, Lipase*

Introduction

Pancreatitis is the inflammatory disease of pancreas. The most frequent gastrointestinal cause for getting admitted into hospital is acute pancreatitis. The incidence of pancreatitis is increasing day by day. The annual global rate of incidence of pancreatitis is 13-45 per 1,00,000 person [1-2]. Elevation of pancreatic enzymes in the blood and abrupt onslaught of abdominal pain are the clinical characteristics of the disease [3]. The overall mortality rate of acute pancreatitis is 3.8% [4] whereas for severe acute pancreatitis, the rate may go upto 20% [5]. Pancreatitis occurs due to different reasons like gallstones, alcohol consumption, cigarette smoking, elevated triglyceride, drug induced etc. The most common cause of acute pancreatitis is found to be due to gallstones worldwide. Gall stones, are made up of either cholesterol or other bile component in the gall bladder, which obstruct pancreatic duct causing pancreatitis. Alcohol abuse induced acute pancreatitis is the next common cause. The toxic and metabolic effects of alcohol on pancreatic acinar cells [6] cause small duct obstruction and hence pancreatitis. The risk of pancreatitis increases with the amount of alcohol consumed. Alcoholic pancreatitis is more likely in middle age population, with a peak incidence at 45-55 years [7]. The present piece of study is aimed at evaluating biochemical findings and final outcome of the treatment of the patients admitted in ICU with pancreatitis.

Materials and Methods

It is a descriptive cross-sectional study which was carried out on all the patients

diagnosed as suffering from pancreatitis and admitted in the ICU from 15th January 2017 to 14th January 2018 of Nobel Medical College Teaching Hospital, Biratnagar, Nepal. The data was collected in standard pro forma and the study variables used were Age, sex, differential diagnosis, blood amylase and lipase level and outcomes of the treatment of the patients. All the patients admitted in ICU suffering from pancreatitis were categorized in three groups i.e. (1) patients suffering from pancreatitis due to obstruction of pancreatic duct by gall stone as biliary pancreatitis, (2) patients suffering from pancreatitis due to alcohol consumption as alcoholic pancreatitis and lastly (3) patients suffering from pancreatitis caused by other reasons like cigarette smoking, elevated TAG, drug induced etc as other pancreatitis. Blood amylase and lipase of the patients suffering from different pancreatitis were assayed by kits available from the manufacturer on Randox analyzer.

The study was carried out after taking the approval from Institutional review committee (IRC) of the institution. The data analysis was done by SPSS software. Mean value and standard deviation were calculated using student's two-tailed t-test. Analysis of the data was performed using student t-test. Results are considered as statistically significant if $p \leq 0.05$.

Results

The total number of patients admitted in ICU within a period of 1 year was 2204. Out of this, 136 patients were of pancreatitis as shown in figure 1. While

analyzing the differential diagnosis of the patients suffering with pancreatitis, it was found that there were three types of patients suffering with different types of pancreatitis. Out of 136, 44 patients were of biliary pancreatitis, whereas the number of patients suffering from alcoholic pancreatitis and other pancreatitis caused by other factors were 40 and 52 respectively as shown in figure 2.

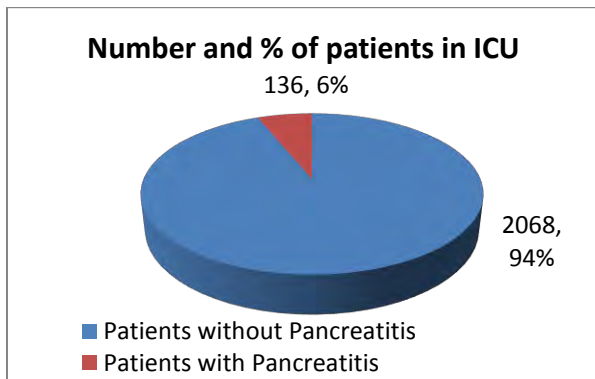


Figure 1 : The total number and percentage of patients in ICU with and without pancreatitis

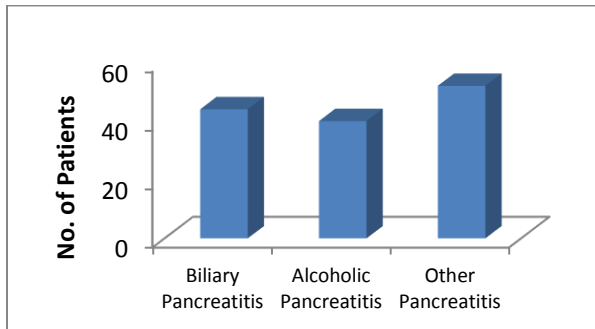


Figure 2 : Number of patients suffering with different types of pancreatitis

The mean age of the patients was 41.5 ± 14.2 . We have analyzed our study according to gender and in different age group also. It was seen in our analysis that the total number of male patients suffering from all types of pancreatitis was 80, whereas that of the female patients was 56 as shown in figure 3.

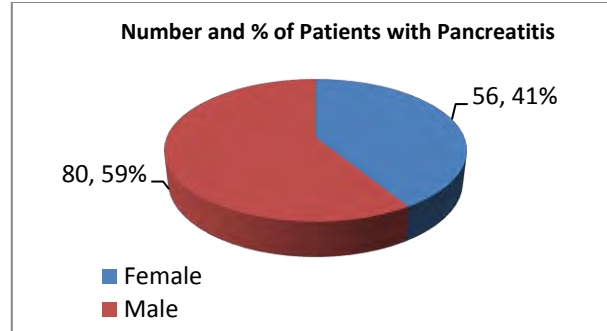


Figure 3 : Number and percentage of male and female suffering from pancreatitis

We have categorized the patients suffering with all types of pancreatitis in different age group, i. e. 20-29, 30-39, 40-49, 50-59 and ≥ 60 . It was found that the maximum number of patients suffering with pancreatitis were in age group 30-39, which was 44 in number. Similarly, the number of patients with pancreatitis in other age group 20-29, 40-49, 50-59 and ≥ 60 were 24, 32, 28 and 8 respectively. The number of male and female patients of pancreatitis (all types combined) in different age group was also found out and is shown in figure 4.

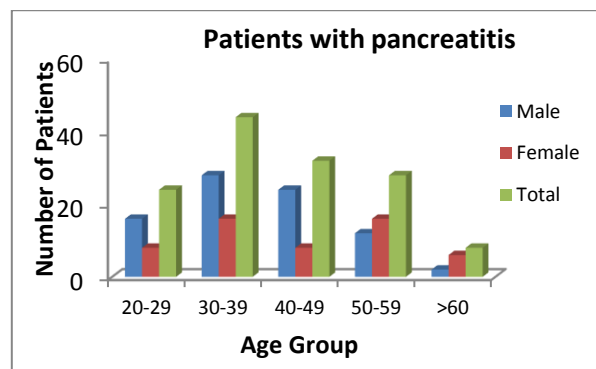


Figure 4 : Number of male and female patients with pancreatitis in different age group

While analyzing the number of male and female patients with different types of pancreatitis in our study, it was found that 36 male and 4 female were of alcoholic pancreatitis, 16 male and 28 female patients were with biliary pancreatitis and 28 male and 24 female patients were of

the other pancreatitis as shown in figure 5. The serum amylase and lipase level of the all the patients with pancreatitis were estimated. The Mean \pm SD value of serum amylase and lipase of all patients with pancreatitis were 1040 ± 1062 IU/L & 442 ± 425 IU/L respectively, which was significantly higher when compared to the control group (figure 6).

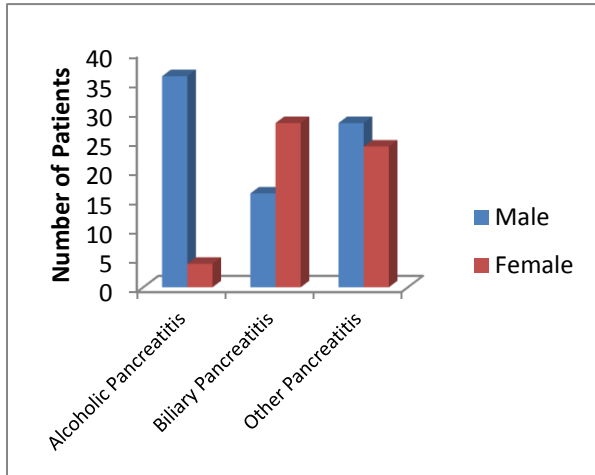


Figure 5: Number of male and female patients with different types of pancreatitis

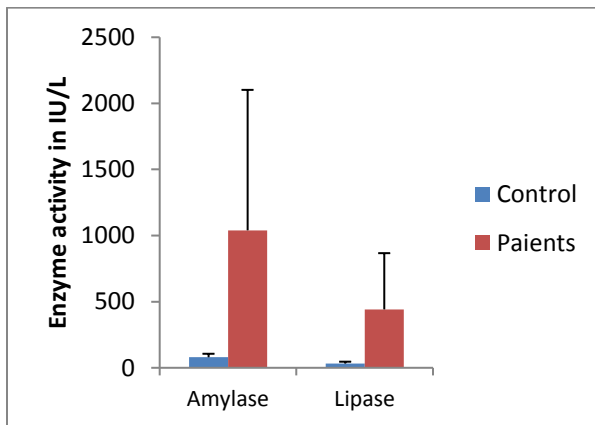


Figure 6 :Mean \pm SD value of Serum amylase and lipase of patients with pancreatitis

The p Value for mean serum amylase and lipase of the patients with pancreatitis were 0.001 & 0.002 respectively, when compared to control group. The outcome of the patients with pancreatitis after getting the treatment was also analyzed. Out of 136, 88 patients recovered

completely without any complication. Some complication was seen in 38 patients, out of which, 26 recovered and 12 were referred to other hospitals for treatment. The last 10 patients could not be recovered and died in the critical care unit.

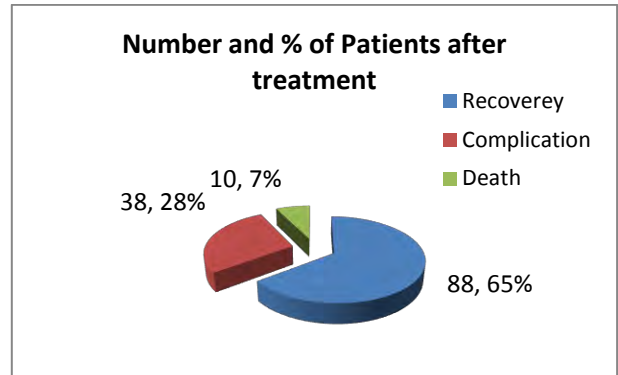


Figure 7: Outcome of the treatment of the patients with pancreatitis

Discussion

The prevalence rate of pancreatitis in our study is 136 out of 2204 total admission in ICU, which is very high if compared to other studies carried out worldwide. The prevalence picture in United Kingdom, US & Finland were 5.38/100000 and 40.1-80/100000 respectively [8, 9]. One of the previous studies carried out in TUTH, Nepal proposed 28% prevalence rate for acute biliary pancreatitis [10]. For our study, we have categorized the patients in three different group as Alcoholic pancreatitis (AP), Biliary pancreatitis (BP) and pancreatitis from other sources (OP). It was found that biliary pancreatitis cases were more than alcoholic pancreatitis cases in our study. Interestingly, the highest number of pancreatitis were of the other reasons in our study, which can be due to factors like smoking, genetic factors, hypercalcemia, hyperlipidemia, autoimmune, post-necrotic, and duct obstruction (e.g. tumor, inflammatory stricture) [11-12]. Out of 136 patients with pancreatitis, the number of male and

female patients (all type combined) was 80 and 56 respectively. Our finding is slightly different from that of the study carried out in Jamaica, which revealed that out of 91 patients, 70 were females and 21 were males [13]. We have extended our study by analyzing the occurrence of pancreatitis in different age groups and found that the maximum number of patients (both male and female) was in the age group of 30-39 years. One of the studies carried out earlier in TUTH, Nepal in 2012 showed the age group of 40-50 years as the maximum prevalence age group for pancreatitis [10]. In other studies, the mean age of occurrence of pancreatitis is 50-55 and 59 years [14-15]. In the large multicenter North American Pancreatitis study [NAPS2] (2000-2013) in the US, the mean age of the occurrence of pancreatitis was 47 [16]. While analyzing the differential diagnosis of pancreatitis in our study, we found that the maximum sufferers of AP were male patients (36 against 4 of females). Similarly, the maximum number of patients suffering from BP was females (28 against 16 of males). A study, in Jamaica in 2017, reported that Alcoholic pancreatitis was only seen in males whereas idiopathic and post-ERCP pancreatitis only occurred in females [13]. The greater risk of suffering from alcoholic pancreatitis in men when compared to women is believed to be primarily due to prevalence of habits of heavy drinking [17]. Our study resembles the finding of one of the studies carried out in UK, which reveals occurrence of higher percentage of cases of pancreatitis due to gall stones in females, whereas percentage of cases of pancreatitis due to alcohol consumption higher in males [18]. Similar type of study was carried out in Kathmandu, Nepal, which had also reported that biliary pancreatitis was more common in females than males [19]. One interesting finding noted in our study, is the occurrence of maximum number of

patients (52) suffering from pancreatitis caused by other factors (52 against 40 of AP and 44 of BP). Risk factors for pancreatitis may be cigarette smoking [20], elevated triglycerides level and drug induced [21]. While analyzing amylase and lipase level as the biochemical markers in this study, we found 1040 IU/L and 442 IU/L as the mean value of serum amylase and lipase respectively, which are significantly higher than the control values. The outcomes after the treatment was also evaluated and found that 65% (88 patients) of cases recovered completely, 28% cases (38 patients) developed complications and recovered and the mortality rate was 7% (10 patients) in our study. A similar finding was reported in TUTH, Nepal, which revealed an uneventful recovery in 54% of cases, recovery after complication in 46% of cases and mortality was observed in one patient [10].

Conclusion

Out of 2204 patients admitted within a year, 136 pancreatitis cases with higher blood level of amylase and lipase enzymes is an indicative of a very high prevalence rate of pancreatitis in this region. The highest number of patients being shared by those suffering from unknown sources, a thorough health check up and investigations including lifestyle, socioeconomic status and food habit etc may be required just to know the actual cause. Out of 40 cases of alcoholic pancreatitis, 36 are males whereas the females are sharing higher (28 out of 44) in the case of biliary pancreatitis. Many of the male members of a family in Nepal, maintain a habit of visiting hotels every evening where alcohol is available and most of the young housewives from well to do families are overweight. Maximum number of operations in NMCTH is cause of Cholecystitis of females.

So, a well regulated awareness program through NGOs or Health department may

be initiated so that consumption of alcohol may be reduced among males. Proper dieting along with regular exercise for young ladies may also be encouraged for maintenance of normal weight.

Conflict of interest: None

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Original Article**Association between the clinical findings and chest radiographs in children with severe pneumonia aged 1 month to 5 years.**

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Abstract**Background**

Pneumonia is the main cause of death among children under five years of age particularly in developing countries. According to the WHO, there are more than 15 million cases representing 7-13% of pneumonia cases annually which necessitate hospital admission due to their severity. There is paucity of data regarding the clinical spectrum and the epidemiology of severe pneumonia from eastern part of Nepal. It is important to understand the clinical spectrum and the epidemiology of severe pneumonia at local level to better define problem and to draw inferences for management and policy formulation.

Material and Methods

A hospital based retrospective observational study conducted at Department of Pediatrics and Neonatology, Nobel Medical College and Teaching Hospital, Biratnagar, Nepal. One hundred and forty four cases with a diagnosis of severe pneumonia were studied over a period of one year. All the cases from 1 month to 5 years of age fulfilling the standard WHO case definition of severe pneumonia were included in the study. A pre-designed semi-structured questionnaire was used to obtain the clinical profile and investigations.

Results

A total of 144 cases were studied and analyzed. The age range was from 1 month to 5 years. The mean age of the cases was 13.56 months. Majority of the cases belonged to age group of 1-6 months 40.27% (n=58). There was a male preponderance in our study comprising 58.3% (n=84) of males and 41.7% (n=60) of females. Fever and cough were the most common symptoms present in all cases, fever being present in 95.8% (n=136) cases and cough was present in 98.6% (n=142) cases. The most common radiological finding in our study was bronchopneumonia in 27.8% (n=40) cases followed by lobar pneumonia in 24.3% (n=35) cases and interstitial pneumonia in 18.8% (n=27) cases. Complications were present in 6.9% (n=10) cases and 22.2% (n=32) of the cases had no radiological abnormalities. Among the studied symptoms and signs of severe pneumonia, hurried breathing (p<0.001), wheeze (p=0.016), refusal of feeds (p=0.001), altered sensorium (p=0.006) and previous history of acute respiratory infections showed significant association with radiological abnormalities.

Conclusion

Children of severe pneumonia presenting with fast breathing, wheeze, altered sensorium, refusal of feeding and past history of acute respiratory infections showed significant association with abnormal chest radiographs.

Key words: Cough, fast breathing, Pneumonia, X-ray

Introduction:

Acute respiratory infections (ARI) are one of the commonest causes of death in children in developing countries. It is responsible for an estimated 4 million deaths worldwide. Almost all ARI deaths in young children are due to acute lower respiratory tract infections (ALRTI), mostly pneumonia [1]. Worldwide, pneumonia is a leading cause of death, killing 6.6 million children less than five years of age [2]. Children with infections of the lower respiratory tract (e.g. pneumonia, bronchiolitis) may demonstrate signs of compensation for impaired gas exchange (e.g. elevated respiratory rate chest indrawing), and those with severe ARI (e.g. associated with sepsis or hypoxemia) often display 'danger signs' (e.g. cyanosis, altered mental status). However, even among children with the same ARI subtype, clinical presentations are highly variable; for example, some children with chest radiograph-confirmed pneumonia do not have cough [3].

Material and Methods:

This is a retrospective study of children with severe pneumonia. Patients visiting the department of pediatrics, Nobel Medical College Teaching Hospital Biratnagar, Nepal fulfilling the inclusion criteria were enrolled in this study from March, 2017 – Feb, 2018. One hundred forty four cases were enrolled in the study. Of these 144 children; there were 84 males, and 60 females with mean age of 13.56 months. Children with congenital anomalies of heart and lungs, anatomical defects like cleft lip and cleft palate, immunocompromised states like human immunodeficiency virus infection (HIV) and infants less than one month of ages were not included in the study.

Diagnosis was made as per the WHO IMCI guidelines. Presence of any one of the general danger signs such as, convulsions; Inability to drink or feed or breastfeed; Lethargy or unconsciousness; Vomits everything; and/or any one of the following: Chest in-drawing or Stridor in calm child. Based on WHO ARI criteria, children were considered tachypnoeic if Respiratory rate (RR) > 60 in < 2 months, > 50 in 2 months – 1 yr and > 40 in 1 yr – 5 yrs.

All the required statistical analysis such as sensitivity, specificity, negative predictive value, P value was calculated wherever necessary and data entry, statistical analysis was done by statistical package for social sciences (SPSS) version 23 for windows.

Results:

A total of 144 cases were studied and analyzed. The age range was from 1 month to 5 years. The mean age of the cases was 13.56 months. Majority of the cases belonged to age group of 1-6 months 40.27% (n=58) followed by age group of 7-12 months 27.08% (n=39). There was a male preponderance in our study comprising 58.3% (n=84) of males and 41.7% (n=60) of females. Fever and cough were the most common symptoms present in all cases, fever being present in 95.8% (n=136) cases and cough was present in 98.6% (n=142) cases. Chest indrawing was present in 47.9% (n=69) cases, followed by hurried breathing in 27.8% (n=40) cases, refusal of feeds in 18.8% (n=27) cases, wheeze in 17.4% (n=25) cases, altered sensorium in 9.0% (n=13) cases, cyanosis in 6.9% (n=10) cases and stridor was seen in 2.8% (n=4) cases.

Table 1. Demographic Distribution of Severe Pneumonia Cases

Age Group (months)	SEX				Total	Percent (%)
	Male	Percent (%)	Female	Percent (%)		
1-6	45	31.25%	13	9.02%	58	40.27%
7- 12	20	13.88%	19	13.19%	39	27.08%
13- 18	4	2.77%	5	3.47%	9	6.25%
19- 24	6	4.16%	10	6.94%	16	11.11%
25- 30	0	0.00%	1	0.69%	1	0.69%
31- 36	6	4.16%	7	4.86%	13	9.02%
37- 42	1	0.69%	0	0.00%	1	0.69%
43- 48	2	1.38%	1	0.69%	3	2.08%
49- 54	0	0.00%	0	0.00%	0	0.00%
55- 60	0	0.00%	4	2.77%	4	2.77%
Total	84	58.3%	60	41.7%	144	100%

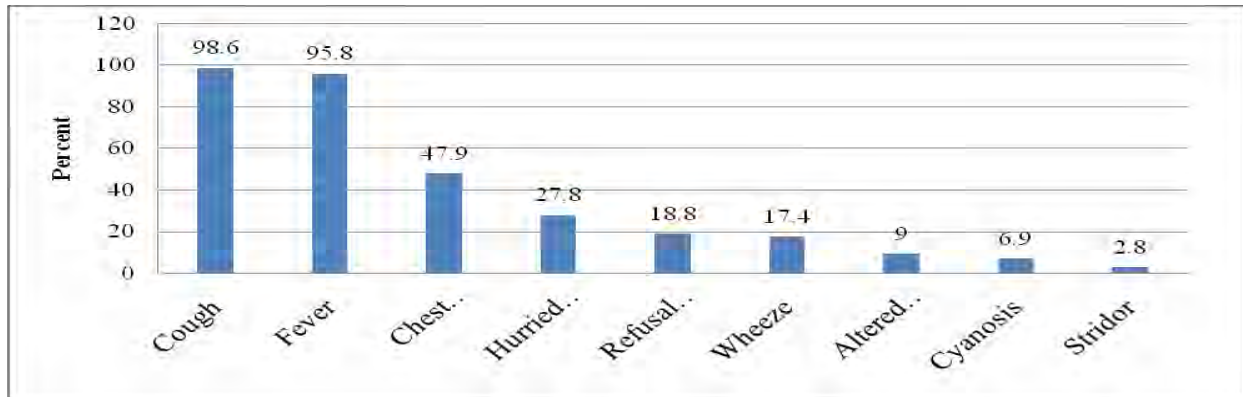


Figure 1: Clinical presentations of severe pneumonia

The most common radiological finding in our study was bronchopneumonia in 27.8% (n=40) cases followed by lobar pneumonia in 24.3% (n=35) cases and interstitial pneumonia in 18.8% (n=27)

cases. Complications were present in 6.9% (n=10) cases and 22.2% (n=32) of the cases had no radiological abnormalities.

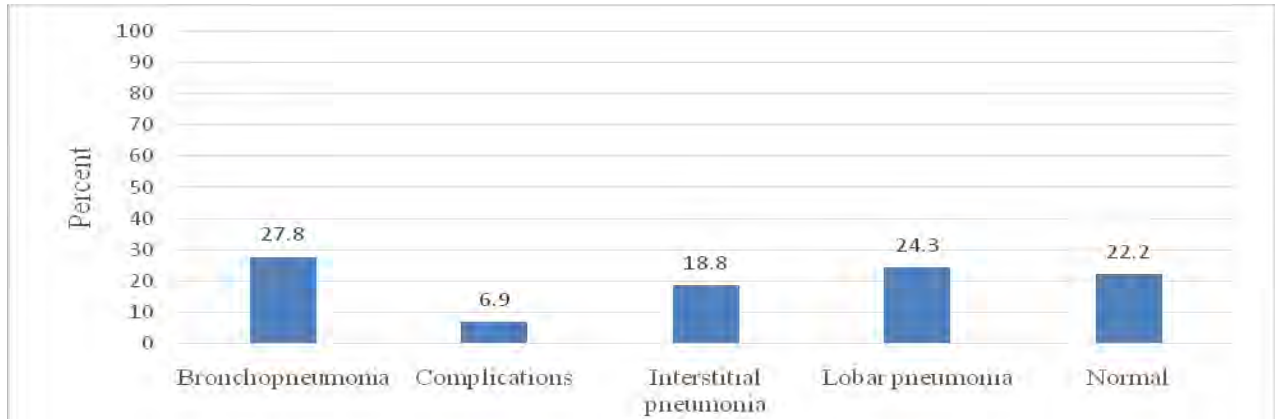


Figure 2: Radiological features of severe pneumonia cases

Among the studied symptoms and signs of severe pneumonia, fever ($p=0.126$), cough ($p=0.130$), chest indrawing ($p=0.071$), stridor ($p=0.135$) and cyanosis ($p=0.199$) showed no significant association with the radiological abnormalities. However, fast breathing

($p<0.001$), wheeze ($p=0.016$), refusal of feeds ($p=0.001$), altered sensorium ($p=0.006$) and previous history of acute respiratory infections in children with severe pneumonia showed significant association with radiological abnormalities.

Table 2: Association of the history and symptoms with radiological Abnormalities

Test statistics										
	FEVER	COUGH	HURRIED BREATHING	CHEST INDRAWING	WHEEZE	STRIDOR	REFUSAL OF FEEDS	CYANOSIS	ALTERED SENSORIUM	PREVIOUS HISTORY OF ARI
P value	0.126	0.130	<0.001	0.071	0.016	0.135	0.001	0.199	0.006	0.017

Discussion:

Pneumonia is a silent global disease which is easily detected and treated effectively in developed countries but in developing countries it has very high morbidity and mortality. Various abbreviations e.g. ARI and LRTI used to in description of pneumonia, its familiar and benign image in the developed world has brought a wrong perception about this disease as a public health problem thus undermining it as a single, tractable problem. Research on pneumonia is can be highly effective, especially if this disease is solely dealt comprehensively [4].

In a study done by Joseph et al at union territory of Chandigarh, India noted fever (73.1%), cough (98.9%), hurried breathing (93.6%), chest indrawing (20.9%), wheeze (32.0%), altered sensorium (8%) and cyanosis in 0.8% of the cases which is similar to our study.^[5]Likewise, clinical

profile of the patients of severe pneumonia done by Magda Yehia El Seify et al at a pediatric hospital of Ain Shams University of Egypt showed fever (92.2%), cough (74.4%), hurried breathing (90%), wheeze (48.9 %), and cyanosis in 24.4% of the patients [6].

Tallying with our study, a study conducted by Hamid et al in Pakistan showed bronchopneumonia in 49.3% cases followed by lobar pneumonia in 10.3%, complications in 1.2% and normal findings in 38.9% of the cases [7]. Similarly, a multicenter study identified normal chest radiographs in 46% cases, lobar consolidation in 15% cases, bronchopneumonia and interstitial pneumonia in 27% cases and mixed consolidation and infiltrates in 12% cases [8].

Chest radiography continues to be a valuable method for case identification that

is correlated to clinical signs of pneumonia. Yet, radiologic findings in cases of clinical pneumonia is likely to vary due to complex mix of etiology, healthcare-seeking patterns, antibiotic use, age, and underlying health conditions and malnutrition.

Conclusion:

Younger children mostly between the ages of 1 to 6 months followed by ages of 7-12 months presented with severe pneumonia with higher incidence in males as compared to females. Fever and cough were the most common symptoms present in all cases. Most common radiological findings were bronchopneumonia followed by lobar pneumonia and interstitial pneumonia. There was significant association of presenting symptoms of fast breathing ($p < 0.001$), wheeze ($p = 0.016$), refusal of feeds ($p = 0.001$), altered sensorium ($p = 0.006$) and previous history of acute respiratory infections ($p = 0.017$) in children with severe pneumonia with radiological abnormalities.

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Original Article**Study of the Amplitude of Accommodation and its Relation to Errors of Refraction: Hospital Based Study***Neha Priyadarshani Chaudhary¹, Pramod Sharma Gautam¹, Sagar Dahal² and Devendra Acharya²**¹Department of Ophthalmology, ²Medical Internee, Nobel Medical College Teaching Hospital, Biratnagar**Received: 22th June, 2018; Revised after peer-review: 24th July, 2018; Accepted: 18th September, 2018**DOI: <https://doi.org/10.3126/jonmc.v7i2.22289>***Abstract****Background**

The unique ability of the eye to vary the refractive power of the lens and to focus on things at a range of distances is called accommodation. The reduction of this ability in which the near point recedes further away from comfortable reading distance is called presbyopia. There is continuing research to understand this process and correct this affliction that affects each and every person at the peak of their productive life. With an aging population, the proportion of people above 40 years is on the rise. This will therefore have public health and economic implications.

Materials and Methods

This is a hospital based retrospective study which was conducted in 100 presbyopic patients in age group of 35 to 60 years at outpatient department of ophthalmology in Nobel Medical College and Teaching Hospital, Biratnagar, from 1st October 2016 to 30th March 2017. The amplitude of accommodation was calculated by measuring near point of accommodation with the help of RAF rule and the data collected was subjected to statistical analysis.

Results

Out of 100 patients in this study who visited our OPD with presbyopic complains, the no. of hypermetropic patients were highest (56%) and they presented with presbyopic symptoms at an early age as compared to myopes, while the no. of myopic patients were less(13%) and they presented late with presbyopic symptoms. The mean amplitude of accommodation was highest in myopes in all age group(3.35 D in 36-40 year age group which reduced to 2.65 D in 56-60 year age group). There was statistically significant difference in amplitude of accommodation between myopia and hypermetropia in all age groups except in 56-60 year age group.

Conclusion

The amplitude of accommodation is generally higher in myopes in all age groups as compared to hypermetropes and emmetropes and they usually develop presbyopic symptoms later in life.

Key words: *Amplitude of Accommodation, presbyopia, Refractive error*

Introduction

Accommodation is the ability of the eyes to change refractive power of the lens and

focus objects at various distances. It is a complex constellation of sensory, neuromuscular, and biophysical

phenomenon by which overall refractive power of the eye changes at various distances to focus objects clearly on retina [1]. The factors that cause presbyopia are still unclear [2].

The point at which accommodation is maximally exerted is called the near point. Amplitude of accommodation (AA) is the amount of accommodation exerted to move the focus from the far point to the near point. It decreases from childhood to 65 years [3]. Clinically, amplitude of accommodation is the reciprocal of near point of accommodation (NPA), the later is measured with RAF rule [4].

Presbyopia is defined as the reduction in the range of accommodation or accommodative power which occurs with ageing. The definition of presbyopia is fluid because there is no standard distance for near work [5]. Symptoms of presbyopia itself can be dependent on other factors like amount of near work done, lighting conditions, corrected distance acuity etc [6].

In this study, we have planned to study accommodative process in peripresbyopic age since there is little data on the actual differences in accommodation that is preserved in various types of refractive errors.

Materials and Methods

This was a hospital based retrospective study on the patients with presbyopic symptoms who visited the outpatient department of ophthalmology in nobel medical college and teaching hospital from 1st october 2016 to 30th march 2017.

Patients between 35-60 yrs of age with clear ocular media and visual acuity improving to 6/6 on snellen's chart was included in the study. patients of Age <35 yrs of age and >60 yrs were excluded in the study. patients with hazy ocular media including corneal opacity and cataract > grade NO1, NC1,C1, P1 according to

LOCS III cataract classification were also excluded. Also, patients with Spherical correction of more than 6.0 D and Cylindrical correction of more than 0.75 D were not included. Lastly, Patients of strabismus or with history of diabetes mellitus, systemic illness, trauma, drug therapy were also excluded.

Emmetropia, was defined as a spherical correction less than or equal to +/- 0.25 D after undilated retinoscopy and subjective refraction.

Hypermetropia was defined as spherical correction of more than or equal to + 0.50 D. Myopia was defined as a spherical correction of more than or equal to - 0.50D. The completed age in years was taken for age determination. The best corrected visual acuity was obtained after undilated retinoscopy and subjective refraction.

To quantify presbyopia, amplitude of accommodation was taken as a measure of accommodative reserve, which was measured with the RAF rule with full distance correction placed in the trial frame at a constant back vertex distance of 15mm. The NPA was measured with the patient trying to read the smallest letter (N5) on the RAF target rule. With the RAF rule in place the target was moved from 50 cm to the point where the last line became slightly blurred. Then the target was slowly pushed back till the last line was just clearly read. This point was taken as near point of accommodation (NPA)

The data collected was tabulated and results of study were analyzed using statistical package for social science (SPSS) 16.0 and Microsoft Word and Microsoft Excel have been used to generate graphs, tables, etc. Significance level was assessed by calculating 'p' value using student T test. Observations were taken as significant at 'p' value less than 0.05 ('p' <0.05).

Results

Out of 100 patients in our study, 50 were male and 50 were female. There were 56 hypermetropic, 13 myopic and 31 emmetropic patients. Table 1 gives the distribution of number of eyes studied according to age group and refractive errors. The mean amplitude of accommodation along with their standard deviation for different age groups and refractive errors are shown in table 2 to table 6 respectively. There was statistically significant difference between myopes and hypermetropes in 35 to 40 years age group ($p = 0.02$, standard error (SE) = 0.26). Statistically significant differences was found among amplitude of accommodation of hypermetropes and

myopes ($p = 0.01$, SE = 0.46) and also between myopes and emmetropes ($p = 0.03$, SE = 0.23) in patients of age group 41 to 45 years. Similarly, in age group of 46-50 years, statistical analysis showed significant difference between amplitude of accommodation of myopes and hypermetropes ($p = 0.02$, SE = 0.36) and between myopes and emmetropes ($p = 0.01$, SE = 0.40). Lastly, in age group of 56 to 60 years, statistical evaluation showed no statistically significant relationship between the three refractive error groups ($p = 0.6$ for hypermetropia and myopia; $p = 0.65$ for myopia and emmetropia).

Table 1: Refractive Status of the Presbyopic patients

AGE GROUPS (YRS)	REFRACTIVE STATUS OF THE PATIENTS						TOTAL
	MYOPIA		EMMETROPIA		HYPERMETROPIA		
	NO. OF CASES	%	NO. OF CASES	%	NO. OF CASES	%	
36-40	03	11%	10	37%	14	51%	27
41-45	03	13%	14	42%	16	48%	33
46-50	02	11%	04	23%	11	64%	17
51-55	03	23%	02	15%	08	61%	13
56-60	02	20%	01	10%	07	70%	10

Table 2: Amplitude of accommodation (AOA) in 36-40 year age group

NO OF CASES	MYOPIA	HYPERMETROPIA	EMMETROPIA
	03	14	10
Mean AOA	3.35	2.93	3.13
S.D	0.32	0.41	0.33

Table 3: amplitude of accommodation in 41-45 year age group

NO. OF CASES	MYOPIA	HYPERMETROPIA	EMMETROPIA
	03	16	14
MEAN AOA	3.16	2.82	3.80
S. D.	0.46	0.36	0.27

Table 4: Amplitude of accommodation in 46-50 year age group

NO OF CASES	MYOPIA	HYPERMETROPIA	EMMETROPIA
	02	11	04
MEAN AOA	3.15	2.29	2.23

Table 5: Amplitude of accommodation in 51-55 year age group

NO OF CASES	MYOPIA	HYPERMETROPIA	EMMETROPIA
	03	08	02
MEAN AOA	2.57	2.09	2.00
S.D.	0.29	0.25	0.0

Table 6: Amplitude of accommodation in 56-60 year age group

NO. OF CASES	MYOPIA	HYPERMETROPIA	EMMETROPIA
	02	07	01
MEAN AOA	2.65	2.09	2.00
S.D.	0.15	0.23	0.00

Discussion

The effect of age on the amplitude of accommodation and the onset of presbyopic symptoms is a well known fact. The onset of presbyopia depends not only on age but also on refraction of the individual and his/her reading habits. A hypermetrope starts in life with a near point considerably farther away than that of an emmetrope, therefore patients may show presbyopic symptoms at the age of 25 years. In myopes, opposite condition ours. Although a number of studies have been done on presbyopia and amplitude of accommodation separately, we found only one study measuring the amplitude of accommodation in the peri-presbyopic age [7].

In our study, we found that the total number of hypermetropes was highest (56%) and the total no of myopes was lowest (13%). These findings correlated with the study 'Human eye as an optical system' which showed that myopes seek help for presbyopic symptoms much later than the rest⁸. It could be due to the fact that these individuals remove their glasses for near work. Another study concluded

that corrected hypermetropes will need near addition at a younger age due to lower effective accommodation and hypermetropes are symptomatic earlier than myopes⁷, this observation is in correlation with our study. Also, they found that the amplitude of accommodation is highest in myopes and lowest in hypermetropes till the age of 44 years. The amplitude of accommodation in emmetropes is in between the two extremes, though in their study in the 35 to 40 yrs age group the amplitude of accommodation was highest in emmetropes but they could not find the statistically significant difference in their study due to small number of hypermetropes in this age group. However, they did not find any statistical significant difference in amplitude of accommodation in the three refractive error groups after the age of 44 yrs, which is in contrast to this study where we found statistically significant difference in amplitude of accommodation between the three refractive groups until the age of 55 yrs. This could probably be due to the fact that they studied large number of cases and our

sample size was small and probably due to small number of hypermetropes presenting to us in 56-60 year age group. Our observation regarding amplitude of accommodation correlates well with another study which showed that difference in amplitude of accommodation occurs with respect to refraction and the relationship is non linear with low myopes exhibiting the largest clinical amplitude of accommodation⁹. However, we found one study which showed that the refractive errors do not affect the dynamics of natural accommodation¹⁰.

Conclusion

In conclusion, we can say that the amplitude of accommodation is generally higher in myopes in all age groups as compared to hypermetropes and emmetropes. This is probably why myopes develop presbyopic symptoms later in life.

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Original Article

A study on prescribing pattern of drugs in patients with rheumatic heart disease at tertiary care hospital

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Abstract

Introduction

Rheumatic heart disease (RHD) is a common cardiac problem. Medical therapy is directed toward secondary prophylaxis and supportive treatment for heart failure (HF), rhythm disorder and anticoagulation to prevent thromboembolism. Drug utilization patterns thus provide a favorable feedback to physicians and help to modify treatment strategies.

Materials and Methods

This is a cross sectional study on 140 patients with RHD who received care at Nobel Medical College Teaching Hospital from October 2017 to September 2018. A semi structured questionnaire was administered to record the demographic characteristics, co-morbid conditions and use of different drugs.

Results

Mean age was 50.09 ± 10.99 years. RHD was more common in females (75.7%). Penicillin prophylaxis was prescribed for 38 (27.1%) patients. Out of which, 22.8% were on daily oral penicillin and 4.2% were receiving three weekly benzathine benzylpenicillin. Beta blockers were the most frequently used drug for heart rate control for patients (51.4%) with both atrial fibrillation (AF) and/or symptomatic mitral stenosis (MS). Digoxin was used in 10% and calcium channel blockers were used in 3.5% of patients who have AF. Different diuretics were used in 88.5% of patients with features of systemic or pulmonary congestion. Out of 20 cases of AF, eleven (55%) were receiving aspirin and nine (45%) were on oral anticoagulants. Out of nine patients receiving warfarin, only four (20%) had therapeutic international normalized ratio (INR).

Conclusions

This study focuses on prescription pattern of drugs for different indications in patients with RHD. There is a need for improved use of secondary prophylaxis to prevent recurrence of RF and antithrombotic in patients with AF.

Key words: *Drugs, Prescription pattern, Rheumatic heart disease*

Introduction

According to WHO, at least 15.6 million people worldwide have RHD. Of the 5,00,000 individuals who acquire RF every year, 3,00,000 go on to develop RHD and 233,000 deaths annually are attributed to RF or RHD [1]. Various studies have been

published on prevalence of RHD in Nepal. All these studies have shown the prevalence of RHD among school children to be between 0.9-1.35 per thousand [2, 3, and 4]. Only an echocardiography based study done in eastern part of Nepal by Shrestha NR, et al showed the prevalence

of RHD 10.2 per thousand indicating that population prevalence of RHD increases when echocardiography is used for screening [5].

RHD is one of the common types of structural heart disease and carry a significant morbidity and mortality in developing countries. Medical therapy in RHD includes measures to prevent RF and thus RHD. In patients who develop RHD, therapy is directed toward eliminating the group A streptococcal pharyngitis, suppressing inflammation and providing supportive treatment for HF, rhythm disorder and anticoagulation in selected cases to prevent thromboembolism.

Periodic evaluation of drug use patterns in hospital setting can be of help to monitor and supervise the drug use behaviors. Drug utilization studies thus provide a favorable feedback to treating physicians and help to modify treatment strategies, identify and correct the shortcomings if any, thus providing a rational and cost effective therapy to the patients. This study was conducted in patients with RHD to highlight these facts.

Material and Methods

This was a descriptive cross-sectional study conducted from October 2017 to September 2018. The diagnosis of RHD was made on the basis of clinical history, examination and echocardiography. A total of 140 patients of RHD were enrolled consecutively who received care at cardiology clinic of Nobel Medical College Teaching Hospital. A semi structured questionnaire was administered to record the demographic characteristics, co-morbid conditions and use of different drugs. Physical examination was performed to note vital signs and abnormal cardiac and neurological findings. Electrocardiography and echocardiography were done to define electrical and structural heart abnormalities respectively. Biochemical parameters were requested to look for blood hemoglobin, renal

function and INR if clinically indicated. Collected data were entered in microsoft excel. Mean, standard deviation and IQR (Interquartile range) were calculated for descriptive statistics. Tabular presentation was be made where necessary.

Results

Mean age was 50.09 (range 22-80) years. The number of RHD was more in females (75.7%) as compared to males (24.2%). Among all patients, 10 (7.1%) were current smoker and 9 (6.4%) were significant alcohol consumer. Mean hemoglobin (Hb) was 12.5 ± 2.02 gm/dl. Mean body mass index (BMI) was 21.42 ± 3.98 kg/m². Mean estimated glomerular filtration rate (eGFR) was 69.48 ± 19.8 ml/min with majority 121 (86.4%) had reduced eGFR of <90 ml/min. Table 1 shows baseline characteristics of the study population.

Penicillin prophylaxis was prescribed for 38 (27.1%) patients. Out of which, 22.8% were on daily oral penicillin and 4.2% were receiving three weekly intramuscular injection of benzathine benzylpenicillin. Beta blockers were the most frequently used drug for heart rate control for patients (51.4%) with both AF and/or symptomatic moderate to severe mitral stenosis. Digoxin was used in 10% and calcium channel blockers were used in 3.5% of patients who had AF. Different diuretic agents were used in 88.5% of patients who had clinical features of systemic or pulmonary congestion. Out of 20 cases of AF, three (15%) had evidence of stroke. Eleven (55%) were receiving aspirin and nine (45%) patients were on warfarin for prevention of stroke and thromboembolism. Out of nine patients receiving warfarin, only four (20%) had therapeutic INR at the time of enrollment. Mitral valve was the most commonly affected valve (82.1%) followed by aortic valve (10%). Both mitral and aortic valves were involved in 7.8 %

patients. Primary TV was involved in 2.8% and secondary TR was present in 52.1% cases.

Table 1. Baseline characteristics of patients with rheumatic heart disease (n = 140)

Characteristics	n
Male: female	34:106
Mean age in years (SD)	50.09 ± 10.99
Mean body mass index in kg/m ² (SD)	21.42 ± 3.98
Mean systolic blood pressure in mmHg (SD)	107.09 ± 13.06
Mean diastolic blood pressure in mmHg (SD)	72.0 ± 9.34
Mean hemoglobin in gm/dl (SD)	12.5 ± 2.02
Mean eGFR (ml/min)	69.48 ± 19.88
Mean heart rate (BPM)	93.74 ± 21.83
≤ 100	95 (67.8%)
> 100	45 (32.1%)
Sinus rhythm	120 (85.7%)
Atrial Fibrillation	20 (14.2%)
Mean LVEF (%)	53.1 ± 8.32
LA diameter in mm (SD)	52.8 ± 7.13
Pulmonary artery hypertension	73 (52.1%)
Smoker	10 (7.1%)
Alcohol use	9 (6.4%)
Hypertension	3 (2.1%)
Diabetes Mellitus	2 (1.4%)
Coronary artery disease	2 (1.42%)

SD: Standard deviation; eGFR: Estimated glomerular filtration rate; BPM: Beat per minute; LVEF: Left ventricular ejection fraction; LA: Left atrium

Table 2. Patterns of drugs used in patients with rheumatic heart disease (n = 140)

Antithrombotics	
None	120 (85.7%)
Aspirin	11 (7.8%)
Warfarin	9 (6.4%)
For rate control	
Beta blockers	72 (51.4%)
Digoxin	14 (10%)
Calcium channels blockers	5 (3.5%)
Diuretics	124 (88.5%)
Loop	101 (72.1%)
Spironolactone	23 (16.4%)

Amiloride	38 (27.1%)
Penicillin prophylaxis	32 (22.8%)
Oral penicillin	6 (4.2%)
Benzathine benzylPenicillin (i.m.)	

Table 3. Use of antithrombotic treatment in rheumatic heart disease with atrial fibrillation (n = 20).

No. of patients with AF	20
No. of patients with AF and stroke	3 (15%)
No. of patients on Aspirin	11 (55%)
No. of patients on warfarin	9 (45%)
No. of patients on warfarin with therapeutic INR (2.0-3.0)	4 (20%)

AF: Atrial fibrillation; INR: International normalized ratio

Table 4. Patterns of valve involvement in patients with rheumatic heart disease (n = 140)

Valves	n
Mitral valve	115 (82.1%)
Aortic valve	14 (10%)
Mitral + Aortic valve	11(7.8%)
Tricuspid Valve (primary)	4 (2.8%)
Tricuspid Valve (Secondary)	73 (52.1%)

Discussion

RHD is a significant complication of RF. Although, RF is equally common in both males and females, RHD tends to be more common in females [6, 7]. In our study, female cases of RHD (75.7%) were more compared to males. It is unclear whether this difference in RHD prevalence is due to greater susceptibility to autoimmune responses following *S. pyogenes* infection or other social factors [8]. People who have suffered RF are more likely to have recurrent episodes and may cause further damage to the cardiac valves. Thus, RHD steadily worsens in people who have multiple episodes of ARF [9]. Primary Prevention is defined as treatment of group A streptococcal sore throat [10] and is indicated only when there is evidence of group A streptococcal infection [11]. Secondary prophylaxis is indicated to

patients with a previous attack of RF or documented RHD. The purpose is to prevent colonization or infection of throat with group A beta-hemolytic streptococci and development of recurrence of RF. In our study, secondary prophylaxis was given in only 27.1% of cases. Although intramuscular injection of benzathine benzylpenicillin every three weeks is advised as the most effective therapy for prevention of recurrent attacks of RF [9], only 4.2% of our patients were receiving benzathine benzylpenicillin. There are a number of interrelated factors associated with underutilization of secondary prophylaxis. RHD remain more prevalent in underprivileged settings. Poor access to health care facility, lack of family support, fear of anaphylaxis, need for long term painful injection etc. could be some reasons for low adherence of treatment and underutilization [11].

The most common cardiac manifestations of RHD are MS followed by aortic valve involvement [12]. In our patients, 82.1% had mitral valve involvement followed by aortic valve (10%) involvement either in the form of regurgitation or stenosis. MS is a slow and progressive condition, takes over decades, usually manifesting in the third to sixth decade of life [13]. Over time, decrease in stroke volume can cause reflex tachycardia which may contribute to an elevated left atrial pressure. The onset of AF secondary to the stenosis may precipitate acute pulmonary edema.

The only medical therapies indicated for these patients are secondary prevention of repeat carditis [14]. Beta blockers can be helpful for symptomatic patients who have tachycardia and /or AF [15]. In our study, 51.4% patients of moderate to severe MS with or without AF were on beta blocker therapy.

Medical management for RHD is provided based on the presence or absence of cardiac symptoms. Most patients with mild

to moderate valvular disease remain asymptomatic for years. There is no role for medical therapy in patients with severe mitral or aortic regurgitation and preserved LV function [16]. Patients who are symptomatic or have decreased LV function should be referred for surgery. If surgical intervention is unavailable or contraindicated, medical therapy for systolic dysfunction is considered a reasonable course of treatment to manage symptoms. Diuretics are used judiciously in patients with evidence of systemic or pulmonary congestion.

Anticoagulants should be administered in the setting of AF or LA thrombus or prior embolic event [15]. In our study, out of 20 cases of MS with AF, 45% patients were on oral anticoagulants and only 20% achieved therapeutic INR at the time of enrollment indicating marked underuse of anticoagulation. A study done in rural part of Nepal showed the marked underuse of anticoagulants, only 22.7% patients with RHD and AF obtained oral anticoagulants [17]. The reasons for under-treatment could be due to include lack of knowledge about treatment guidelines, perceived potential contraindications, fear of bleeding, poor drug compliance, cost and inconvenience of monitoring.

Balloon valvuloplasty is performed if the valve anatomy is favorable and there is no significant mitral regurgitation [15]. Patients who have non-calcified, relatively mobile valves and lack severe leaflet thickening or subvalvular pathology are most likely to have good early and late outcome [18].

Conclusions

The progression of RHD, beginning with *S. pyogenes* infection followed by RF and subsequent cardiac valve damage offers opportunities for the prevention. Improvement in the use of secondary prophylaxis may halt the progression of disease. This study focuses on prescription

pattern of drugs for different indications in patients with RHD. There is a need for improved use of secondary prophylaxis to prevent recurrence of RF and anticoagulants for prevention of stroke in patients with AF.

Ethical Clearance

The study was approved by IERB of Nobel Medical College Teaching Hospital prior to beginning of the study.

Competing interests

None declared

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Original Article**Comparative study of laparoscopic hernia repair versus open hernia repair***Rohit Prasad Yadav*¹, Dipendra Thakur¹, Bashu Dev Baskota², Amit Kumar Shah²,
Kaushal Samsher Thapa¹ and Sakar Babu Gharti¹*¹Department of General Surgery, Nobel Medical College Teaching Hospital, Biratnagar²Department of General Surgery, B & C Medical College Teaching Hospital and Research Center, BirtamodReceived: 10th November, 2018; Revised after peer-review: 15th December, 2018; Accepted: 22th December, 2018DOI: <https://doi.org/10.3126/jonmc.v7i2.22303>**Abstract****Background**

Hernia is the abnormal exit of an organ or fatty tissue, such as the bowel, through the weak wall of the cavity in which it normally resides. Repair of inguinal hernia is common surgical procedures. This study aims to compare between laparoscopic and open hernia repair.

Method

This study is non comparative study. Our study includes 76 patients who had undergone surgery for inguinal hernia. Among them 38 patients undergone laparoscopic hernioplasty and 38 patients undergone open hernioplasty from June 2016 to August 2018.

Results

Mean hospital stay was 2.95 days in group 1 and 4.03 in group 2. VAS was found to be 2.45 in group 1 and 5.71 in group 2 which is significantly low in group 1 patients with $p < 0.001$. Duration of surgery is more in group 1 with mean duration of 94.08 minutes comparing to group 2 with mean duration of 43.55 minutes (with $p < 0.001$).

Conclusion

Laparoscopic hernia repair offers advantages over open repair in terms of less hospital stay and lower pain score for patient not contraindicated for general anesthesia and complicated hernia.

Keywords: *Inguinal, Hernia, Hernioplasty***Introduction**

Hernia is the abnormal exit of an organ or fatty tissue, such as the bowel, through the weak wall of the cavity in which it normally resides. Repair of inguinal hernia is one of the common surgical procedures done worldwide [1]. Anatomical understanding of inguinal canal anatomy increased through the work of Camper, Scarpa, Cooper, Hasselbach and Hunter. Still, it was not until the late nineteenth century, when Edoardo Bassini proposed his first successful reconstruction of the

inguinal floor that surgical techniques started rapidly evolving. Then, in the late twentieth century the tension-free repair, introduced by Irving Lichtenstein, caused a dramatic drop in recurrence rates and became the procedure of choice [2]. However, the introduction of a laparoscopic technique by Ralf Ger in the early 1990s sparked a new debate over the best method of inguinal hernia repair [3]. In 1984, Lichtenstein et al coined the term "Tension-Free Hernioplasty" and broke the convention by advocating routine use of

mesh for hernia repair, thereby making tissue repair a thing of the past. Real controversy started in 1990, when laparoscopic Tension-Free repair came in to vogue and was routinely advocated and aggressively marketed by promising less pain and shorter recovery period, but the things in the small prints were completely ignored [4]. The lack of consensus in the literature as to the optimum repair technique or prosthetic mesh to insure a long term durable result is also surprising [5, 6]. (The life time risk for men is 27% and for women is 3%. The wide use of mesh in the groin hernia repair has gained more popularity and has almost replaced the suture repairs such as Shouldice or Maloney repair [7, 8]. There is, however, a very large debate on relative merits of laparoscopic mesh placement by using two to three small abdominal incisions compared with placement of mesh by using an open approach through a standard groin incision [9]. We discuss the advantages and disadvantages of laparoscopic hernia repair versus open hernia repair.

Methods

The following study is a non-randomized comparative study done in single center. The study includes 76 patients treated with hernioplasty among them 38 cases were of laparoscopic hernioplasty and 38 cases were of open hernioplasty in the Department of General Surgery, B & C Medical College Teaching Hospital and Research Center, Birtamod during the study period of June 2016 to August 2018. Written consent taken from all the cases. All patients of both sex, who were 18 years of age or older with a diagnosis of inguinal hernia, either bilateral or unilateral and were medically fit to undergo the procedure were included in the study. Patients with age less than 18 years of age, contraindication to general anesthesia

(for laparoscopic repair)/Regional anesthesia (for open repair), patients with complicated inguinal hernia like obstruction, strangulation or gangrene were excluded in study. TEP (Totally extraperitoneal hernia repair) in laparoscopy surgery and Lichtenstein's hernia repair was done in open inguinal hernia surgery. Laparoscopic surgery was done by Single surgeon and open hernia repair was done by other surgeons in the same unit. Data were collected using specific set of questionnaire. Preoperatively patient were allowed to choose either laparoscopic hernia repair or open hernia repair for inguinal hernia after counseling about advantages and disadvantages of respective procedures along with type of anesthesia. Post-operative analysis was done with respect to operative duration, VAS and hospital stay. At the end comparison were made between laparoscopic hernia repair and open Lichtenstein's mesh repair.

Statistical analysis

Qualitative data will be expressed as percentages and proportions. Quantitative data will be expressed as mean and standard deviation. The differences between two groups with respect to continuous variables will be analyzed using t-test while categorical variables will be analyzed using chi-square test. Data were entered in Microsoft excel 2013 and converted in Statistical software package for social sciences (SPSS.V11.5) for analysis. P value <0.05 will be considered as statistically significant while P value <0.01 will be considered as statistically highly significant.

Results

This study consists of 76 patients among which 38 patients (50%) were placed in group 1 (laparoscopic hernia repair) and 38 patients (50%) were placed in group 2 (Open Lichtenstein's repair)

Table no 1. Distribution according to sex

		Group			Total
		1 (laparoscopic hernia repair)	2 (Open Lichtenstein's repair)		
Sex	Male	No of patients (n)	35	34	69
		% within sex	50.7%	49.3%	100%
	Female	No of patients (n)	3	4	7
		% within sex	42.9%	57.1%	100%
Total		No of patients (n)	38	38	76
		% within sex	50.0%	50.0%	100%

P=0.692 Not significant

Table no 2. Distribution according to age

			Group		Total	
			1	2		
Age group	< 30	No of patients(n)	9	5	14	
		% in age group	64.3%	35.70%	100%	
	30-39	No of patients(n)	6	3	9	
		% in age group	66.7%	33.3%	100%	
	40-49	No of patients(n)	3	4	7	
		% in age group	43.9%	57.1%	100%	
	50-59	No of patients(n)	6	11	17	
		% in age group	35.3%	64.7%	100%	
	> 60	No of patients(n)No of patients(n)	14	15	29	
		% in age group	48.3%	51.7%	100%	
	Total		No of patients(n)	38	38	76
			% in age group	50%	50%	100%

Table no 3. Mean age undergoing surgery

Group		Mean	Standard deviation
Age	1	47.87	18.963
	2	55.21	19.692

P=0.100 Not significant (T test applied)

Table no 4. Distribution according to diagnosis

			Group		Total
			1	2	
Diagnosis	Right inguinal hernia	No of patients(n)	27	21	48
		% with diagnosis	56.3%	43.8%	100%
	Left inguinal hernia	No of patients(n)	6	12	18
		% with diagnosis	33.3%	66.7%	100%
	B/L inguinal hernia	No of patients(n)	5	5	10
		% with diagnosis	50%	50%	100%
Total		No of patients(n)	38	38	76
		% with diagnosis	50%	50%	100%

P= value 0.263 Not significant

Table no.5 Group statistics

Group		Mean	Standard deviation
Hospitalized days	1	2.95	1.064
	2	4.03	1.585
VAS	1	2.45	0.795
	2	5.71	1.088
Operative duration	1	94.08	12.673
	2	43.55	8.375

P values: Hospitalized days :<0.001 Significant VAS :<0.001 Significant Operative duration <0.001 significant (T test applied)

Table 1. shows gender distribution of the patient, both group 1 and 2 consists of mostly male i.e. 69 and only 7 female cases were noted. Regarding age distribution (table no. 2) in study, in group,1 age of patient ranged from 18-83 with mean age of 47.87 years. Age of the patients in group 2 ranged from 21-95 years with mean age of 55.10 years. The operating time (table no.5) duration was calculated from the time of induction till the time of wound closure. In this study the mean operating time in group 1 was 94.08 minutes while in group 2 was 43.55 minutes, with $p < 0.001$. The pain score (table no 5) was significantly less in group 1 with The mean value of just 2.45 and in group 2 with the mean value of 5.71. The post operative hospital (table no 5) stay for group 1 was less with the mean of 2.95 with $p < 0.001$, when compared with group 2 which has got a mean hospital stay of 4.03.

Discussion

In this study most of the patient were male, both in group 1 and group 2 with just 4 females in group 1 and 3 females in group 2 which indicates the high incidence of inguinal hernia in male in general population .Majority of the patient operated were having right inguinal hernia in both groups with bilateral hernia making 13.16% in both the group .Regarding age group, in our study about 38.16 % patient falls under >60 years of age group followed by 22.37% patients of age group

50-59 and 18.42% patient of age group <30 which indicates that the incidents of inguinal hernia is more common in older age group. Though operating duration of surgical techniques varies between surgeons and also vary considerably between centers, in this study the mean operative time was 94.08 minutes for group 1 and 43.55 minutes for group 2. The overall mean operative time was significantly more in laparoscopic hernia repair than open. It is less important to the patient than a successful operation. Post-operative pain scores were obtained using visual analogue scale (VAS). In this study post-operative pain is significantly less in group 1 when compared to group 2. A 2003 Cochrane database systematic review demonstrated less persisting pain, and less persisting numbness in the laparoscopic groups. Similarly, another meta-analysis study from the EU Hernia Trialists Collaboration reported decreased post-operative pain with the employment of laparoscopic methods [10]. Therefore, there is ample evidence that laparoscopic hernia repair produces less postoperative pain and is associated with similar or less risk of persisting pain than open hernia repair. In the present study, the mean post-operative hospital stay was 2.95 days for laparoscopic hernia repair group, whereas it was 4.03 days for Open Lichtenstein's repair. Hence the mean post-operative hospital stay was significantly less in laparoscopic repair than open hernia repair with $p < 0.0001$ which was extremely

significant. So, from this study it can be concluded that laparoscopic hernia repair is associated with less postoperative hospital stay and better comfort than open hernia repair. One of the major criticisms of laparoscopic hernia repair is that it is more expensive to perform than open hernia repair [11]. So there have been speculations whether this surgery, thought to be advanced laparoscopic surgery, should be done in developing countries as ours [12]. But other studies have confirmed that laparoscopic repair of inguinal hernias could be contemplated safely both via totally extra peritoneal as well as transperitoneal route [13].

Conclusion

Inguinal hernia is a common surgical problem which can be easily treated with surgery. This study compares between the laparoscopic hernia repair and open hernia repair. Laparoscopic hernia repair is associated with less post-operative morbidity with faster recovery and Satisfaction as documented by less post-operative pain, early discharge from the hospital and return to work. The present study supports the view that laparoscopic mesh repair of inguinal hernia offers definitive advantages over open mesh repair and should be available option for all patients requiring elective hernioplasty.

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Original Article

Early outcome of permanent pacemaker implantation

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Abstract

Background

Permanent pacemaker implantation (PPI) is considered the most effective and safe procedure for treatment of symptomatic bradyarrhythmia. In this study we evaluated incidence of intraoperative and early postoperative (three month) outcome of PPI in our center.

Method

This is a cross sectional study carried out over a period twenty months between August 2015 to July 2018 (3 Years). All patients undergoing PPI at Nobel Medical College were enrolled in the study. Details of demographic data, medical history, hardware used and complications were recorded. Prospective follow up was done in outpatient department upto three months.

Result

A total of seventy-six patients were enrolled in the study. Fifty-one (67%) were male and twenty-five (33%) were female. Ninety percent of the patient was above the age of sixty-five years. Fifty-five (71%) received single chamber and twenty-one (28%) received dual chamber pacemaker. Majority of the patient (87%) had a diagnosis of complete heart block. There was no mortality upto 3 moths. Majority (92%) of the patient had no complications at all. Two patients had pocket site infection. Lead dislodgment was noted in three patients. Lead perforation and acute tamponade occurred during intraoperative period in one case, which was successfully managed by pericardiocentesis.

Conclusion

In summary permanent pacemaker implantation was effective and relatively safe procedure in our center with no mortality.

Key words: *Bradyarrhythmia, outcome, permanent pacemaker*

Introduction

Cardiac pacemaker implantation is the treatment of choice in severe and/or symptomatic bradycardia. Implantation of PPI has increased significantly over the years. It is estimated that over 700,000 new pacemakers are implanted yearly, worldwide [1]. With widespread use, pacemaker technology has greatly evolved, and highly sophisticated devices have become available providing optimal support

for treating any type of bradyarrhythmias. Device miniaturization, advent of smart device, improvement and simplification of implantation technique, establishment of new cathlab centers and increase in the training of more physicians has led to the increase number of implantation every year. When the technology grows, safety concerns become more prominent. In this study we tried to evaluate the safety and

outcome of the permanent pacemaker implantation done in our newly established center.

Subjects and Methods

In this prospective observational study, we enrolled all patient undergoing permanent pacemaker implantation at Nobel Medical College, over a period of three years (Aug. 2015-July 2018). All patients were followed up to three months to record any complications of the procedure. Demographic, clinical, electrocardiographic and hardware profile were recorded and analyzed to find any association with complications.

Data are presented as mean values \pm SD or medians for continuous variables and as absolute and relative frequencies for categorical variables. Comparisons between groups were performed using Student's t-tests and chi-square tests, where appropriate.

Results

A total of seventy-six patients undergoing permanent pacemaker implantation were enrolled in the study. Sixty seven percent (n=51) were male and thirty three percent (n=25) were female. Mean age of the patients was 72 years. Ninety percent (n=68) of the patients were above the age of 65 years. Twenty eight percent (n=21) of the patient received dual chamber pacemaker and seventy two percent (n=55) received single chamber pacemaker. Eighty seven percent of the patients (n=66) received pacemaker for the diagnosis of complete AV block. Five patients had sick sinus syndrome and five had 2:1 AV block. Table1.

In this study, forty five percent (n=34) of the people were hypertensive, thirty-one(n=24) percent of the people were diabetic whereas twelve percent (n=9) of the people were smoker and lower number of people was suffering from hypothyroidism(n=9). Table2

Table 1. Demographic and disease characteristics

Variables	Value
Male	51(67%)
Female	25(33%)
Age > 65 years	90%(68)
Age < 65 years	10%(8)
Single Chamber	55(72%)
Dual Chamber	21(28%)
CHB	66(87%)
SSS	5(6.5%)
2:1 AVB	5(6.5%)

Table 2. Comorbidities

Hypertension	34(45%)
Diabetes	24(31%)
Smoking	9(12%)
Hypothyroidism	9(12%)

Only seven patient experienced complications associated with pacemaker implantation. Out of seven patients, two patients had pocket infection, three patients had lead dislodgement, and one patient had lead perforation and only one patient experienced with the complication of haemothorax. No death was direct result of pacemaker implantation. Table 3

Table 3. Complications

No complication	69
Pocket infection	2
Lead dislodgement	3
Lead perforation	1
Haemothorax	1
Death	0

Table 4. Association of complications with different variables

Characteristics	Value	P value
Age	< 65years	0.85
	> 65 years	
Sex	Male	0.38
	Female	
Type of PPI	Single Chamber	0.54
	Dual Chamber	
Diagnosis	CHB	0.05
	SSS	
	2:1 AVB	
Comorbidities	Hypertension	0.65
	Diabetes	
	Smoking	
	Hypothyroidism	

There is no significant association between age, sex, type of PPI and co-morbidities since p value is more than 0.05. There is significant association between diagnoses of the patient and complications (p value is 0.05). Table 4

Discussion

Pacemaker implantation is the only effective treatment for symptomatic bradycardia. Implantation of a pacemaker reduces symptoms caused by an insufficient blood supply to the vital organs such as the heart and brain, thereby improving patients' quality of life, sometimes even saving a life. Use of permanent pacemaker has been increasing in Nepal in the past few years owing to establishment of more cathlabs capable of performing the procedure. Similarly, it is reported in one study carried out in UK that the estimated average rate of new permanent pacemaker (PPM) insertion per annum is around 610 per million populations (pmp) [2]. However, only one center in Nepal has published the data regarding its safety and outcome [3]. In this present study we tried to evaluate the short-term (3 month) outcome of the patients undergoing permanent pacemaker implantation for various reasons. We don't have any pediatric age group patients. Mean age of the patients was 72 years (40-88). More than ninety percent of the patients were of age more than 65 years. These results are similar to those published by Khanal J et al [3]. A study carried out in Australia reported that the median age of pacemaker recipients was 86 years (interquartile range 83-89) [4].

Our study shows that less number of female patients is likely to receive the pacemaker therapy. Sixty seven percent of the patients were male. The report from Australia in one study is nearly similar to our result which revealed that 61% were male among pacemaker recipients [4]. A

study from Turkey shows that forty nine percent of the patients receiving pacemaker therapy were female [5]. Compared to this our number of female patients is less. The reason may be the less investment of society on female patients.

The effectiveness and cost-effectiveness of dual-chamber pacemakers over single-chamber pacemakers for bradycardia due to atrioventricular block or sick sinus syndrome has been demonstrated in various studies [6]. However in our study population single chamber pacemaker was the most frequently used one (72%). Main reason for it was financial constrain. The finding of the study done in Australia is different with our study, which revealed that 74% of the patients received a dual-chamber pacemaker [4].

In a study by Veerareddy S and et al sick sinus syndrome (55%) was the commonest cause of PPI [7]. In another study from Greece AV block (47%) was the commonest cause of permanent pacemaker implantation [8]. In our study complete heart block was the commonest (87%) cause of PPI. In our study most of the patients presented with syncope. It may be due to the reason that patient with SSS and pre-syncope didn't attend the clinic or were not properly diagnosed by the physicians on time.

In our study forty five percent of the patient population were having hypertension, thirty one percent had diabetes and twelve percent had hypothyroidism. Patients with heart block and hypothyroidism may or may not improve with treatment of hypothyroidism; it can be just an association. In our study twelve percent of the patients were having hypothyroidism. One study from China reported that 89.9% of the patients with hypertension, 24.1 % with diabetes, 15.2% with TIA and 15.2% with vascular disease were having Pacemaker implantation [9].

The majority of the cases had no complication in our study. Two patients had pocket site infection. Lead dislodgment was noted in three patients. Lead perforation and acute tamponade occurred during intraoperative period in one case. While comparing our findings with the reports from USA and Australia, we found similar results. According to the reports, the incidence of procedural complications is reported between 3% and 6% with around 50% of these complications being serious or requiring further treatment [10-12]. We also evaluated the correlation of different variables with the complications and outcome. Age, Sex, type of pacemaker, comorbidities were not significantly associated with the adverse outcome. However the patients presenting with complete heart block had more adverse outcome compared with other diagnosis like SSS, 2:1 AVB. (<0.05).

Conclusion

The patients with symptomatic bradycardia coming to our centre in emergency state were managed and made stable by Pacemaker Implantation with minimal complication and no mortality. Hence PPI proved as a safe, effective and life saving technique for this subset of patients.

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Original Article**Surgical site infection in Laparoscopic versus Open appendicectomy****Ashok Koirala^{1*}, Dipendra Thakur¹, Sunit Agrawal², Bhuwan Lal Chaudhary¹ and Sagar Poudel¹**¹Department of General and Minimally Invasive Surgery, NMCTH, Biratnagar²Department of Surgery, B.P. Koirala Institute of Health Science, DharanReceived: 11th November, 2018; Revised after peer-review: 13th December, 2018; Accepted: 25th December, 2018DOI: <https://doi.org/10.3126/jonmc.v7i2.22306>**Abstract****Background**

Acute appendicitis is very common surgical cause of acute abdomen and needs surgical removal either by laparoscopic or open appendicectomy. The aim of this study is to compare frequency of surgical site infection (SSI) in patients undergoing laparoscopic and open appendicectomy.

Materials and Methods

The study was prospective study conducted in NMCTH, Biratnagar. Total 200 patients with diagnosis of acute appendicitis admitted through the emergency department of our hospital were included in the study. The patients were randomly allocated in two groups: Laparoscopic appendicectomy group (LA) and Open appendicectomy group (OA). Both groups underwent successful emergency appendicectomy. Wound infections in terms of surgical site infection (SSI) if present were recorded. All age groups and both sexes were included.

Results

Two hundred patients underwent appendicectomy, one hundred Laparoscopic appendicectomy (LA) and another hundred open appendicectomy (OA). The mean age of patients with acute appendicitis was 30.63 ± 16.14 years with minimum of 6 years and maximum of 77 years. The highest number of patients were in age group of 10 to 20 years (29.5%). In LA group SSI noted in 3 patients (3%) whereas in OA group it was found in 12 patients (12%).

Conclusion

Laparoscopic appendicectomy is better and offers great advantages in terms of SSI as compared to Open appendicectomy.

Key words: *Surgical site infections (SSI), Laparoscopic appendicectomy (LA), Open appendicectomy (OA).*

Introduction

The term acute appendicitis was coined by Reginald Harvard Fitz in 1886 and proposed for early removal of appendix to save the life [1]. Open appendicectomy (OA) was described by McBurney in 1894 and remained treatment of choice for acute appendicitis [2]. But in 1983 the German gynecologist Kurt Semm performed first

laparoscopic appendicectomy, since then LA had got acceptance [3]. Surgical site infection (SSI) is the most common complications following appendicectomy and seen in 5-10% of all patients [4]. SSI leads to increase pain, discomfort, prolong hospital stay and delay in recovery [5]. So, aim should always be focused to reduce SSI. SSI means infections within 30 days

of surgery or within one year in case of implants according to CDC.SSI may be superficial, deep or organ space infections [6]. This study aims to evaluate surgical site infections (SSI) in patients who underwent Laparoscopic as well as Open appendicectomy for acute appendicitis.

Materials and Methods

A prospective, comparative, randomized study was conducted in the patients, diagnosed as acute appendicitis who underwent emergency appendicectomy. Patients admitted through Emergency Department of Nobel Medical College and Teaching Hospital, Biratnagar, Nepal from June, 2017 to September, 2018, were included in the study after taking ethical clearance from Institutional Review Committee. The diagnosis of acute appendicitis was made on the basis of history, clinical examinations, laboratory investigations and by ultrasonography of abdomen and pelvis.

A total of 200 patients of all age group and both sexes were included in the study excluding those who were not able to return for follow up. Informed written consent was obtained from all the patients who were enrolled in this study.

Pregnant women and patients with medical diseases like hemodynamic instability, chronic medical or psychiatric illness cirrhosis and coagulation disorders, metabolic disorder patients like malnutrition, diabetes, uremia, jaundice patients were excluded from the study.

The enrolled 200 patients were divided into two groups LA group (Laparoscopic appendicectomy) and OA group (Open appendicectomy) with 100 patients in each group. Each group of patients received 1gm ceftriaxone and 500mg metronidazole at the time of induction of anesthesia.

All patients were observed till 3rd postoperative day and were discharged and were asked to follow up after one week in

Surgical Outpatient Department. During follow up suture removal and wound inspections was done. Patients were further followed up on 2nd and 4th weeks of operation. Parameters used for assessment of wound infection are shown in Table 1.

Table 1: Grades of Wound Infection

Grade I infection	I	Slight reddening and induration of wound edges requiring no intervention.
Grade II infection	II	Slight serous discharge from wound, requiring no intervention
Grade III infection	III	Obvious infection or purulent discharge from wound, requiring repeated change of dressings and institution of antibiotics

These types of wounds were managed with suture removal, wound swab for culture and sensitivity, analgesics, antipyretics and antibiotic treatments.

Analysis

The results of the study were statistically analyzed using SPSS version 25, using chi-square test and independent sample t-test. Results on continuous measurements are presented on mean \pm SD (min-max) and results on categorical measurement are presented in numbers (%). A p-value of <0.05 was considered statistically significant.

Results

A total of 200 patients with acute appendicitis were studied, of which 100 were in LA group and another 100 in OA Group. Out of 200 patients, 107 were female (53.5%) and 93 were male (46.5%). Therefore, female to male ratio was 1.15:1. The mean age of patients with acute appendicitis was 30.63 ± 16.14 years with minimum of 6 years and maximum of 77 years. The highest incidence of acute appendicitis was observed in the patients of age group 10 to 20 years (29.5%) as shown in Table 2.

Table 2: Distribution of patients according to different age groups

Age Group (Year)	No. of Patients				Total (n = 200)
	Laparoscopic Appendectomy (n = 100)		Open Appendectomy (n = 100)		
	Male	Female	Male	Female	
0-10	3 (3%)	2 (2%)	2 (2%)	3 (3%)	10 (5%)
10-20	10 (10%)	18 (18%)	17 (17%)	14 (14%)	59 (29.5%)
20-30	11 (11%)	12 (12%)	8 (8%)	9 (9%)	40 (20%)
30-40	10 (10%)	13 (13%)	12 (12%)	11 (11%)	46 (23%)
40-50	4 (4%)	5 (5%)	3 (3%)	6 (6%)	18 (9%)
50-60	6 (6%)	3 (3%)	5 (5%)	5 (5%)	19 (9.5%)
> 60	1 (1%)	2 (2%)	1 (1%)	4 (4%)	8 (4%)
Total	45 (45%)	55 (55%)	48 (48%)	52 (52%)	200 (100%)

Out of 200 patients, 100 underwent Laparoscopic appendectomy and another 100 underwent Open appendectomy. On evaluation of the intraoperative findings of laparoscopic appendectomy, 84 were uncomplicated appendicitis, 5 were gangrenous appendix, 7 appendicular abscess and 4 perforation peritonitis whereas in open appendectomy 73 were uncomplicated appendicitis, 7 gangrenous

appendicitis, 12 appendicular abscess and 8 perforation peritonitis. The surgical findings between two groups was not statistically significant ($p=0.289$) but the rate of surgical site infections was found to be higher in complicated appendicitis both in laparoscopic appendectomy ($P<0.001$) and open appendectomy ($p<0.001$) as shown in Table 3.

Table 3: Comparison of intraoperative finding between Laparoscopic Appendectomy and Open Appendectomy

Groups	Post-operative infection	Surgical Finding				p value	
		Uncomplicated appendicitis	Gangrenous appendix	Appendicular abscess	Peritonitis		
Group LA	Infection	0	0	1	2	<0.001*	0.289
	No infection	84	5	6	2		
	Total	84	5	7	4		
Group OA	Infection	1	1	4	6	<0.001*	
	No infection	72	6	8	2		
	Total	73	7	12	8		

***statistically significant**

During follow up in outpatient department (OPD), Three patients (3%) developed surgical site infections in Laparoscopic group whereas twelve (12%) developed SSI in Open appendectomy group which is statistically significant ($p=0.029$) as shown in Table 4. In Laparoscopic appendectomy group, two patients had grade one and one patient had grade two types SSI. Whereas, in Open appendectomy group, six patients had grade three, four had grade two and two

had grade one type of SSI. All these wounds were managed successfully.

Table 4: Comparison of wound infection between two groups (LA versus OA)

	Wound infection, n (%)	No wound infection, n (%)	p-value
Laparoscopic appendectomy	3 (3%)	97 (97%)	0.029*
Open appendectomy	12 (12%)	88 (88%)	

* statistically significant

Discussion

Laparoscopic appendectomy is very common surgical procedure in General surgical practice nowadays where expertise and equipment are available. Moreover, it offers the complete visualizations of peritoneal cavity so that there is less chance of diagnostic error.

Different series has reported 8 to 33 % of negative appendectomy, which is more common in female patients of child bearing age. Therefore laparoscopic technique aids diagnostic accuracy as well as avoids unnecessary negative appendectomy and also helps to find out the cause of abdominal pain [7, 8].

In the present study altogether there were 107(53.5%) female patients whereas male patients were 93(46.5%). The female to male ratio was 1.15:1. Therefore female predominance was seen in our study. Similar finding was observed in the study conducted earlier in our institute [9]. However, the study conducted by Williams et al showed male predominance in their study [4]. The mean age of the patients with acute appendicitis was 30.63 + 16.14 years with minimum of 6 years and maximum of 77 years. The highest number of the patients was observed in between 10 to 20 years (29.5%). Similar finding was observed in our study conducted earlier [9] but another study showed peak incidence between 15-25 years [4] and the study of Kumar et al showed peak incidence between 10-30 years [10]. Both are almost comparable with our study.

Surgical site infection (SSI) is the most common complications following appendectomy and seen in 5-10% of all patients [4]. In the present study ,surgical site infections was seen higher in complicated appendicitis in gangrenous appendix, appendicular abscess,

appendicular perforations peritonitis both in laparoscopic as well as open appendectomy .Therefore intraoperative findings were directly related to surgical site infections .The study conducted by Baek HN et al ,Minutolo et al, Suh YJ et al[11,12,13] too showed intraoperative findings were directly proportional to the SSI which is comparable to our study.

About intra abdominal access for appendectomy, wound infection rate in Laparoscopic appendectomy (LA) was only 3% whereas in Open appendectomy it was 12%, which was statistically significant ($P=0.029$). Similar type of findings was observed by Yagnik VD showing 1.92%in LA and 10.63%in OA and Khan et al (1.2% in LA and 9.2% in OA) which were comparable with our study [14, 15]. The large meta-analysis of randomized control trial of 2877 patients too showed wound infection rate lower in laparoscopy (2.3 to6.1%) that is comparable to our study [16]. However the study conducted by Tamjeed et al showed no significant advantage of LA over OA in terms of surgical site infections [17].

The present study showed that LA offers less chance of wound infections as such there will be less postoperative morbidity and aids quick recovery of the patient's. However, intraoperative conditions of appendix too had direct impact on outcome of SSI.

Conclusion

This study concludes that Laparoscopic appendectomy is better than Open appendectomy in terms of surgical site infections. So, laparoscopic appendectomy should be performed where expertise and facilities are available.

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Original Article**Comparative Trials of 5% Permethrin Lotions Vs 1% Gamma Benzene Hexachloride Lotions in Treatment of Scabies****Manish Pradhan^{1*}, Dipa Rai, Sagar Paudel¹ and Chandra Bhal Jha²**¹Department of Dermatology, Nobel Medical College Teaching Hospital, ²Mechi Zonal HospitalReceived: 15th November, 2018; Revised after peer-review: 10th December, 2018; Accepted: 22th December, 2018DOI: <https://doi.org/10.3126/jonmc.v7i2.22307>**Abstract****Background**

Scabies is a contagious pruritic skin condition caused by the mite *Sarcoptes scabiei* var. *hominis*, and it is one of the major public health problem in developing country like ours. To determine and compare the efficacy of topical permethrin and topical gamma benzene hexachloride in treatment of scabies in population of Nepal.

Methods

This was a prospective, randomized, comparative study conducted in 300 diagnosed cases of scabies treated with permethrin and gamma benzene hexachloride.

Results

At the end of 2nd week, treatment was effective in 91.2% cases in permethrin (group A) and 64.6% in gamma benzene hexachloride (group B). After switch over of the non-improved patients to the other group drug, 6.7% were treated successfully with gamma benzene hexachloride and 80.9% were treated successfully with permethrin at the end of 4th week. No major side effects were observed in both groups. Gamma benzene hexachloride was found to be cost effective than permethrin.

Conclusion

Permethrin was found to be more effective than gamma benzene hexachloride in treatment of scabies.

Keywords : *Gammabenzenehexachloride, Permethrin, Scabies*

Introduction

Scabies is a contagious disease caused by parasite *Sarcoptes scabiei*, var. *hominis* [1]. It has been recognized at least 3000 years back and was reported in ancient India, China and the Middle East as a disease in humans and animals [1]. In developing country health burden of this disease is high, where it is endemic [2]. In Nepal it is endemic and is one of the common skin problem for which patients visit hospital.

An ideal scabicide drug has to be safe, effective and of low cost as this disease is more common in poor people [3]. Drugs

used in scabies have changed from sulphur compounds to gamma benzene hexachloride to permethrin to oral Ivermectin [2]. In Nepal there is three drugs commonly used for the treatment of this disease, Gamma benzene hexachloride (Lindane) 1 % Cream/lotion, Permethrin 5% cream/lotion or oral Ivermectin. Lots of studies are being carried out comparing the efficacy and safety of antiscabetic drugs [2].

In 1983, Hernandez-Perez first reported that some patients with scabies in El Salvador did not respond to 1% lindane

even when used twice in 48 hours [4]. There are reports of several lindane resistant scabies worldwide in recent years and lindane resistance is rising [5]. Further, children and pregnant women are not advised to use lindane and there are several reports of central nervous system toxicity and convulsions with lindane [6]. Many studies has found permethrin to be safe and effective in scabies [2,7]. So, though little expensive, currently 5% topical Permethrin cream/lotion is considered by many as the drug of choice in the treatment of scabies [7].

As this disease is endemic in developing country like Nepal and there is always need of safe and effective treatment to decrease the burden of this disease in population, we carried out the study to compare efficacy and safety of lindane 5% lotion with Permethrin 1% lotion.

Materials and Methods

This prospective, comparative, randomized study was conducted on the patients, diagnosed as scabies, attending the Outpatient department of Dermatology, Nobel medical college and teaching hospital, Biratnagar, Nepal for a period of one year from Jan 2017 to Dec 2017. The diagnosis was made on the basis of clinical history and examination. Ethical clearance was obtained from Institutional ethics committee of Nobel Medical College and teaching hospital, Biratnagar, Nepal.

Case Selection

Inclusion Criteria

- Any newly diagnosed patient of scabies of any gender and above 5 years of age.

Exclusion Criteria

- Pregnant or lactating females
- History of diabetes, hypertension or any chronic disease, psychiatric illness or neurological disorder
- Any other associated skin disease which affect the study due to same

presentations like atopic dermatitis, dyshidrotic eczema, insect bite reaction.

- Patients who had received any anti-scabietics or topical steroids during the past 4 weeks

A total of 351 patients of scabies attending the OPD of Dermatology were enrolled in our study after proper informed written consent. But, only 300 patients completed the treatment and were compliant with the follow up schedule. Informed written consent was obtained from all the patients who were enrolled in this study and their age, gender, socioeconomic status, occupation were recorded for demographic comparison. The selected patients were allocated to any one of the two treatment groups randomly on basis of a computer generated random table.

The diagnosis of scabies was done clinically by presence of the following criteria: demonstration of a burrow and/or typical scabietic lesions at the classical sites, nocturnal pruritus, and history of similar symptoms in their families and/or close contacts and demonstration of eggs, larvae, mites or fecal material under light microscopy when needed.

Interventions

The patients were randomly allocated on one of the following groups-

Group A: Single application 50ml of Permethrin lotion 5% was applied over whole body, below neck and scrub bath was taken after overnight application of 8 hours. This process was repeated after one week. The 50ml 5% Permethrin lotions was priced at NRs. 150.

Group B: Single application of 50 ml of gamma benzene hexachloride 1% lotion was applied over whole body, below neck and scrub bath was taken after overnight application. This process was repeated after one week. The 50 ml 1% Gamma benzene hexachloride was priced at NRs.

68. Participants of Group A and B were educated about the nature of the disease including the possibility of continued itching even after successful treatment for up to 2 weeks, mode of application of drugs and were instructed to take warm water bath after application of medicine next morning. They were advised importance of treatment of family members and close contacts as well. They were also told about prevention of transmission by washing all clothes and bedding that came in contact. The patients were told not to use any antipruritic drug or any other topical medications.

Evaluation and Efficacy Assessment

Treatment was done with antiscabietic agents and then followed up at intervals of 2 and 4 weeks. They were examined clinically again and evaluated based on previously defined criteria. Treatment was thought to be effective if pruritus improved and no new lesions developed. And, treatment considered being failure if there was still marked itching or appearance of new lesions. In such case, the patient was crossed over to the other group and evaluation performed at the end of 4th week.

Cost Effectiveness Assessment

The cost effectiveness was calculated on basis of total expenditure in medicine in NRs at the end of two week and cure rate in percentage and the drug was assessed on the basis of amount needed to treat on case successfully.

Analysis

The results of the study were statistically analyzed using SPSS version 22, using chi-square test. A P-value of <0.05 was considered statistically significant.

Results

A total of 300 scabies patients were studied excluding those patients who were not able to return for follow up either after

2 weeks or after 4 weeks. Among 300 patients studied, 141 (47%) were males and 159 (53%) were females. The mean age of scabies patient was 19.12 ± 13.88 years with minimum of 4 years and maximum of 58 years. The highest number of disease was observed in the patients between 0 to 10 years (44.00%), followed by 10 to 20 years (21.67%) and least in age group 50 to 60 years (4.33%) as shown in Table 1.

Table 1: Age and sex distribution of scabies patients

Age group	Male	Female	Total
0-10 years	59 (19.67%)	73 (24.33%)	132 (44.00%)
10-20 years	32 (10.67%)	33 (11.00%)	65 (21.67%)
20-30 years	15 (5.00%)	20 (6.67%)	35 (11.67%)
30-40 years	23 (7.67%)	18 (6.00%)	41 (13.67%)
40-50 years	7 (2.33%)	7 (2.33%)	14 (4.67%)
50-60 years	5 (1.67%)	8 (2.67%)	13 (4.33%)
Total	141 (47.00%)	159 (53.00%)	300 (100%)

Of the scabies patients, majority were students 196 (65.3%), followed by farmer 35 (11.7%), housewife 26 (8.7%), labourer 28 (9.3%), drivers 13 (4.3%) and the remaining 2 (0.7%) were doing other professions. Out of 300 scabies patients, majority 127 (42.3%) patients presented on winter season followed by 86 (28.7%) patients in spring, 53 (17.7%) patients in summer and 34 (11.3%) patients in autumn. Of the total scabies patients, a majority 136 (45.3%) belongs to low class family, followed by 115(38.3%) to middle class family and 49 (16.3%) to high class family. The total of 195 (65%) scabies patients had positive contact history with family or friends whereby 105 (35%) have no contact history as shown in Table 2.

Table 2: Distribution of scabies patient by various demographic features

	Category	Numbers	Percentage
Season	Winter	127	42.3%
	Spring	86	28.7%
	Summer	53	17.7%
	Autumn	34	11.3%
Occupation	Student	196	65.3%
	Housewife	26	8.7%
	Farmer	35	11.7%
	Labourer	28	9.3%
	Driver	13	4.3%
	Others	2	0.7%
Socioeconomic status	Low class	136	45.3%
	Middle class	115	38.3%
	High class	49	16.3%
Contact history	Present	195	65%
	Absent	105	35%

Out of 300 patients, 167 were treated with permethrin (Group A) and 133 were treated with lindane (Group B). The demography of two groups does not show any statistically significant difference as shown in Table 3.

Table 3: Comparison of group A and group B at 2nd weeks and 4th weeks of treatment

	Group A n=167	Group B n=133	P value
Sex	Male (46.7%)	63 (47.4%)	0.501
	Female (53.3%)	70 (52.6%)	
Age (years)	27.11 ± 10.08	27.68 ± 10.95	0.636
Effectively treated at 2 weeks	152 (91.02%)	86 (64.66%)	<0.001*
Effectively treated at 4 weeks after cross over	1 (6.7%)	38 (80.9%)	<0.001*

*Statistically significant at p<0.05

On evaluation after 2 weeks on first follow up, treatment was effective in 152 (91.02%) patients in the permethrin group (Group A) and 86 patients (64.66%) in the lindane group (Group B) which when analyzed using chi-square test shows

statistically significance difference (p<0.001) as shown in table 3. Total of 62 patients (15 in permethrin group and 47 in lindane group) who had not improved were crossed over to the other group. Among the patients who were not improved 32 were males and 30 were females and their mean age was 23.06 ± 14.17 years.

On the next follow-up, at 4-week post-treatment, out of 15 patients who showed no improvement in the permethrin group at the first follow-up and was subsequently treated with lindane, only one patient showed improvement and rest 14 patients still had scabies. However, of all the 47 patients not responding to lindane who were then treated with permethrin at first follow-up, 38 showed improvement and only 9 still had severe itching as shown in Table 3.

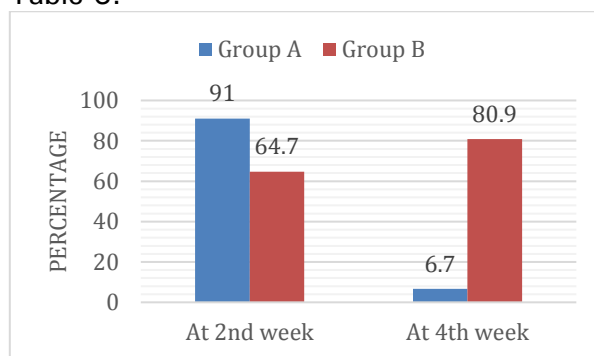


Figure 1: Response of Group A and Group B at 2nd weeks and after cross over of drug at 4th week

The patients who were still having the symptoms after 4 week follow up were treated with oral ivermectin. Regarding side effect of the drug 4 patients treated with gamma benzene hexachloride complains of irritation and only 1 patient treated with permethrin complains of mild burning sensation. Major side effect was not observed with both the drugs. On comparing cost effectiveness, gamma benzene hexachloride (NRs 105.16) was found to be cost effective than permethrin (NRs164.80) as shown in Table 4.

Table 4: Cost- effectiveness analysis of each drug at end of 2 weeks

Group Drug	Cost in NRS for 100 participants	Cure rate (%)	Cost effectiveness	Cost (NRS) to treat one case
Permethrin	$150 \times 100 \times 2 = 30000$	91.02 %	NRS 30000 for 91.02 participants	329.45
Gamma benzene hexachloride	$68 \times 100 \times 2 = 13600$	64.66 %	NRS 13600 for 64.66 participants	210.33

Discussion

Scabies is a common public health problem in Nepal. Topical 1% gamma benzene hexachloride and topical 5% permethrin is commonly used drug to treat this disease. So, our study was done to compare these two drugs.

We found that scabies was more common in school going children of low socioeconomic class family in winter season. This may be due to lack of hygiene in children and overcrowding in winter and population of low socioeconomic class. Our result showed that permethrin 5% lotion is superior to gamma benzene hexachloride 1 % lotion in treatment of scabies.

Zargari O et al. like ours, also found that permethrin is better than gamma benzene hexachloride for the treatment of scabies. They found an improvement rate of 84.6% after two weeks in permethrin group, whereas lindane was effective only in 48.9% of patients [7].

Schultz et al. reported that improvement was seen in 91% patients treated with permethrin and 86% given lindane. They concluded that because of a lower potential for neurologic toxicity, permethrin might be preferable to lindane for the treatment of scabies, particularly in children [8].

We did not compare topical drug with oral ivermectin. Dulcie Celia A et al. and Maurya M et al. found that even though, both ivermectin and permethrin were equally efficacious and safe but ivermectin is the cost effective one. Therefore, ivermectin may be the preferred drug in the treatment of scabies with better compliance [2,9].

Gamma benzene hexachloride, an organochlorine, is a neurotoxin that interacts with the GABA-A receptor chloride channel complex at the picrotoxin binding site and disrupts GABA neurotransmission. This results in death of mite. Since it acts only on GABA-A receptors, so its ovicidal effect cannot be established. Thus a second course of treatment must be given after one week to destroy any newly hatched larvae. Its selective action on single receptor may explain its low efficacy in comparison to permethrin [2].

Permethrin, a synthetic pyrethroid, is a neurotoxin and it disrupts the function of voltagegated sodium channels of arthropods, causing prolonged depolarization of nerve cell membranes and disrupting neurotransmission. It blocks the movement of sodium ions from outside to inside of the nerve cells. This causes delayed repolarisation and paralysis and death. Permethrin acts on ubiquitous sodium channels so it acts at all stages of the life cycle of the mite. Gamma benzene hexachloride dose not has this effect [10]. Human skin is 20 fold more permeable to lindane than to permethrin. Hence, the risk for systemic toxicity due to systemic absorption during overuse is projected to be 40 to 400 times lower for 5% permethrin lotion than for 1% lindane lotion [11].

Regarding side effect, no major side effect was observed except for irritation in 3 % of cases treated with gamma benzene hexachloride and less than 1 % cases with

permethrin. Zargari O et al and Maurya M et al. also did reported any side effect in their patients [7,9].

Gamma benzene hexachloride was found to be cost effective with net price of NRs 210.33 compare to 329.45 for Permethrin. In country like Nepal where the prevalence of scabies is very high, our study might help the clinicians to choose the better treatment option.

Conclusion

Permethrin is better drug than gamma benzene hexachloride regarding its efficacy and side effect in treatment of scabies though it is little bit expensive when effectiveness cost is taken into consideration. We recommend that permethrin is better drug with fewer side effects for treatment of scabies.

Limitation of Study

The study could have been better if oral ivermectin was compared with both the topical drugs.

Acknowledgement

We are very grateful to all of our patients who gave consent for the study and helped us with regular follow up.

Conflict of Interest

None

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Original Article

Association of Hypertensive Retinopathy with different serum lipid parameters in patients of Essential Hypertension: A Hospital Based Study.

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Abstract**Introduction**

Abnormalities in serum lipid and lipoprotein levels are recognized as major modifiable risk factors for cardiovascular disease and essential hypertension and retinopathy. So this study was conducted to evaluate the role of dyslipidemia on development of retinopathy in hypertensive patients and to establish the association of parameters of serum lipid profile with hypertensive retinopathy.

Materials and Methods

A cross-sectional study was conducted in Ophthalmology Department among 135 patients in Nobel Medical College and Teaching Hospital (NMCTH), Biratnagar who were diagnosed with essential hypertension. Patients having diabetes mellitus, myopia, hazy ocular media and other posterior segment disorders were excluded from the study. The detailed ophthalmic examination was carried out in department of ophthalmology, NMCTH, Biratnagar and all the study population were investigated for fasting serum lipid profile.

Result

Out of 135 patients with essential hypertension, 65.44% had retinopathy and remaining had no signs of retinopathy. Mean age of patients were 60.24(±15.14) years. Although no gender preponderance was found with retinopathy but this study showed that hypertensive retinopathy increases significantly with increase in age and its incidence increases after the age of 60 years.

Conclusion

The duration of hypertension was found to be strongly associated with development of hypertensive retinopathy. The increase in all the lipid profile parameters (Serum TG, TC, and LDL and LDL:HDL) and the obesity were found to be strongly associated with retinopathy in hypertensive patients.

Key words: *Retinopathy, Low density lipoprotein, Dyslipidemis, Triglycerides, High density lipoprotein.*

Introduction

Hypertension is the emerging public health problem in both developing and developed countries. Systemic hypertension is a state of persistently elevated blood pressure above 140/90 mm of Hg based on an

average of two or more blood pressure readings taken on two or more visits [1]. Hypertensive retinopathy (HR) is one among the vascular complication of essential hypertension and HR was 1st described by Marcus Gunn in 19th century

in a series of patients with hypertension and renal disease[2]. HR is a condition characterized by a spectrum of retinal vascular signs in people with elevated blood pressure [3]. Hypertension and hyperlipidemia not only accelerate atherogenesis but also cause degenerative changes in the walls of large- and medium-sized arteries [4] which accelerate cerebrovascular hemorrhage [5] ischemic heart disease [6] and cardiac arrest [7,8]. Hence, this study helps to assess the association between hypertensive retinopathy in patients of essential hypertension with an altered serum lipid profile, with the aim of preserving vision by managing the elevated serum lipid profile parameters viz. serum total cholesterol (TC), serum triglycerides (TG), serum low density lipoprotein (LDL) and serum high density lipoprotein (HDL) .

Materials and Methods

A hospital based, descriptive cross-sectional study was carried out in 135 patients attending the Ophthalmology department of NMCTH, Biratnagar who were diagnosed to have essential hypertension by physicians of Internal Medicine Department of NMCTH, Biratnagar from January 2017 to August 2017, where intervention was done as per the need. The stage of hypertension was classified according to JNC 7 criteria. Verbal informed consent was taken from all the patients and proforma was filled up which includes detailed demographic data, duration of hypertension, fasting serum lipid profile which include serum LDL, serum HDL, serum TC and serum TG and obesity present or not according to WHO classification for South Asian population. Patients having diabetes mellitus, high myopia, hazy ocular media in both eyes, and other retinal vascular and posterior segment disorders were excluded from the study. Detailed Ophthalmological

examination was carried out including slit lamp examination and fundus evaluation under mydriasis with tropicamide 1% with the both indirect ophthalmoscope (HEINE SIGMA 150 KC) and direct ophthalmoscope (HEINE Beta 200) to identify fundus changes related to hypertension. Patients were investigated for complete fasting serum profile. Staging of hypertensive retinopathy was carried out using Modified Keith Wagner Barker Classification. The data was entered and analyzed with SPSS program version 22. The associations between hypertensive retinopathy and serum lipid profile parameters were assessed using Chi-square test.

Results

A total of 135 hypertensive patients were included in this study after satisfying the selection criteria, of which 50.4% were male among them 67.6% had hypertensive retinopathy and 49.6% were female among them 64.2% had hypertensive retinopathy. There was no statistically significant association of retinopathy with gender ($p=0.672$) table1. Of the total patients studied, 8.9% were in the age group of <40 years out of which 25% had hypertensive retinopathy and 10.4% were in the age group of ≥ 80 years of which 71.4% had hypertensive retinopathy, with an average age of study population being $60.24(\pm 15.14)$ years. This study showed that hypertensive retinopathy increases significantly with increase in age ($p=0.0001$) and it increases significantly after age of 60 year table2. Among the 135 study subjects, 65.9% had hypertensive retinopathy and 23% of total had grade I retinopathy, 29.6% had grade II, 12.6% had grade III and 0.7% had grade IV retinopathy table3. 28.1% of total hypertensive patient had duration of hypertension ≤ 5 years of which 28.9% had hypertensive retinopathy and 19.3%

had >15years duration of which 100% had hypertensive retinopathy, with mean duration of hypertension 10.13(±5.35) years. The duration of hypertension was found to be significantly associated with development of hypertensive retinopathy (p=0.0001) table4. Among the total of 135 hypertensive patients, 42.97% were found to be obese out of which 86.20% had retinopathy and most of them had grade II retinopathy. Thus obesity was found to be statistically very significantly associated for development of hypertensive retinopathy (p=0.0001) table5. Among the total study subjects, 46.67% had TG level of ≥150mg/dl, out of which 87.30% had retinopathy and most of them had grade III retinopathy. Similarly, 20% of the total study subjects had TC level of (200-239) mg/dl, out of which 66.67% had retinopathy and 19.25% had TC ≥240mg/dl, of which 96.15% had retinopathy, and most of them had grade II retinopathy. Similarly, out of 135, 14.81% hypertensive patients had LDL level of

(130-159) mg/dl, of which 75% had retinopathy and 18.5% had LDL ≥160mg/dl, of which 100% had retinopathy, and most of them had grade II retinopathy. Among the total study subjects, 31.85% had LDL:HDL ratio of 2.5-5, of which 67% had retinopathy and 12.59% had LDL:HDL ratio >5, of which 100% had retinopathy, and again most of them had grade II retinopathy. Thus, increase in all those lipid profile parameters were found to be significantly associated with retinopathy in hypertensive patients with p-values of 0.0001, 0.0001, 0.0001, 0.001, respectively table6,7,8,10.

Table 1 Gender distribution of HR

Gender	HR (-) Frequency (%)	HR (+) Frequency (%)	Total Frequency (%)
Male	22(32.4)	46(67.6)	68(50.4) 67(49.6) 135(100.0)
Female	24(35.8)	43(64.2)	
Total	46(34.1)	89(65.9)	

Table 2 Age distribution of HR

Age group (years)	HR(-) Frequency(%)	HR(+) Frequency(%)	Total Frequency(%)
< 40	9	3	12
	(75.0)	(25.0)	(100.0)
40-49	11	13	24
	(45.8)	(54.2)	(100.0)
50-59	13	14	27
	(48.1)	(51.9)	(100.0)
60-69	6	21	27
	(22.2)	(77.8)	(100.0)
70-79	3	28	31
	(9.7)	(90.3)	(100.0)
≥ 80	4	10	14
	(28.6)	(71.4)	(100.0)
Total	46	89	135
	(34.1)	(65.9)	(100.0)

Table 3 HR grading

TC					
HR	< 200mg/dl Frequency (%)	200-239mg/dl Frequency (%)	≥ 240mg/dl Frequency (%)	Total Frequency (%)	p-value
No retinopathy	36 (78.3)	9 (19.6)	1 (2.2)	46 (34.1)	0.0001
Grade I	20 (64.5)	8 (25.8)	3 (9.7)	31 (23)	
Grade II	21 (52.5)	7 (17.5)	12 (30.0)	40 (29.6)	
Grade III	5 (29.4)	3 (17.6)	9 (52.9)	17 (12.6)	
Grade IV	0 (0.0)	0 (0.0)	1 (100.0)	1 (0.7)	
Total	82 (60.7)	27 (20.0)	26 (19.3)	135 (100.0)	

Table 4 Duration of hypertension and retinopathy

Duration (years)	HR(-) Frequency(%)	HR(+) Frequency(%)	Total Frequency(%)
< 5	27 (71.1)	11 (28.9)	38 (28)
	12 (41.4)	17 (58.6)	29 (21)
5-10	7 (16.7)	35 (83.3)	42 (31)
	0 (0.0)	26 (100.0)	26 (20)
> 15	46 (34.1)	89 (65.9)	135 (100.0)

Table 5 Association with obesity

HR retinopathy	Obesity(-) Frequency(%)	Obesity(+) Frequency(%)	Total Frequency(%)	p-value
No retinopathy	38 (87.6)	8 (17.4)	46 (100.0)	0.0001
Grade I	16 (51.6)	15 (48.4)	31 (100.0)	
Grade II	19 (47.5)	21 (53.5)	40 (100.0)	
Grade II	4 (23.5)	13 (76.5)	17 (100.0)	
Grade IV	0 (0.0)	1 (100.0)	1 (100.0)	
Total	77 (57.0)	58 (43.0)	135 (100.0)	

Table 6 Association with triglyceride

HR	Triglyceride		Total Frequency(%)	p-value
	< 150mg/dl Frequency(%)	≥ 150mg/dl Frequency(%)		
No retinopathy	40 (87.0)	6 (23.0)	46 (34.1)	0.0001
Grade I	15 (48.4)	16 (51.6)	31 (23)	
Grade II	13 (32.5)	27 (67.5)	40 (29.6)	
Grade III	4 (23.5)	13 (76.5)	17 (12.6)	
Grade IV	0 (0.0)	1 (100)	1 (0.7)	
Total	72 (53.3)	63 (46.7)	135 (100.0)	

Table 7 Association with total cholesterol

Retinopathy	Frequency	Percentage
No retinopathy	46	34.1
Grade I	31	23.0
Grade II	40	29.6
Grade III	17	12.6
Grade IV	1	0.7
Total	135	100.0

Table 8 Association with LDL

HR	LDL			Total Frequency(%)	p-value
	< 130mg/dl Frequency (%)	130-159mg/dl Frequency(%)	≥ 160mg/dl Frequency(%)		
No retinopathy	41 (89.1)	5 (10.9)	0 (0.0)	46 (34.1)	0.0001
Grade I	19 (61.3)	9 (29.0)	3 (9.7)	31 (23)	
Grade II	25 (62.5)	4 (10.0)	11 (27.5)	40 (29.6)	
Grade III	5 (29.4)	2 (11.8)	10 (58.8)	17 (12.6)	
Grade IV	0 (0.0)	0 (0.0)	1 (100.0)	1 (0.7)	
Total	90 (66.7)	20 (14.8)	25 (18.5)	135 (100.0)	

Table 9 Association with HDL

HDL					
HR	35mg/dl Frequency(%)	36-60mg/dl Frequency(%)	> 60mg/dl Frequency(%)	Total Frequency(%)	p- value
No retinopathy	33 (71.7)	10 (21.7)	3 (6.5)	46 (34.1)	0.898
Grade I	19 (61.3)	9 (29.0)	3 (9.7)	31 (23)	
Grade II	24 (60.0)	11 (27.5)	5 (12.5)	40 (29.6)	
Grade III	10 (58.8)	6 (35.3)	1 (5.9)	17 (12.6)	
Grade IV	1 (100.0)	0 (0.0)	0 (0.0)	1 (0.7)	
Total	87 (64.4)	36 (26.7)	12 (8.9)	135 (100.0)	

Table 10 Association with HDL:LDL

HDL:LDL					
HR	< 2.5 Frequency (%)	2.5-5 Frequency (%)	> 5 Frequency (%)	Total Frequency (%)	p-value
No retinopathy	32 (69.6)	14 (30.4)	0 (0.0)	46 (34.1)	0.001
Grade I	16 (51.6)	13 (41.9)	2 (6.5)	31 (23)	
Grade II	20 (50.0)	12 (30.0)	8 (20.0)	40 (29.6)	
Grade III	7 (41.2)	4 (23.5)	6 (35.3)	17 (12.6)	
Grade IV	0 (0.0)	0 (0.0)	1 (100.0)	1 (0.7)	
Total	75 (55.6)	43 (31.9)	17 (12.6)	135 (100.0)	

Discussion

In our hospital based study, the mean age of patients was 60.24(± 15.14) years which ranges from 23-93 years that is closely related to a cross-sectional study conducted by Bastola et al that showed the mean age of the study group was 58.5(±9.2) years; (range = 33-48) [9]. There were 50.4% male among them 67.6% had HR and 49.6% female among them 64.2% had HR. There was no statistically significant gender preponderance (p=0.672). None of the

past studies shown gender preponderance, though there were limited studies on incidence of HR.

The prevalence of HR was 65.9% which is more or less similar to the result showed by other studies; study conducted in India shows prevalence of hypertensive retinopathy 70%[10] and 69% [11].

In this present study, there was an increase prevalence of retinopathy in hypertensive patients having high serum TC level and this association was highly statistically significant (P<0.0001).

Similarly, Bastola et al in their study also showed that there was highly statistically significant difference in the mean serum cholesterol level ($P < 0.001$) of patients with normal fundus and in those with different grades of HR[9]. And the result of our study also supports the findings of the study conducted by Gupta RP et al that showed there was an increase incidence of HR in patients having high serum cholesterol level ($p < 0.0008$)[11].

We, in our study, found a highly significant relation between serum LDL-cholesterol and the severity of retinopathy ($p < 0.0001$). The studies conducted by Bastola et al[9] and Badhu et al[12] also showed a statistically significant association between high serum LDL-cholesterol and HR.

However, among total, 26.67% of patients had HDL level of < 35 mg/dl, of which 72.22 % had retinopathy while 8.89% of patients had HDL > 60 mg/dl, of which 75% had retinopathy and increase in HDL was not associated with retinopathy. This result supports the findings of Bastola et al and Gupta RP et al, however no other studies have reported any direct association between serum HDL-cholesterol and HR so far. So, further studies in large scale are sought for establishment of this correlation.

Our study showed a significant association of LDL:HDL cholesterol ratio with HR with p value < 0.001 . The study conducted by Gupta RP et al also showed the same findings ($p < 0.0001$). And also the overall association of serum TG was found to be statistically significant with retinopathy ($p < 0.0001$). Similar results were shown by Gupta RP et al ($p < 0.01$). In present study, among the total subjects, 46.67% had TG level of ≥ 150 mg/dl, out of which 87.30% had retinopathy and most of them had grade III retinopathy. Similarly, in the study conducted by Bastola et al, the mean

serum TG level were also found to be high in grade II and higher grades of HR.

Hence, our study shows a definite association between increased serum lipid parameters and the prevalence of HR.

Conclusion

Hypertensive retinopathy has been found to occur more commonly after 40 years of age, with the mean age of 60 years and there was no gender preponderance. It has been found that an increase in prevalence of HR with increase in serum TC, serum TG and serum LDL-cholesterol. However, no association was found between HDL-cholesterol and HR.

Hence, in conclusion, we can say that dyslipidemia must be considered as the important risk factors for prevalence and severity of HR. So lowering increased serum lipid parameters in hypertensive patients is advisable to preserve sight as well as other end organ damage in long run.

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Original Article**Level of Knowledge Regarding Water and Sanitation
among Women of Biratnagar*****Durga Devi Chaulagain(Parajuli)* and Kamal Prasad Parajuli****Department of Nursing, Nobel Medical College Teaching Hospital, Biratnagar**Received: 14th October, 2018; Revised after peer-review: 22th November, 2018; Accepted: 19th December, 2018**DOI: <https://doi.org/10.3126/jonmc.v7i2.22309>***Abstract****Background**

Clean and safe water is one of the basic needs of human beings. Inaccessibility to this and poor sanitation leads to various water borne diseases, gastro enteropathy and under nutrition. In Nepal, only 39% of total population have access to improved sanitation and 38.4% of people defecate in open airs. So the objective of this study was to assess the level of knowledge and practices regarding safe drinking water and sanitation among women.

Materials and Methods

A descriptive cross-sectional research design was adopted for the study. A convenient sampling technique was used for sample collection. A self-designed structured questionnaire along with face to face interview was used to evaluate the knowledge. Data were analysed by using descriptive as well as inferential statistics to find out association between levels of knowledge of safe drinking water.

Result

The findings showed that among 75 participants, 44% had adequate knowledge, 45.3% had moderate knowledge and 10.7% had inadequate knowledge regarding safe water and sanitation. In this study most of the respondents, i.e. 45.3% had moderate knowledge.

Conclusion

The research findings concluded that most of the participants had moderate knowledge about safe drinking water and sanitation. Thus, the author feels community mass health education is required in this community to prevent water borne diseases.

Keywords : *Sanitation, water borne, safe water, feco-oral route*

Introduction

Water is transparent, tasteless, odorless, and nearly colorless liquid which is the basis of the fluids of living things [1]. It is one of the most precious natural resources and essential element of life. According to National Sanitation Foundation, USA, "Sanitation is a way of life. It is the quality of living that is expressed in clean home, clean firm, clean business and clean

community." Sanitation covers the whole field of controlling the environment with a view to prevent disease and promote health [2]. Preventing human contact with feces is a part of sanitation as is hand washing with soap. It aims to protect human health by providing a clean environment that will stop the feco-oral route. Sanitation is a global development priority. The estimate in 2017 by Joint

Monitoring Program (JMP) states that 4.5 billion people currently have a safely managed sanitation. Lack of access to sanitation has an impact not only in public health but also in human dignity and personal safety. Inadequate sanitation facilities lead to outbreak of various diseases world-wide and improving sanitation has a significant beneficial impact on health, both in households and across communities. Sanitation not only refers to the provision of facilities and services for the safe disposal of human urine and feces but also refers to the maintenance of hygienic conditions through services such as, garbage collection and waste water disposal.

Hygienic sanitation facilities are crucial for public health. Since 1990, the number of people gaining access to improved sanitation has risen from 54% to 68%. In 2010, the UN General Assembly recognized provision of safe and clean drinking water and sanitation as a human right and called for international efforts to help countries to provide safe, clean, accessible and affordable drinking water and sanitation. Despite the progress, 700 million people missed the 2015 Millennium Development Goal target to halve the proportion of the population without access to improved sanitation facilities.

Around 842,000 people from developing countries die as a result of inadequate water, sanitation and hygiene each year representing 58% of total diarrheal deaths. Diarrhea remains a major killer of children but is largely preventable. Better water, sanitation and hygiene could prevent the deaths of 361,000 children under 5 years each year. Open air defecation perpetuates a vicious cycle of diseases and poverty. Countries where open air defecation is most widespread have the highest number of deaths of children, under 5 years of age. In order to decrease the number of

deaths of children fewer than 5 years of age, the new Sustainable Development Goals (SDGs) call for ending open air defecation and achieving universal access to basic services by 2030.

"Safe water, effective sanitation and hygiene are critical to the health of every child and every community and they are essential to building stronger, healthier and more equitable societies." said UNICEF Executive director, Anthony Lake. He further said, "As we improve these services in the most disadvantaged communities and for the most disadvantaged children today, we give them a fairer chance at a better tomorrow."

Out of 2.1 billion people who do not have safely managed water, 844 million do not have even a basic drinking water services. This includes 263 million people who have to spend over 30 minutes per trip collecting water from sources outside the home.

Sanitation is seen principally as the removal of human excreta or the availability of appropriate facilities for its disposal. Improved sanitation is used, and it refers to connection of households to a private or sewer septic system, a pour flush latrine or to a ventilated improved pit latrine [3]. Poor sanitation, water and hygiene have many other serious consequences; children and particularly girls are denied their rights to education because their schools lack private and decent sanitation facilities. Poor water quality is deadly and some 5 million deaths a year is caused by polluted drinking water [4].

Adequate sanitation, proper hand-washing with soap and water after stool contact is an important barrier to the feco-oral transmission of diseases. Hand-washing with soap and water before contact with food and water also reduces the secondary

transmission of pathogens from the environment to a new host [5].

Improving the access to safe drinking water and adequate sanitation, as well as promoting good hygiene are key components in the prevention of diarrhea. It also indicates that access to adequate sanitation reduces the incidences of diseases and brings relative comfort and ease to the daily routine of toilet use, thereby enhancing the quality of life [6].

Safe water is one of the most important needs in the public health in developing countries in the 21st century. The year, 2005 marked the beginning of the "International Decade for Action: Water for Life" and renewed effort to achieve the Millennium Development Goal (MDG) to reduce by half, the population without sustainable access to safe drinking water and sanitation by 2015[7].

Improving drinking water condition and sanitation facilities remains a major concern globally. Though 89% of the world's population has access to drinking water facilities, about 768 million people rely on unimproved drinking water sources; 83% of them residing in rural areas [8].

Lack of adequate sanitation, poor hygiene and lack of safe portable water are serious global health problems that contribute to deaths of 1.5 million children under the age of 5 years annually due to diarrhea. Mothers are the immediate and reliable care-givers of the children and their knowledge and practices on Water, Sanitation and Hygiene (WASH) have a strong influence on the occurrences of diarrheal diseases. Mothers of under-five children should maintain a higher standard of cleanliness at all time to prevent diarrhea occurrence. This assertion was supported by WHO, WHO attributed 90% of all diarrheal diseases under-five children are due to mothers' unhygienic practices and poor sanitation [9].

Methodology:

A descriptive cross-sectional research design was adopted to find out the knowledge and of water and sanitation in women of Biratnagar-5. The study was carried out from August 17th August, 2018 to September 1st, 2018 after the approval of Institutional Review Committee (IRC) of Nobel Medical College Teaching Hospital. Total of 75 samples were included in the study and data were collected by using structured questionnaire and interview based on the objective of the study. Knowledge regarding water and sanitation was categorized based on the qualities of knowledge present.

- Inadequate knowledge: <50% of total knowledge score
- Moderate level of knowledge: 51-75% of total knowledge score
- Adequate level of knowledge: >75% of total knowledge score

The collected data were checked for completeness and consistency. Data were entered into Microsoft Excel and were exported to statistic package for social science version 23 for analysis. Both descriptive and inferential statistics were used for analysis.

The table no. 1 shows that majority of participants (82.7%) were married. More than half (50.7%) of them were illiterate followed by more than one fourth (25.3%) were able to read and write. Majority of them were Hindu (77.3%) followed by Madhesi (60%).

The table no. 2 shows that 54.7% of the respondents live in a nuclear family. Majority of the respondents' (44%) were dependent upon agriculture. Finding shows that most of them (82.7%) fall under poverty line.

Table 1: Socio Demographic Characteristics of Respondent's

n = 75

Characteristics	Frequency	Percentage (%)
Mean age in years ± SD (Min-Max)	34.51 ± 10.0 52(16-57)	
Marital status		
Married	62	82.7
Unmarried	4	5.3
Widow	9	12.0
Education status		
Illiterate	38	50.7
Literate	37	49.3
Can read and write	19	25.3
Lower secondary school	13	17.3
Higher secondary school	5	6.7
Religion		
Hindu	58	77.3
Christian	15	20.0
Buddhist	2	2.7
Ethnicity		
Janajati	30	40.0
Madhesi	45	60.0

Table 2: Socio Demographic Characteristics of Respondent's

n = 75

Characteristics	Frequency	Percentage (%)
Family type		
Nuclear	42	56
Joint	33	44.0
Occupation		
Housewife	30	40.0
Student	3	4.0
Agriculture	33	44.0
Service	6	8.0
Labor	2	2.7
Others	1	1.3
Under poverty line		
Yes	62	82.7
No	13	17.3

Table 3: Respondent's knowledge regarding general information of water

n = 75

Characteristics	Correct response	Incorrect response	Percentage	
			Correct response	Incorrect response
Daily requirement of water per person for drinking 2 liters per day	21	54	28	72
Importance of drinking clean water Prevent water borne disease	45	30	60	40
Water storing process Bucket with closed lid	48	27	64	36
Covering water container* Prevents dust	47	28	62.7	37.3
Keeps water clean	59	16	78.7	21.3
Prevents water borne disease	75	0	100	0

* (multiple responses)

The table no. 3 shows only 28% of the participants had knowledge regarding daily requirement of water, 60% of them had knowledge regarding importance of drinking clean water. 64% of the participants had knowledge about water storing processes and cent percent of them were conscious about covering water container to prevent water borne diseases. Only 66.7% of the participants were aware that boiling and filtration were water purification methods. Only 92% of the respondents knew that purification of water reduces the water borne diseases and 20% of the respondents had knowledge about time required to boil water before drinking and 98.7% of the respondents had knowledge about water borne diseases.

Table 4: Respondent's knowledge regarding domestic waste management

n = 75

Knowledge regarding	Correct response	Incorrect response	Percentage	
			Correct response	Incorrect response
Method of solid waste disposal Composting	39	36	52	48
Method of liquid waste disposal Mix in drain	42	33	56	44
Importance of latrine Proper disposal	72	3	96	4
Importance of handwashing Prevents diseases	71	4	94.7	5.3
Importance of washing vegetables prevents food borne diseases	44	31	58.7	41.3

The table no. 4 shows that 52% of the participants had knowledge of solid waste management and 56% of the respondents had knowledge of liquid waste management also 96% of them had knowledge of importance of latrine and 94.7% were aware of the importance of hand washing. Only 58.7% of the participants had adequate knowledge of importance of washing vegetables.

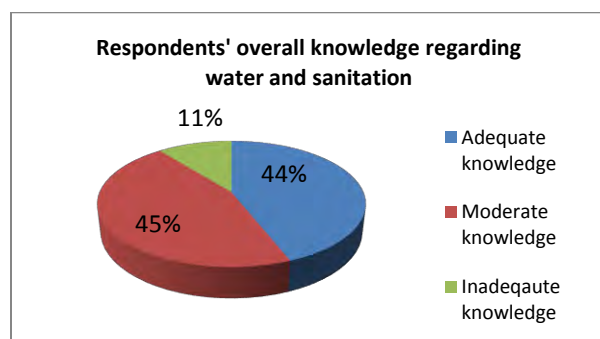


Figure 1: Respondents' overall knowledge regarding water and sanitation n = 75

The figure no. 1 shows that there is narrow difference between adequate and moderate knowledge of the respondents i.e. 44% and 45% respectively.

Discussion

The statistical analysis showed that among 75 respondents, 45.3% had moderate knowledge, 44% had adequate knowledge and 10.7% had inadequate knowledge regarding water and sanitation. This study was supported by a similar type of study conducted in Udip district of India on the knowledge and practice regarding water and sanitation among 300 women. The study revealed that 42% had moderate knowledge, 40% had adequate knowledge and 18% had inadequate knowledge regarding water and sanitation. (10)

During the last decade, rural areas of Nepal have achieved huge success on the provision of safe water supply and sanitation. Various NGOs and INGOs are putting their strength in providing basic and water supply by funding rural people to build water pumps and sanitary toilets but still the knowledge of using safe water and proper methods of disposal of night soil is still lacking in many rural communities. At the household and school level there are concerns about the quality and use of these water and sanitation facilities

The poor sanitation affects every aspect of life including, health, nutrition, development, economy, dignity and empowerment. Globally, water, sanitation, and hygiene are responsible for 90% of diarrhea related mortality which is much higher than combined mortality from malaria and HIV/AIDS [11].

Though there is a ray of improvement in drinking water facilities in rural regions, the trend of the sanitation is still on a slow mark with 60% of the total rural population not having toilet facilities, limited access to safe drinking water and poor sanitation can lead to water borne diseases. Improving

quality of safe drinking is a key to longevity of life. Improvement in sanitation will obviously reduce the water-borne diseases like diarrhea, dysentery, cholera, hepatitis etc.

Many of the water borne infections can be treated with antibiotics but persisting burden of water borne diseases and increasing antibiotic resistance have created dual pressure on policy makers, public health professionals and pharmaceutical industries. Interventions for decreasing the number of people with limited access of clean drinking water can lead to significant economic benefits which can help in achieving sustainable development [12].

Many communicable diseases can be efficiently managed by improving the sanitation, hygiene and water usage practices Infrastructures development and policies are adequate to fill the gap of knowledge and practice of drinking water and sanitation. But, effective reduction of effects of poor water and sanitation practices each and every individual must be aware of the life-threatening diseases hidden in poor drinking water and sanitation [13].

Conclusion

Based on the objectives of the study, majority of the respondents had moderate knowledge regarding safe drinking water and sanitation. The findings also show, there is need of health awareness program on safe drinking water and good sanitation.

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Original Article

Intracerebral hemorrhage: epidemiology and surgical options from a tertiary care hospital in Eastern Nepal

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Abstract

Background

Intracerebral hemorrhage accounts for 10 to 20% of strokes. Based on the precise site and size of the hematoma, ICH can manifest a range of clinical and radiological deficits. The role of surgical removal of hematoma has by far been controversial, and despite large clinical trials, the efficacy of surgery remains controversial. In this paper, we described our experience of ICH and its epidemiology along with the outcomes of patients undergoing surgical removal of hematoma secondary to ICH.

Patient and Methods

A retrospective observational study was conducted from April to September 2018 in a tertiary care center in Nepal. 102 patients undergoing surgery using trans-cortical, trans-sylvian or endoscopic approaches were included, and their outcomes were assessed using a 5-point GOS at a 6-weeks follow-up.

Results

A total of 102 patients were included in the study. Out of these, 54 were males (mean age: 54.7), and 48 females (mean age: 56.13). Smoking was common in 42.2% of patients and alcohol intake (15.7%). The site of hematoma was 55.9% basal ganglia bleed and 44.1% hemorrhages of the frontal, occipital, parietal and temporal lobes collectively. Surgical outcomes at a 6-weeks follow up included a mortality of 11.8% (n = 12), 27.5% (n = 28) with moderate disability, and 60.8% (n = 62) with good recovery.

Conclusion

The etiology of ICH is attributed to a spectrum of modifiable and non-modifiable risk factors. Treatment strategies should focus on prevention of progression to secondary brain damage. Surgical intervention, if performed during the ideal time-window provides a good outcome in patients with ICH. Further studies are needed to evaluate the efficacy and best treatment strategy.

Keywords: *Intracerebral Hemorrhage; Hematoma, Hemicraniectomy*

Introduction

Intracerebral hemorrhage accounts for approximately 10 % to 20 % of all strokes [1] and presents a wide variation in its epidemiology based on a spectrum of risk factors that contribute to the development of this manifestation. Spontaneous rupture

of small penetrating vessels inside the brain parenchyma lead to accumulation of blood manifesting with a range of clinical and radiological symptoms depending upon the size and site of hemorrhage. Typically, ICH can be divided into basal ganglia and lobar hemorrhage (including frontal, parietal,

temporal and occipital). Preventive strategies are based on the risk factors and other confounders. With the improvement of blood pressure control, the incidence of hypertensive ICH has decreased in developed countries. However, in developing countries, the burden of ICH remains the same [2,3]. Variations in regional incidence of ICH is attributed to age, sex, season and geographical location. The treatment of intracerebral hemorrhage remains anecdotal and inconsistent [4,5]. There is no convincing evidence of benefit from any medical treatment, and the role of surgery remains controversial despite clinical trial, which deemed inconclusive. This paper aims to identify the choice of surgical approach and efficacy of prompt surgical management in cases of spontaneous ICH.

Patients and Methods

A retrospective observational study was conducted between April to September 2018. All patients undergoing surgery for intracerebral hemorrhage were included in the study. Patient data was retrieved using hospital records and patient follow-up was obtained using a 5-point Glasgow Outcome Scale (GOS) at 6 weeks post-operatively. Data was entered and analysed using SPSS software and relevant conclusions were drawn.

Results

A total of 102 patients were included in the study. Out of these, 54 were male with a mean age of 54.7 years, and 48 were females, with mean age of 56.13 years. Smoking was common in 42.2% of patients, followed by alcohol intake (15.7%). Hypertension, diabetes and cardiovascular diseases were common comorbidities in almost all patients, with hypertension being the most prevalent followed by diabetes. Use of anticoagulant

drugs was also found in a small patient population [Figure 1]. Site of hemorrhage was divided into lobar and basal ganglia hemorrhages. In our set up, the distribution of hemorrhagic sites was equal with 55.9% basal ganglia bleed and the remaining 44.1% comprised hemorrhages of the frontal, occipital, parietal and temporal lobes collectively. Among all cases of lobar hemorrhages (n=45), majority were operated using trans-cortical approach (n=39, 86.67%) and remaining were operated using trans-sylvian approach (n=6, 13.33%). Similarly, basal ganglia hemorrhages (n=57) were operated using trans-cortical (n=30, 52.63%), trans-sylvian (n=15, 26.32%) and endoscopic approaches (n=12, 21.05%) [Table 1]. Surgical outcomes at a 6-weeks follow up included a mortality of 11.8% (n=12), followed by 27.5% (n=28) with a moderate disability, and 60.8% (n=62) with a good recovery. The outcomes were significantly correlated with age, with mortality occurring in patients aged 55 and above ($p=0.001$), whereas no statistically significant association was found between other confounders including smoking, comorbidities, site of hemorrhage and surgical approach [Figure 2].

Table 1: Site of hematoma and surgical approaches

Site * Surgery Crosstabulation

Count

		Surgery			Total
		Trans-cortical	Trans-Sylvian	Endoscopic Evacuation	
Site	Lobar	39	6	0	45
	Basal Ganglia	30	15	12	57
Total		69	21	12	102

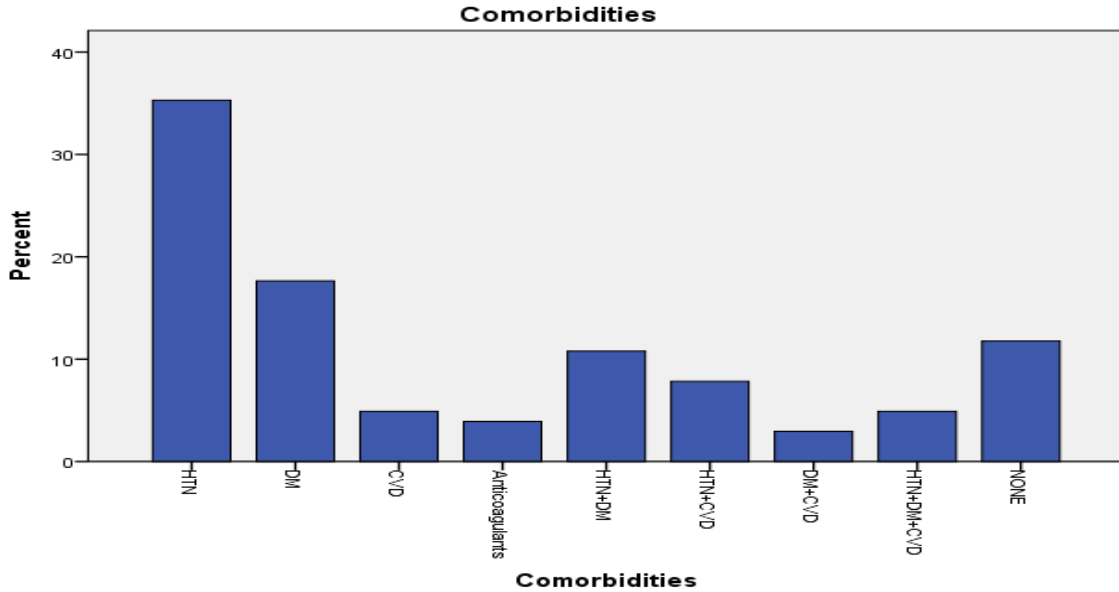


Figure 1: Frequency distribution of comorbidities in patient population

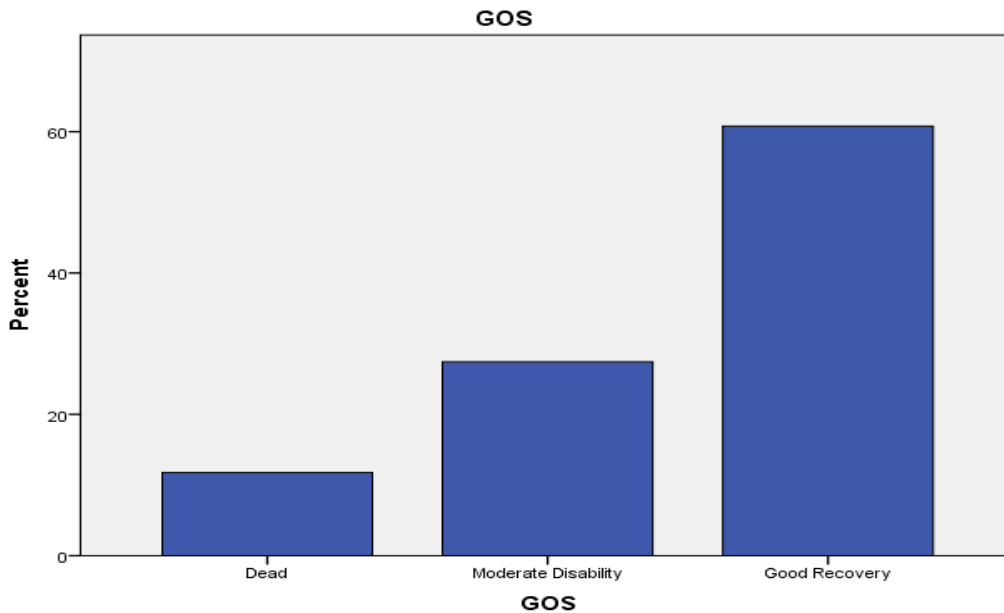


Figure 2: Surgical Outcomes at 6-weeks follow-up

Discussion

Intracranial hemorrhage refers to the pathological accumulation of blood within the cranial vault and may occur within brain parenchyma or the surrounding meningeal spaces. Hemorrhage within the meninges or the associated potential

spaces, including epidural hematoma, subdural hematoma, and subarachnoid hemorrhage. Intracerebral hemorrhage (ICH) is usually caused by rupture of small penetrating arteries secondary to hypertensive changes or other vascular abnormalities [6] and an extension of

parenchymal bleeding into the ventricles results in intraventricular hemorrhage [IVH]). ICH accounts for approximately 10-20% of all strokes [7] 8-15% in western countries like USA, UK and Australia [8], and 18-24% in Japan [9] and Korea [10]. The incidence of ICH is substantially variable across countries and ethnicities. The incidence rates of primary ICH in low- and middle-income countries were twice the rates in high-income countries (22 vs. 10 per 100,000 person-years) in 2000-2008 [11]. In a systematic review of 36 population-based epidemiological studies, the incidence rate of ICH per 100,000 person-years was 51 [12] in Asians, 24.2 in Whites, 22.9 in Blacks, and 19.6 in Hispanics [13].

The incidence of ICH has not changed over the last 30 years, probably due to changes in the risk factor profiles of ICH patients. It appears that ICH is more common in men, and Asian populations are more frequently effected than other populations. In addition to the known risk factors of hypertension and increasing age, alcohol consumption, the presence of the apolipoprotein $\epsilon 2$ or $\epsilon 4$ allele, extremes of body mass index, diabetes, and ophthalmic conditions have been suggested to be associated with ICH. Factors associated with a reduced risk of ICH include hypercholesterolaemia and a diet high in fruits and vegetables [14].

The neurological deficits caused by ICH can be attributed to localisation and volume of the hematoma and may develop within minutes to hours as seen in ischemic insults. These symptoms can range from severe headaches, sometimes in combination with vomiting; to alteration in level of consciousness. Symptoms of lobar ICH are associated with the affected cerebral lobe, so homonymic hemianopsia, paresis of arm or leg, or aphasia are observed. Small ICH of basal ganglia could occur without any symptoms, but larger ICH in this region leads to sensorimotoric

contralateral hemiparesis, sometimes in combination with aphasic disorders or homonymous hemianopsia, when the hematoma extends posteriorly and involves optic radiation. In ICH of Pons severe neurological deficits are observed like coma, disorders of pupillomotoric, abnormal flexions or extensions of extremities. Cerebellar ICH typically causes nausea, vomiting, and dizziness. Hydrocephalus may occur, if circulation pathways of CSF are obstructed, leading to an alteration in level of consciousness. Larger cerebellar haemorrhages could lead to brain stem compression. In these cases an alteration in level of consciousness, tetraparesis or paresis of cranial nerves could be observed. Hematomas located exclusively intraventricularly usually cause headaches only, although a secondary hydrocephalus can lead to unconsciousness.

There is no clear indication till date for surgical removal of ICH in the majority of patients. There are two reasons for this: (i) the mechanism of neurological damage is poorly understood; and (ii) the prospective randomized controlled clinical trials comparing surgical and medical treatment of ICH have been small and inconclusive [15]. Surgical removal of clot is considered life-saving by most neurosurgeons in patients who deteriorate with an initially good level of consciousness, however the efficacy can only be determined at the outcomes of the surgical removal of clot in patients who are stable or even improving. Functional impairment in ICH is based on the pathological oedema around an ICH which determines the degree of neuronal damage. Hence, measures need to be taken to salvage as much of the brain as possible. Clear surgical indication for initial clot removal are still under study. Current practice favours surgical intervention in the following situations: (i) superficial haemorrhage; (ii) clot volume between 20-

80 ml; (iii) worsening neurological status; (iv) relatively young patients; (v) haemorrhage causing midline shift/raised ICP; and (vi) cerebellar haematomas > 3 cm or causing hydrocephalus

Once a surgical intervention is warranted, the choice of surgery is dependant upon the site and size of hematoma. Open Craniotomy using smallest possible incision and Evacuation of the Hematoma is primarily done in a way, that the hematoma can be reached on the shortest path as possible avoiding further injury to eloquent brain-areas. Hemicraniectomy is useful for treating mass effect which is the main contributing pathology to death from ICH; therefore, it is possible that this may be an option for younger patients with rapidly declining conscious state and imminent herniation. One further advantage of this approach is that hemicraniectomy could potentially be performed by general surgeons, allowing for stabilization and then transfer of patients from geographically isolated regions. The use of an operation microscope aids for adequate hemostasis and satisfactory hematoma removal. Endoscopic Evacuation of the Hematoma Endoscopic guided evacuation of the hematoma allows the surgery to be performed through a single burr hole. While evacuating the hematoma the direction of the endoscope is changed to inspect all directions of the hematoma cavity for bleeding vessels, which could be coagulated. This is thought to provide better neurological outcome compared to an open craniotomy however, further randomized trials are still missing [16,17]. Different meta-analyses have provided different interpretations on the value of surgery for ICH [18]. The largest modern trial, the Surgical Trial in Intracerebral Haemorrhage (STICH), was negative, but did show a trend towards improved outcome with surgery, particularly in the subgroup of superficial ICH within 1 cm of

the cortex [19]. There was also a trend towards improvement with surgery in lobar ICH patients with deteriorating conscious state. The subgroup of patients with intraventricular hemorrhage (IVH) had a particularly poor outcome.

The STICH II study is re-examining the role of surgery specifically in the patients with superficial ICH [20]. There is also interest in minimally invasive surgical techniques, some in combination with thrombolytic agents, in order to enhance aspiration of the clot [21].

Timing of surgical interventions also seems to be an important issue depending upon the status of the leaking vessel, as well as brain edema and mass effect. Should surgery be required, to prevent death from the increasing mass effect and herniation, then this should be performed before the cascade of secondary changes from herniation (e.g., secondary infarcts from pressure effects on vessels) is at risk of occurring, providing the ideal time window between approximately 24 and 48 hours.

Apart from conventional surgical procedures, ventriculostomy is indicated for patients with severe intraventricular haemorrhage, hydrocephalus or elevated ICP [22]. Cisternal drainage of CSF in the setting of brain trauma instantly reduces the ICP and furthermore prevents secondary damage that otherwise is almost inevitable in standard decompression hemicraniectomies.

Conclusion

Intra cerebral hemorrhage accounts for the highest rates of strokes worldwide. The etiology is attributed to a spectrum of modifiable and non-modifiable risk factors and symptoms arise from the site and size of the hematoma formed. Treatment strategies should be targeted at preventing deterioration of neurological status and secondary brain damage. Surgical intervention, if performed during the ideal

time-window provides a good outcome in patients with ICH. Further studies are needed to evaluate the efficacy and best treatment strategy.

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Case Report

Cyclopia: A Rare Congenital Malformation

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Abstract

Cyclopia is a rare and lethal congenital anomaly of the forebrain system, resulting from incomplete cleavage of prosencephalon into right and left hemispheres occurring between the 18th and the 28th day of gestation. Approximately 1.05 in 100,000 births are identified as infants with cyclopia, including stillbirths. Many teratogenic factors are identified as the causative factors for this anomaly which include irregular cholesterol biosynthesis, radiation exposure, viruses, alcohol intake and maternal diabetes. Many authors also suggest genetic etiology of this illness. We report a case of 35 year old lady G₇P₆L₅ with previous history of normal vaginal delivery who presented to us in second stage of labor. She delivered a male baby with a large head, a median single eye and absent nose with intact mouth. The baby died soon after the birth. This case is presented because of its rarity. Early ultrasound diagnostics and proper management of this anomaly must be emphasized most strongly to prevent complication associated with this condition.

Key words: *Cyclopia, single eye, large head*

Introduction

Cyclopia is a rare congenital anomaly characterized by a single midline orbit that contains ocular structures that could be monophthalmic, synophthalmic, or anophthalmic [1]. It results from incomplete cleavage of prosencephalon into right and left hemispheres occurring between the 18th and the 28th day of gestation [2]. Approximately 1.05 in 100,000 births are identified as infants with cyclopia, including stillbirths [3].

Three levels of increasing severity are described: alobar holoprosencephaly (cyclopia being the most severe form), with a single brain ventricle and no interhemispheric fissure; semi lobar holoprosencephaly with a partial separation; and lobar holoprosencephaly, where the right and left ventricles are separated, but with some continuity across the frontal cortex [4].

Cyclopia typically presents with a median single eye or a partially divided eye in a single orbit, absent nose, and a proboscis above the eye. Extra cranial malformations described in stillbirths with cyclopia include polydactyly, renal dysplasia, and an omphalocele.

The etiology of this rare syndrome, which is incompatible with life, is still largely unknown. Most cases are sporadic [5]. Heterogeneous risk factors have been implicated. Possible risk factors include: maternal diabetes [6]. The only formally recognized environmental factor with a 1% risk and a 200-fold increase in fetal holoprosencephaly), drugs during pregnancy [7, 8] (alcohol, aspirin, lithium, anticonvulsants, hormones, retinoic acid, anticancer agents, and fertility drugs), radiation exposure, chromosomal abnormalities [2] (mostly trisomy 13) and genetic causes (familial occurrences in

twins and in consanguineous marriages have been documented) [9]

Case presentation

We report a case of 35 year old unbooked G₇P₆L₅ at 34⁺² weeks of gestation presented to the labor room of Nobel Medical College and Teaching Hospital (NMCTH) in second stage of labor. She had normal vaginal delivery in her previous and present pregnancies. She belongs to lower socioeconomic status with irregular antenatal check-up and no antenatal ultrasound scan was done in this pregnancy. There was no history of diabetes in mother or any teratogenic, radiation or drug exposure in first trimester. She delivered a male baby vaginally weighing 2.5 kg with congenital anomalies. The baby died after 15minutes of birth. On examination, the newborn was found to have a pink face and a trunk with peripheral cyanosis. Heart rate was 134 beats/minute and respiratory rate 32/minute, but Apgar score was not calculated because of congenital malformations. Head circumference was 38 cm, with a dysmorphic face, a median single eye, absence of nose, and micrognathia. In the face, there was no nasal aperture or proboscis in the midline. The external ears were normal. No cleft lip or cleft palate was noted, but there was micrognathia (Figure 1). In postnatal period, while reviewing the history, it was found that the baby was the product of consanguineous marriage which may be the etiological factor for this anomaly. Brain MRI could not be done, because baby expired after 15minutes of birth. Chromosomal analysis and postmortem autopsy were not carried out as consent to these two procedures was not given by the father.



Figure 1: Cyclopic baby

Discussion

During the 4th week of gestation, the neural tube forms the three primary brain vesicles (prosencephalon, mesencephalon, and rhombencephalon) and by the 5th gestational week, the prosencephalon further divides into the telencephalon and diencephalon. The two cerebral hemispheres and the lateral ventricles arise from the telencephalon, whereas the thalami, hypothalamus and the basal ganglia arise from the diencephalon. Holoprosencephaly refers to a group of disorders arising from failure of normal forebrain development during embryonic life. There are three forms of holoprosencephaly: alobar, semi lobar and lobar varieties, with alobar holoprosencephaly (cyclopia) being the most severe form and characterized by undifferentiated holosphere of the cerebral parenchyma with a central monoventricle, fused thalami, and absence of midline structures, such as corpus callosum and the midline falx cerebri [10,11,12,13].

Ultrasonography is the most helpful in the prenatal diagnosis of cyclopia [14,15,16] Holoprosencephaly can be expected to present in 16% or more of all cases of fetal hydrocephalous [17]. Even about 17% of fetuses with alobar holoprosencephaly reported by DeMyer¹⁷ and 29% reported by Nyberg [14,18] had a nondiagnostic face at delivery, but when holoprosencephaly is suspected by sonography to be the case, careful intrauterine scanning of the face will allow a more definitive diagnosis of cyclopia. One has to remember the well-known phrase, "the face predicts the brain." Cardinal facial features of cyclopia may include a median single eye or a partially divided eye in a single orbit, absent nose, and a proboscis above the eye. Other facial features are absent philtrum, otocephaly, and astomia or microstomia.

In our case, a severe hydrocephalous and other facial features were missed because sonography was not done in antenatal period. At birth, our case was found to have the typical facial features of cyclopia including a median single eye, absence of nose, micrognathia. (Fig 1)

Apart from the facial features of the infant with cyclopia, extra facial features were reported and could include polydactyly, renal dysplasia, and an omphalocele, all of which can be detected by sonography if looked for them carefully. The presence of extra facial abnormalities carries a very poor prognosis and almost always associated with stillbirth [14,19].

Most live infants with cyclopia at birth were reported to have the typical facial features but no extra cranial ones. During literature review, we found only two reports of live newborn infants with cyclopia having extra facial malformations in addition to facial features: a live newborn with cyclopia and bladder exstrophy was reported by Mc Gahan et

al.[14] and another baby with polydactyly was reported by Corsello et al [20].

The originality of our case is that it is the first case report of a live preterm infant with cyclopia, with typical facial features. Even it is allowed by medical law in many countries to terminate the pregnancy if major congenital abnormalities are detected during pregnancy, but in many other countries it is still not allowed for cultural, religious, and other reasons. In our case, because of poor antenatal visits and check-ups, this lethal anomaly could not be diagnosed early and hence could not be terminated medically. This case calls for urgent worldwide legitimization of pregnancy termination in indexed cases.

The last but not the least important fact is that even Holoprosencephaly is a syndromic malformation with many genetic causes, both with and without an associated chromosomopathy, and chromosomal analysis and postmortem autopsy can add to the diagnosis of cyclopia, but in our case they were not carried out as consent to these two procedures was not given by the father.

Conclusion

The prenatal diagnosis of cyclopia can be made early by ultrasound and the awareness of the spectrum of sonographic findings of cyclopia can improve the accuracy of prenatal diagnosis. Early ultrasound diagnostics and proper management of this anomaly must be emphasized most strongly to prevent complication associated with this condition. However, in developing countries where women do not receive regular antenatal care and do not undergo prenatal diagnosis, such cases will go undetected. The legitimization of pregnancy termination for indexed cases in many countries around the world should be revised.

Consent

Written informed consent was obtained from patient's father for publication of this case report.

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Conflict of Interest: None

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