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Knowledge and awareness about Hepatitis B among the Students of Moinamoti School & College

Abu Hena Md Mustafijur Rahman¹, Mizanur Rahman Molla², Mohammad Shakil³, Farhana Amin⁴, Elias Bin Akber⁵, Salah Uddin Ahmed⁶

Abstract

Background: Bangladesh is a densely populated area. An infectious disease especially Hepatitis B (HB) is an alarming disease in this poor developing country. HB is the most prevalent chronic infection that affects liver and caused by hepatitis B virus (HBV). HB is a serious global public health problem. It is contagious and easy to be transmitted from one infected individual to another by blood to blood contact, mother to child, unprotected sexual intercourse, sharing of eating utensils and barber shop and beauty salon equipment. **Objectives:** The aim of this study was to assess knowledge and awareness about HB among the Students of class VI to class XII in Moinamoti School & College. **Methods:** This cross sectional descriptive study was conducted among the Students of class VI to class XII in Moinamoti School & College, Moinamoti, Cumilla from November 2016 to April 2017 to determine the knowledge and awareness about HBV infection. The sample was collected using non-probability (purposive) method from the available students in Mainamoty School and College. The sample size was 349. **Results:** The results of our study showed that only about ten percent of the students had knowledge on HB and around forty five percent knew about HB from teachers. In case of mode of transmission, risk group and prevention more than sixty percent thought it is spread by blood, more than fifty percent thought Sex worker are more prone to develop HB and only one third thought HB can be preventable and half of them thought that it is by vaccination. This study indicates that there is lack of awareness about HB, its route of transmission and modes of prevention among those students. **Conclusion:** This study indicates that there was lack of knowledge and awareness about HB, its route of transmission and modes of prevention among the students of Moinamoti School & College.

Key words: Knowledge, Awareness, Hepatitis B, Students.

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Introduction

Viral hepatitis is an important health problem worldwide. HB infection is a serious blood-borne disease, caused by the HBV which attacks the liver. HBV is a DNA Virus that is transmitted by percutaneous injuries or per mucosal exposure to infectious blood products or other body fluids. HB is endemic in Asia. Most people in the region become infected with HBV during child-hood. In these regions, 8% to 10% of the adult population is chronically infected. In the Middle East and the Indian sub-continent, it is estimated that 2-5% of the general population are chronically infected. Less than 1% of the population in Western Europe and North American are chronically infected. The risk of being infected with HBV is the consequence of the high prevalence of virus carriers in the population, the high frequency of exposure to blood and other body fluids and the high contagiousness of HBV. The WHO stated that HBV is 50 to 100 times more infectious than HIV. It can survive outside the body for at least 7 days.

Although acute cases rarely results in liver failure and death, the main public health problem is the lifelong chronic HBV infection. The consequences of infection with HBV are potentially fatal and include chronic liver disease, cirrhosis and primary hepatocellular carcinoma.¹ Most of the liver diseases are preventable by awareness. The National Liver Foundation of Bangladesh is a non-profit organization started with the aim of prevention, treatment, education and research on liver diseases in Bangladesh. HB was the first to be discovered in 1965 by Baruch Blumberg. Most people who were infected long ago with HBV or Hepatitis C (HCV) virus are unaware of their chronic infection and so can unknowingly transmit the infection to other people. HB, often referred to as the “secret killer,” is the most dangerous type of viral hepatitis despite the dramatic increase in the treatment and effective vaccination against the disease.² Worldwide, two billion people are infected with HBV, and an estimated of 370 million chronic infections, affecting 5-7% of the world's population. 600.000 persons die each year due to acute or chronic consequences of HBV.³ It has been

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recommended that prevention is a safeguard against epidemic of viral hepatitis. A Safe and effective vaccine for HBV is available in market since last 3 decades although it is not possible with HCV infection. By knowing facts, having proper awareness and attitudes the menace of this disease can be prevented to a great extent. As health-care workers (HCWs) remain at a high-risk of transmission by skin prick with infected, contaminated needles and syringes or through accidental inoculation of minute quantities of blood during the surgical and dental procedures it is very important for them to follow proper measures of infection control and prevention.⁴ There are few data on the prevalence of these infections among Students of School & College in Bangladesh.

Results

Table 1 shows that the most of the respondents were in the 13-15 years age range; female respondents were higher than that of male and the majority of the respondents were in Class VI. In concern of occupation of the respondent's father and mother, most of them were farmer and housewife respectively, 64.18% had 5-7 persons in their family, 64.18% lived in pacca house, 59.31% drunk water from tube-well, and 69.34% did nothing for purification of water and 78.80% used sanitary latrine. Fig. 1 shows that according to their knowledge about HB, most of the respondents (315, 90.26%) did not know about HB. Fig. 2 shows according to the source of knowledge about HB, most the respondents knew about HB from teachers (44.25%), media(23.53%), doctor (11.76%), others (11.63%), friend (5.88%) and health assistant (2.94%). Table 2 shows that according to their knowledge about HB transmission, the proportion of respondents knew about HB transmission by blood, multiple use of syringe, water, air and sexual activity 64.7%, 8.82%, 5.88% and 2.94%, respectively. Table 3 shows that according to their knowledge about high risk group to develop HB most of the respondents knew that sex worker (52.94%) are more prone to develop HB, followed by drug abusers (17.65%), doctor and health assistant (5.88%), driver (2.94%). Table 4 shows that according to their knowledge about prevention of HB, only one third of the respondents (35.29%) thought. that HB is preventable. Table 5 shows that according to their knowledge about HB prevention, 50% of the respondents thought HB is preventable by vaccination, followed by avoid of multiple use of one syringe (25%), safe sex (16.67%) and others (8.33%).

Table 1: Socio-demographic characteristics of the respondents (n=349)

Characteristics	Group	%
Age (years)	10-12	22.06
	13-15	48.14
	16-18	28.37
	19-21	1.43
Gender	Male	40.69
	Female	59.31
Educational qualifications	Class VI	20.06
	Class VII	17.48
	Class VIII	15.19
	Class IX	13.47
	Class X	19.20
	Class XI	08.88
	Class XII	05.73
Occupation (Father)	Working in abroad	12.89
	Farmer	31.52
	Service	12.32
	Business	18.05
	Others	25.21
Occupation (Mother)	Housewife	94.84
	Farmer	00
	Service	02.29
	Business	0.57
	Others	02.29
Family members	2-4 person	22.92
	5-7 person	64.18
	More than 8 person	12.89
Type of residence	Pacca house	42.12
	Semi pacca house	30.66
	Kacha house	27.22
Source of drinking water	Tube well	59.31
	Deep tube well	39.54
	Well	1.15
Types of water purification	Nothing	69.34
	Boiling	18.34
	Filtration	11.75
	Others	0.57
	Type of Latrine	Sanitary Latrine
	Service type	19.22
	Open field	0.29
	Others	1.15

Figure 1: Distribution of the respondents according to their knowledge about Hepatitis B (n=349)

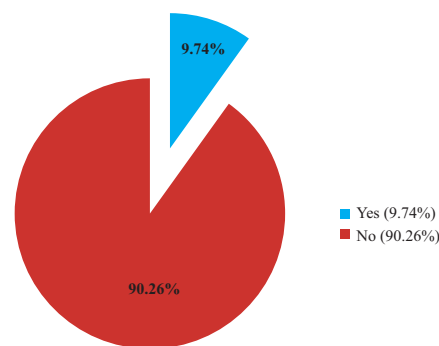


Figure 2: Distribution of the respondents according to source of knowledge about HB (n=34)

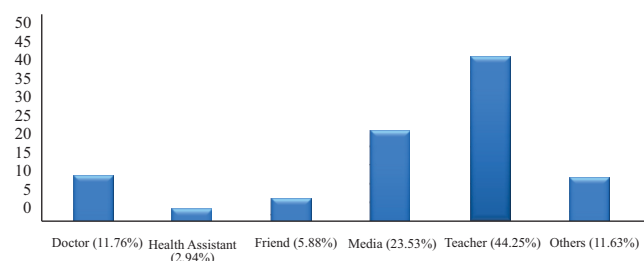


Table 2: Distribution of the respondents by their knowledge about mode of transmission of HB (n=34)

Knowledge about mode of spread of HB	Number	%
By Blood	22	64.7
By water	02	5.88
By touch	0	00
By air	1	2.94
By multiple use of syringe	03	8.82
By sexual activity	01	2.94
From mother to child	0	00
Others	5	14.71
Total	34	100

Table 3: Distribution of the respondents according to their knowledge about high risk group for HB (n=34)

Knowledge about high risk group of HB	Number	%
Doctor	2	5.88
Health Assistant	2	5.88
Sex worker	18	52.94
Drug abusers	6	17.65
Driver	1	2.94
Working in abroad	0	00
Others	5	14.71
Total	34	100

Table 4: Distribution of the respondents according to their knowledge about prevention of HB (n=34)

Knowledge about prevention of HB	Number	%
Yes	12	35.29
No	22	64.71
Total	34	100

Table 5: Distribution of the respondents according to their knowledge about mode of prevention of HB (n=12)

Knowledge about mode of prevention of HB	Number	%
By Vaccination	06	50
By safe sex	02	16.67
By avoid of multiple use of one syringe	03	25
By safe drinking water	0	
Others	01	8.33
Total	12	100

Discussion

HBV infection is a serious health problem worldwide. It is a significant burden on the health services especially in developing countries with limited resources. The most serious outcome of HB infection is chronic liver disease, which can range from chronic hepatitis resulting in cirrhosis to primary hepatocellular carcinoma with a case fatality rate of about 1% in acute hepatitis cases. Carrier rates of 5-15% have been reported from different regions.⁵ HB is a life threatening infection resulting in 0.6 million deaths annually. In Asia, 10 to 15 million individuals suffer from HB.⁶ The general characteristics of the respondent in this study revealed that most of the respondents were in the 13-15 years age range; female respondents were higher than that of male and the majority of the respondents were in Class VI. In concern of occupation of the respondent's father and mother, most of them were farmer and housewife respectively, 64.18% had 5-7persons in their family, 64.18% lived in pacca house, 59.31% drunk water from tube-well, and 69.34% did nothing for purification of water and 78.80% used sanitary latrine. The findings of this work had some disappointing facts on basic knowledge on HB, more than ninety percent of the respondents had no knowledge about HB (315, 90.26%) and only less than ten percent (34, 9.74%) knew about HB, whereas the rate of knowledge on HB (53.8%) in nursing College in Tamil Nadu, India,⁷ and 59.23% had correct knowledge on HB infection in amongst the students of Rural Dental College, Maharashtra, India.⁸ Source of knowledge about HB, most the respondents knew about HB from achers (44.25%), followed by media (23.53%), doctor (11.76%), others (11.63), friend (5.88%) and health assistant (2.94%). In a study conducted by Bijay Misra, in 2016 found that Source of information regarding HB included television (75%), newspapers (55%), and radio (26%).⁹ In concern to knowledge about HB transmission, the proportion of respondents knew about HBV transmission by

blood, multiple uses of syringe, water, air and sexual activity 64.7%, 8.82%, 5.88% and 2.94%, respectively. Whereas 71.0% were having correct knowledge about mode of transmission among nursing student in Tamil Nadu, India.⁷ Another study was conducted among the Students of University of Kassala, Sudan showed poor knowledge on causative agents, mode of transmission.¹⁰ According to their knowledge about high risk group to develop HB most of the respondents knew that sex worker (52.94%) are more prone to develop HB, followed by drug abusers (17.65%), doctor and health assistant (5.88%), driver (2.94%). According to their knowledge about prevention of HB, most of the respondents (22, 64.71%) did not think that HBV infection is preventable, only 12 (35.29%) of them thought and most the respondents said HB can be prevented by vaccination (06, 50%), followed by avoid of multiple use of one syringe (25%), safe sex (16.67%) and others (8.33%). A study carried out among the nursing students in Tamil Nadu, India showed that 69.3% had correct knowledge that it is a vaccine preventable disease.⁷

Conclusion

The present study concludes that there was poor knowledge and awareness among the students of school & college about HB, its mode of transmission and prevention.

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Knowledge and perception of the parents and caregiver about household accidental injuries of under five children and its prevention in a selected area in Bangladesh

Taslima Akter Sumi¹ Sharif Hossain Ikbal² AKM Jakirul Alam³ Anwar ul Alam⁴ ,Ripon Chundra Majumder⁵

Abstract

Background: Every child in the world matters. The landmark convention on the Rights of the Child, ratified by almost all governments, states that children around the world have a right to a safe environment and to protection from injury and violence. Childhood injury is a major public health problem that requires urgent attention. Injuries are not inevitable; they can be prevented or controlled. **Materials and Methods:** A descriptive cross sectional study was conducted in some selected villages of keraniganj upazilla, Dhaka district from January 2018 to May 2018 with 292 sample to get an in-depth understanding on the occurrence of household injuries in children of under 5 age group and protection practiced by their caregivers. Pretested questionnaire was used for data collection which includes information regard accidental injury of under five children & its prevention. Our respondents were included on the spot and were selected by purposive sampling. **Results:** Out of 292 respondents 81.5% were female and 18.5% were male. Majority under five children of our respondents (52.4%) had never experience a household accident where 47.6% had. The most common cause of accidental injuries of under five children was abrasion and laceration (62%), fall from height(55%) , burn and scald was the third common cause of injuries (24%), 17% got injured by drowning and only 11% got injured by electrocution. The accidental injuries were head injury (61.9%), fracture of bones, (25%), deep wound and bleeding (17.12%) and loss of limbs (11.3%) and others (4.79%). According to the respondents, the most effective way of avoiding household accidents of under five children were keeping sharp cutting instruments away from children (51.3%) followed by preventing the children from going to the roof or other high places (19.3%), building bamboo or wooden barrier (17.9%), by keeping the children away from electric wire (9.3%) and others. **Conclusion:** As children, being less aware of danger, are one of the most vulnerable groups, which can be explicated with the ongoing development of neuromotor , cognitive, physical, socio-psychological and sensory skills. Special efforts to improve existing injury information systems by segregating them by age and sex, and generating reports of child injuries will complement the efforts to achieve the target of child safety.

Key words: Knowledge, Household accidental injury

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Introduction

Accidents currently form the third leading causes of morbidity and mortality in the developing and developed countries⁸. Accidents can take place in a wide variety of environment and there is a possibility of accidents in every sphere of humans life. Accidents, in developing and developed countries alike, are one of the leading causes of infant death and it is imperative to accept them as a public health problem since they frequently occur in early childhood and cause death and vital injuries. Moreover, accident-related deaths are reported to be four times likelier than the others¹. According to the results of epidemiologic studies, accidents usually occur in children aged between 1 to 5 years old . Mother's age, educational and socioeconomic status, the numbers of people the child lives with at home and environmental factors have been found to

be influential in the occurrence of injuries .Scholar et al. 1997 reported that 0-4 years old children of young mothers who are undereducated and have more than one child are more likely to die in accidents. In various studies, it has been noted that accidents may occur in spring and summer months more frequently and boys are under much greater risk. Childhood accidents are traffic accidents and home accidents which are the leading causes of childhood injuries such as drowning, falls, burns, foreign object aspirations, poisoning. Because 06 years old children tend to spend much time at home than any other place, they may be exposed to numerous hazards which usually take place in kitchens, living rooms and bathrooms¹. Injury is a leading cause of death and disability in the world. According to World Health Organization (WHO), every year more than 5.8 million people die from injuries, with a rate of 97 per 100,000 population. Of this, 3.8 million (128.6 per 100,000 population) are male and 1.9

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million (66.7 per 100,000 population) are female. A quarter of the deaths are due to road traffic accidents, 16 percent are suicides and 10 percent are homicides. Among all age groups, injury is the fifth leading cause of death in the world and accounts for 10 to 30 percent of all hospital admissions². More than one-quarter of injury deaths occurred in South East Asia². The Bangladesh Health and Injury Survey (BHIS) has established conclusive evidence of a dramatically altered trend in child deaths in Bangladesh. The research shows that injury is now a leading killer of children over one year of age. Taken together, drownings, road traffic accidents, falls, burns, animal bites and other injuries killed more than 30,000 children in Bangladesh in 2002 making 83 child deaths each day or about three per hour. The survey findings highlight a significant variation in injury patterns at different stages of life. Between the ages of one and nine years, drowning presents by far the greatest danger although the rate declines after the age of five as children learn to swim. For every injured child who dies, many others live on with varying degrees and durations of disability and trauma. For each permanent disability, many more children are hospitalized, seek care, or miss work or school. The BHIS documented an overall child injury rate of 1,592/100,000 children per year³.

Methodology

It was a descriptive type of cross sectional study which was conducted from January 2018 to May 2018. The study was carried out in some selected villages of Keraniganj upazilla, Dhaka. Study population were adult married male and female having children. Purposive sampling was done. Sample size was 292. The number was identified on the basis of assumption. Pretested questionnaire was used for data collection which includes information regards to accidental injury of under five children & its prevention. After introductory conversation and obtaining consent from the respondent the relevant data were collected by face to face interview using close and open ended questionnaire. Data were recorded in the questionnaires. All filled up data were verified for its consistency. The data were then compiled and tabulated manually according to key variable in master sheet. Then finally data were analyzed in computer.

Results

On the spot 300 sample were selected and ultimately 292 sample were set for analyzing, remaining 08 sample were discarded due to inconsistency among the collected information. So the ultimate sample size was 292. After completion of data collection all filled up questionnaire were verified for any inaccuracy and inconsistency. The data were then compiled and tabulated manually according to key

variable in master sheet. Results were presented on tables and figures by using computer. Out of 292 respondents, minimum age was 20 years and maximum age was more than 40 years. The table 1 shows that most of the respondent were from 20-25 years age group 33.56% (n=98), followed by 26-30 years age group 31.85% (n=93), 31-35 years age group 18.83% (n=55), 36-40 years age group 9.25% (n=27), >40 years age group 6.51% (n=19). Figure 1 shows that majority respondents were female 81.5% (n=238) where only 18.5% (n=54) respondents were male. Table 2 shows that majority of the respondents 53.76% (157) had children 3-5 years old, 23.28% (n=68) respondents had children of 1-3 years, 18.15% (n=53) had children of 0-1 years and only 4.79% (n=14) had children of more than 5 years. Figure 2 shows that most of the parents acted as a caregiver for their children 78.77% (n=230), 17.12% (n=50) depend on family members, 3.42% (n=10) kept their child under supervision of grant parents and only 0.69% (n=02) took help from servants. According to the statement of 292 respondents, 56.50% (n=165) of their children had suffered from sharp cutting injury, 56.84% (n=166) fall from height, 13.35% (n=39) had burn and scald, 7.53% (n=22) drowning shows in Table-3. The study reveals that the causes of household accidents were 36.5% (n=146) of carelessness, 31.5% (n=126) of unawareness, 16.5% (n=66) of absence of parents, 13.75% (n=55) of lack of caregiver, others 1.75% (n=7) shows in Table-4. Most common injuries from these accidents were abrasion and laceration 62% (n=180), 55% (n=161) suffered from fall from height, burn and scald was the third common cause of injuries 24% (n=69), 17% (n=50) got injured by drowning and only 11% (n=32) got injured by electrocution shows in Table-5. According to the respondents, the most effective way of avoiding household accidents in children were keeping sharp cutting instruments away from children 51.3% (n=237) and then followed by preventing the children from going to the roof or other high places 19.3% (n=89), building bamboo or wooden barrier 17.9% (n=83), by keeping the children away from electric wire 9.3% (n=43) and others 2.2% (n=10) shows in Table-6. The respondents used disinfectant 55.82% (n=163) as a medicine, followed by powder/ointment 25.34% (n=74) painkiller 22.95% (n=67) used herbal medicines 10.62% (n=31) and others 2.05% (n=06) for treatments of the injuries from household accidents shows in Table-7. We can conclude that most favourable preventive measure taken for the parents were keeping away sharp cutting equipment 75% (n=219), followed by prevention of fall from height 30.8% (n=90), making bamboo or wooden barrier around the water reservoir of house 26.02% (n=76) prevention from electrocution 13.69% (n=40) and others 3% (n=9) shows in Table-8.

Table 1: Distribution of the respondents according to their age

Age of the respondents (in years)	Number	Percentage
20-25	98	33.56
26-30	93	31.85
31-35	55	18.83
36-40	27	9.25
>40	19	6.51
Total	292	100

Figure 1: Distribution of the respondents according to their sex

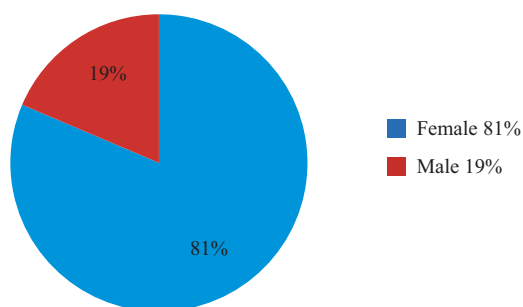


Figure 2: Distribution of the respondents according to the caregiver of the children

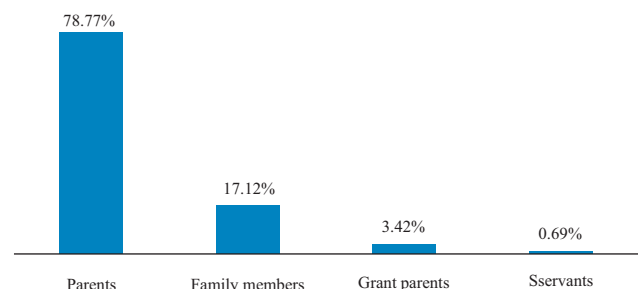


Table 2: Distribution of the respondents according to the age of children they have

Age of children(in years)	Number	Percentage
0-1	53	18.15
2-3	68	23.28
3-5	157	53.76
>5	14	4.79

Table 3: Distribution of the respondents according to their knowledge about the household accidents of under five children.

Knowledge about nature of household accidents	Number	Percentage
Sharp cutting injury	165	56.50
Fall from height	166	56.84
Burn and scald	39	13.35
Drowning	22	7.53
Others	00	0

Table 4: Distribution of the respondents according to their knowledge about the causes of household accidents of under five children.

Knowledge about causes of household accidents	Number	Percentage
Unawareness	126	31.5
Carelessness	146	36.5
Lack of caregiver in the house	55	13.75
Absence of parents	66	16.5
Others	07	1.75

Table 5: Distribution of respondents according to most common accidental injuries happened to the under five children.

Type of accidents	Number	Percentage
Abrasion & Laceration	180	62
Fall from height	161	55
Electrocution	32	11
Drowning	50	17
Burn & scald	69	24
Others	09	03

Table 6: Distribution of respondents, according to their knowledge of the way of avoiding household accidents .

Way of avoiding household accidents	Number	Percentage
Keep sharp cutting instruments away from children	237	51.3
Keep the baby away from electric fibers	43	9.3
Building bamboo or wooden barrier	83	17.9
Prevents the child from going to the roof or other high places	89	19.3
Others	10	2.2

Table 7: Distribution of the respondents according to the type of medicine they use for household accidental injuries.

Type of medicine	Number	Percentage
Disinfectant	163	55.82
Painkiller	67	22.95
Powder/ointment	74	25.34
Herbal medicines	31	10.62
Others	6	2.05

Table 8: Knowledge about the prevention of household accidental injuries of under 5 children.

Preventive measures	Number	Percentage
Keeping sharp cutting instruments away from children	219	75
Making bamboo/wooden barrier against pond, lake and other water reservoirs.	76	26.02
Preventing children from fall from height	90	30.80
Preventing from electrocution	40	13.69
Others	9	3

Discussion

The current study were set with 292 sample for analyzing to get an in-depth understanding on the occurrence of household injuries in children of under 5 age group and protection practiced by their caregivers. Most of respondents (42.8%) had 2 children and majority of them (46.87%) had children 3-5years old, 33.13% (n=111) had children of 1-3 years, 15.82% had children of 0-1 years and only 4.18% had children of more than 5 years, 25.30% of under five children belonged to nuclear families and 23.90% were belongs to joint families. The most common household accidental injuries of these children suffered from are sharp cutting injury (62%), fall from height (55%), burn and scald (24%), drowning (17%), electrocution (11%) and others (3%). According to parents and caregiver of the children the causes of household accidents are mostly unawareness (31.5%), carelessness (36.5%), lack of caregiver in the house (13.17%), absence of parents (16.5%). In a study children in step families were more likely to have had an accident reported by their mother during their first five years of life than children from two-parent families. Children in step families were also more likely to have repeated accidents (two or more). Children in single-parent families were slightly more likely to have accidents or repeated accidents than children in two-parent families, but the differences were less pronounced than for children in step families. Many factors are associated with accident rates, and illustrates rates of accident, repeated accident, and hospital admission after accident selected by social and biological factors. The most pronounced difference in rates was that between boys and girls⁴. In another study in Turkey it was found that 36.5% of children are reported to have had an accident, while 63.5% of children are found not to have any. Among those who had an accident, 38.5% are boys and 34.4% are girls. There wasn't a meaningful relationship found between children's sex and

incidents of accidents . There were 33 children in age 4 group (35.5%), 71 children in age 5 group (37.8%) and 59 children in age 6 group (35.5%) are found to have had an accident. There isn't a meaningful relationship between children's ages and incidents of accidents⁵. These findings are nearly to our current study. Our current study reveals that the most common household accidents of under five children were cut injuries (57.19%), fall from height (56.84%), burn and scald (13.35%), electrocution (11%) drowning (7.53%). According to the parents 47.6% of their children had suffered from these household accidented somehow. It was found that 3.09% under five children died from these accidents in our current study. The first aid that our respondents had use for these household accidents were disinfectant (46.88%), ointments (25.34%), analgesics (16.95%), herbal medicines (7.7%), knot on bleeding point (24.18%). Most of the respondent thought that the preventive measure to avoid household accidents of under five children could be proper education (38.35%), training of caregiver on child rearing (33.21%), increase house hold security (43.49%), use of safety equipment (30.13%). According to BHIS report a total of 52 FGDs were carried out on six leading causes of injury drowning, transport injury, burn, poisoning, fall and animal bite involving more than 500 participants. In another study all three types of injury shown here have the potential for serious consequences. Head injuries and suspected poisonings were more often reported for children in step families, and burns and scalds in children of one-parent families. Many factors are associated with accident rates, and table 3 illustrates rates of accident, repeated accident, and hospital admission after accident selected by social and biological factors. The most pronounced difference in rates was that between boys and girls. As the preventive measure this particular study suggested the knowledge, education, awareness and dedications of the parents⁵. Opposite findings however were reported from a study in Egypt which showed that increased level of education statistically improves knowledge in preventing accidents in children; and a study in Canada found that knowledge of the prevention of accidents caused by chemicals in the home increases with increasing level of education⁶. Injury was the leading cause of death in children <5 years of age. The three leading causes of injury-related death were drowning (43.63%), suffocation (27.57%), and traffic accidents (14.34%). Suffocation was the leading cause in children <1 year of age (79.49%). Suffocation has high incidence in the winter and spring, and drowning has high incidence in the summer season.

Drowning was the leading cause in children 1±4 years of age (62.80%). Drowning and suffocation accounted for 67.74% and 65.11%, of injury related deaths that occurred at home; while the traffic injury deaths (54.12%) occurred mainly in transit⁷. The findings are different from the current study.

Conclusions

Though the consequences of child injuries were different in different parts of the world the outcome is always a major burning issue for child health. It is evident that injuries constitute a major proportion of childhood deaths and hospitalization. Since injury is the leading cause of childhood mortality after the first birthday, it is evident that the Millennium Development Goals 4 (MDG4) reduce under-five mortality rate cannot be met without addressing the issue of child household accidental injuries. Special efforts to improve existing injury information systems by segregating them by age and sex, and generating reports of child injuries will complement the efforts to achieve MDG4.

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A Study Of 25 Cases: Outcome Of Excision Of Pterygium With Conjunctival Autograft Under Topical Anaesthesia

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Abstract

Background: Pterygium is the most frequent problem in clinical practice of ophthalmology. Patients do not always need treatment if the symptoms are minimal in grade 1 and 2 pterygium. Treatment modalities of pterygium are non-operative and operative treatment. **Material & Methods:** Case records of 25 eyes of 25 patients were included in the study. Data from March 2017 to May 2018 were analyzed prospectively in BNS PATENGA. All surgeries (Excision of Pterygium with CAG limbus to limbus) are performed by one surgeon under topical surface anaesthesia. Data collection included patient's age, sex, ocular medical and surgical history, visual acuity before and after surgery, surgical technique and complications. Pterygium was graded according to the corneal involvement (Grade 1: crossing limbus; Grade 2: midway between limbus and pupil; Grade 3: reaching upto pupillary margin; Grade 4: crossing pupillary margin). Stiches are removed after 10 days till symptomatic relief is achieved. Patients were called for follow up at 1 month interval for 3 to 6 months. **Results:** Study was conducted on 25 cases of Pterygium of grade 1 to 4 and recurrent pterygium. The highest number of patients 20 (60%) were in the age group of 30-50 years with majority 15 (%) being male. Male female ratio was 4:1. All the patients presented with whitish fleshy mass at nasal or temporal conjunctiva growing towards cornea. Satisfactory results were observed in 23 (92%) patients of whom 8 (32%) patients were having Grade 1 and 6 (24%) patients were having Grade 2 pterygium and 7(28%) patients were having Grade 3 and 2 (8%) patient was having Grade 4 and 2 (8%) patient was having recurrent pterygium. CAG were more effective [Grade 1 and 2 pterygium patients]. **Conclusion:** Conjunctival autograft under topical anaesthesia is a suitable procedure for treatment of pterygium. The method is easy, convenient, cheap and also well accepted and comfortable for patient. There are very less complications and the result is also satisfactory. Total 25 cases of grade 1-4 and recurrent pterygium were treated with excision followed by CAG. Among them 8 (32%) patients were having Grade 1 and 6 (24%) patients were having Grade 2 pterygium and 7 (28%) patients were having Grade 3 and 2 (8%) patients were having Grade 4 and 2 (8%) patient was having recurrent pterygium. The highest age incidence was 20 patients was in 3rd to 5th decade (80%). Out of 25 patients, number of male was 20 (80%) and that of female was 5 (20%). The patients were followed up monthly for 3 months to 1 year. All the patients were presented with painless fleshy mass at conjunctiva encroaching towards cornea for more than 2 years. Foreign body sensation was present in 16 (80%) patients. Satisfactory result was observed in 23 patients (92%).

Key word: Pterygium, Conjunctival Autograft, Topical Anaesthesia

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Introduction

A pterygium is an ocular surface fibrovascular, wing-shaped encroachment onto the cornea associated with chronic ultraviolet light exposure^{1,2}. Pterygium is seen in all countries of the world but its prevalence is higher in a country like Bangladesh which is a part of "pterygium belt". The main histological change in pterygium is elastotic degeneration of conjunctival collagen⁴. Pterygium occurs mostly on the nasal side, which can be attributed to light coming to the temporal cornea and being focused on the nasal cornea⁵. As we know, conjunctival autograft (CAG) under local infiltrating anaesthesia is the gold standard in the management of primary pterygium⁶. Superior and inferior bulbar CAG has been effective, but it is difficult to obtain a thin graft from inferior bulbar

conjunctiva, so a superior donor site is preferable even under topical anaesthesia (Oxybuprocain Eye drop 0.4%). In non-operative treatment, low dose steroid with or without artificial tear eye drops are essential. Active treatment of pterygium consists of excision of pterygium with or without CAG or Amniotic membrane graft under infiltrating peribulbar anaesthesia or topical eye drops. MMC, fibrin glue could be used in lieu of suture. The aim and the objective of this study were to evaluate the outcome of topical anaesthesia in treatment of all types of pterygium.

Materials and Methods

This observational study was carried out at BNS Patenga during March 2017 to May 2018. All the patients to the eye out patient department of BNS Patenga are included in this

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study. On the basis of history, patients were selected for Pterygium operation. A Gold standard surgical technique⁶ was followed with a few modifications. 0.4% Oxybuprocain Hydrochloride was used as local topical anaesthesia. Head of the pterygium was avulsed from the corneal surface using a toothed forceps. The pterygium body and the underlying fibrovascular tissue were excised using conjunctival forcep and scissors. The corneal and limbal area were scraped clean of residual tissue with a crescent blade. The superior bulbar conjunctiva was selected as the donor site. Normal saline was injected subconjunctivally with 26G needle, which was useful for the good dissection of conjunctiva from Tenon's capsule. A small nick incision was made at the forniceal end using Vannas scissors. A thin conjunctival graft of adequate size was fashioned and was excised from the base using Vannas scissors. Changing the orientation of graft was placed on bare scleral defective area were secured with interrupted 10-0 monofilament nylon sutures. Adjunctive agents (MMC) or 5-fluorouracil were not used in this procedure⁷. Autografts were secured at the limbus with episclera and tenon capsule anchoring sutures superiorly and inferiorly and the remaining margin of graft was attached to conjunctiva with two or three interrupted sutures. Here limbus to limbus orientation was strictly maintained and complete covering of bare area was ensured. The eyes were patched overnight. Postoperatively, topical 0.1% dexamethasone phosphate, 0.5% moxifloxacin HCL and tear substitute 0.5% carboxymethyl cellulose were started 6 times daily for the 1st week and gradually tapered over 4 weeks. Patients were examined on postoperative day 1, day 7 and day 28. The data from each visit was analyzed and documented.

Results

On prospective observational study of 25 eyes with grade 2-4 and recurrent pterygium operated by gold standard technique of excision of pterygium with CAG under topical anaesthesia with limbus to limbus orientation, the following results were obtained. Age distribution of the patients showed that highest number of the patients 10 (40%) were in age group of 30 – 40 years. This was followed by the 10 (40%) patients were in age group of 40-50 years (Table-1). Out of 25 patients 20 (80%) were male and 5 (20%) were female. Male female ratio was 4:1. All the patients presented with fleshy mass at eye for long duration. Foreign body sensation, discomfort, mild pain and photophobia were also present. Out of 25 patients 8 (32%) patients were having Grade 1 and 6 (24%) patients were having Grade 2 pterygium and 7(28%)

patients were having Grade 3 and 2 (8%) patient was having Grade 4 and 2 (8%) patient was having recurrent pterygium. Distribution of patients according to the type of Pterygium. During and after the operation 22 (88%) patients had Sub Conjunctival Haemorrhage (SCH) and 20 (80%) patients had Edema, which resolves gradually after 10 days. Out of 25 patients satisfactory results were observed in 23 (92%) patients of whom 14 (56%) patients were having grade 1&2 pterygium and 8 (32%) patients were having grade 3 & 4 pterygium. CAG was observed more effective in patients with grade 1 and 2 pterygium ($p < 0.001$) compared to recurrent pterygium patients. Table 7 shows comparison of different techniques of single head pterygium surgery and their postoperative outcomes published in previous studies.

Table 1: Distribution of patients according to age group (n=25)

Age group (in years)	Number of patient	Percentage
30 – 40	10	40
40 – 50	10	40
50 – 60	5	20
Total	25	100

Table 2: Distribution of patients as per sex (n=25)

Sex	Number of patient	Percentage
Male	20	80
Female	05	20
Total	25	100

Table 3: Clinical presentation of the patient (n=25)

Clinical presentation	Number of patient	Percentage
Fleshy mass at eye	25	100
Foreign body sensation	12	48
Discomfort	10	40
Mild pain & photophobia	08	16

Table 4: Grading of Pterygium (n=25)

Type of pterygium	Number of patient	Percentage
Grade 1 pterygium	8	32
Grade 2 pterygium	6	24
Grade 3 pterygium	7	28
Grade 4 pterygium	2	8
Recurrent pterygium	2	8
Total	25	100

Table 5: Complications of excision and CAG

Complication	Number of patient	Percentage
Edema	20	80
SCH	22	88
Graft Retraction	02	8
Recurrence	01	4
Dellen	01	4
Tenon's granuloma	01	4

Table 6: Results of CAG under Topical anaesthesia

Type of Pterygium	No patients	Results	X2	P
Grade 1 &2	14	Satisfactory		<0.001
Grade 3&4	09	Satisfactory		
Recurrent Pterygium	02	Satisfactory		

Table-7: Results of CAG under Topical anaesthesia

Authors	Pterygium type	No of eyes	Surgery technique	Mean follow-up (month)	Recurrence rate (%)	Granuloma (%)	SCH (%)	Edema (%)
This study	Primary	25	Excision of pterygium with suture of CAG with limbus-limbus orientation	17.28±10.28	1/25(4)	1/25(4)	22/25 (88)	20/25 (80)
Hirst and Smallcombe [12]	Primary	20	PERFECT technique	12	0/20(0)	-	-	-
Solomon <i>et al</i>	Primary	11	Extensive pterygium excision with AMT	12.8±4.3	1/11(9)	-	-	-

Discussion

Pterygium surgery holds the possibility of recurrence as one of the major complications. The operative procedure of choice should aim to minimize the recurrence rate along with better visual cosmetic appearance. In this study, excision of Pterygium with CAG from superior quadrant is used and secured the graft with sutures with maintaining limbus to limbus orientation of bare scleral defects. Various options are available for the management of pterygium (single headed) is CAG with or without limbus to limbus orientation, superior and inferior bulbar CAG and AMT with local anaesthesia, but none of them has worldwide acceptance. Use of beta irradiation or thiotepa eye drops, antimetabolic drugs (MMC and 5-fluorouracil), fibrin glue and AMT have been used⁸. Various complications of MMC have been noted such as punctate keratopathy, scleral melt, corneal melting⁹. Amniotic membrane is costly, requires preservation and availability is an issue. Previous studies have reported higher recurrence rate with AMT compared to conjunctival grafting¹⁰. Fibrin glue for securing graft gives advantages of easy fixation and better postoperative comfort, but it has high cost and risk of transmission of infectious agents such as parvovirus B19 and prion¹¹. Most recently, a new technique named "pterygium extended removal followed by extended conjunctival transplant" perfect for double-head pterygium was published by Hirst and Smallcombe and showed

excellent cosmetic results with no recurrence rate in 20 eyes at 1 year follow up¹². In general the pterygium recurrence occurs within the first 3 months after surgery¹³. In this study the overall rate of recurrence was 4% (01 out of 25 eyes) which was comparable to other published studies. Previous studies mentioned suture-related complications such as infection, prolonged operation time, local anaesthesia related postoperative discomfort which can sometimes require second surgery^{14,15}. The eye which had recurrence might have developed excessive graft retraction due to early loose suture cutting from nonlimbal end at 1 week follow up, leading to graft loose at 6 weeks, and eventually recurrence at 3 month follow up. In a study a Solomon *et al.* with technique of pterygium excision with AMT, the recurrence rate was 9%¹⁶. Similarly this study shows comparable rate of 33.33 % (1 out of 3 eyes) in primary pterygium¹⁷. Previous studies reported that limbal stem cells act as a barrier between the conjunctiva and corneal epithelium and destruction of this barrier leads to growth of conjunctival tissue on the cornea^{18,19}. However, in our study, adequate size graft, enough to cover the bare scleral defect with maintaining limbus-limbus orientation, had still lower recurrence rate comparable to other studies. Conjunctival graft retraction occurred in 8% (2 out of 25 eyes). The eyes with retraction at 6 weeks resolved without any intervention at subsequent follow ups. Graft retraction could be due to inclusion of Tenon's in the graft and can be minimized by meticulous dissection of subepithelial graft tissue¹⁵. Furthermore, suture cutting early in the postoperative period may lead to graft retraction. Graft edema was observed in 80%(20 out of 25 eyes) patients which could be due to excessive handling of the graft. Graft edema subsided without any intervention at the end of 1 to 2 weeks. Graft edema and sub-conjunctival hemorrhage was the most common outcome of the study. Mutluet al. reported that the most frequent complication in limbal CAG transplantation was graft edema and SCH²⁰. The study had 4% (1 out of 25 eyes) of Tenon's granuloma, which may be due to inadequate excision of Tenon's tissue from donor bed. Previously published studies advocated this due to friction of the exposed Tenon's tissue with upper eyelid during blinking eventually leading to granuloma formation^{21,22}.

Conclusion

This study had certain limitations, being nonrandomized. The cases had very low recurrence rate. This technique modified with other methods such as use of fibrin glue instead of sutures would definitely reduce postoperative discomfort and irritation with lesser surgical time. Easy of application procedure, lack of toxicity and sufficient effect to complete the surgery make it as effective alteration to injectable anaesthesia. In summary, under topical anaesthesia CAG with limbus to limbus orientation, just large enough to cover the bare scleral defect, appears to be successful technique with lower recurrence rate in treating single-head pterygium.

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Death profiling of electrocuted victims in and around Dhaka City

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Abstract

Background : Minimum attention is given to electrocution related fatalities as we hardly come across these cases during autopsy. They can be prevented by adopting safety measures and public awareness. **Methods :** A retrospective postmortem based study of three years conducted by history of each cases, Police inquest report and by doing autopsy at Sir Salimullah Medical College Mortuary. **Results :** A total of 90 cases of electrocuted victims comprising 0.86% of the total 10400 autopsies. Male victims i.e 73 (81.11%) outnumbered the 17 females(18.88%). The highest affected age group was 21-30 years i.e 50 cases (55.55%) followed by 31-40 years i.e 25 cases (27.77%) and 11-20 years and 41-50 years respectively i.e 6 cases (6.66%). The most common places of electrocution were home i.e in 52 cases (57.77%) followed by other places in 24 cases (26.66%) and working places in 14 cases (15.55%). Home appliances i.e in 56 cases (62.22%) were the commonest causative agent followed by water pumps and high tension wires. We observed most of the incidences from the month of July to September i.e 43 cases (47.77%) followed by April to June 24 cases (26.66%), January to March 13 cases (14.44%) and October to December 10 cases (11.11%). Most of the electrocutions occurred at day time i.e 59 cases (65.55%) followed by night time 31 cases (34.44%). Upper limbs i.e in 73 cases (81.11%) were the mostly involved body part followed by lower limbs in 32 cases (35.55%), head-neck in 5 cases (5.55%), trunk in 4 cases (4.44%) and whole body in 3 cases (3.33%). We observed burns in 55 cases (61.11%) and contact wounds in 48 cases (53.33%). All cases of electrocution i.e 90 cases were of accidental in nature.

Conclusion : Electrocution accounts for a minor proportion among all other unnatural deaths annually which are truly preventable.

Key words : Electrical injury, electrocution, death, autopsy

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Introduction

Use of electricity is almost universal^{1,2,3}. Although the commercial use of electricity as a source of power began in 1849⁴. Electricity is such an integral part of life, that it is hard to imagine life without it. But, with the advantages and convenience of electricity come the hazards as well. Sometimes, the use of electricity may result in cases of morbidity or mortality^{5,6}. The passage of substantial electric current through the tissues can cause skin lesions, organ damage and death. This injury is commonly called "electrocution"⁷. Injuries caused by electrocution respect all the known laws of physics and thus are predictable in their manifestations under different physical conditions⁸. Electricity energy may be generated spontaneously in the nature by lightning or artificially in the form of electric current. Electric current generated artificially could be of two types, direct (DC) and alternating (AC)⁹. Contrary to the popular belief alternating current is more dangerous than direct current¹⁰. Electricity is now-a-days used widely and extensively in household, industrial and transport purposes; thus even when millions of the population become exposed

to its danger, yet the fatality or mortality is very negligible¹¹. Electrical injuries occur due to high tension wires falling on the ground or the person; short circuit of electricity; faulty electrical appliances like iron, heater etc.¹². Clinical manifestations range from transient unpleasant sensations without apparent injury to massive tissue damage. Some electrocutions are instantly fatal¹³. Electrical deaths can occur in any of several ways depending upon the type and magnitude of the electric current that the victim is exposed to¹⁴. Cause of death due to electrocution includes ventricular fibrillation, inhibition of the respiratory center in the brain and sometimes due to complications of electrical injury such as infection, burns, wounds etc¹⁵. Deaths due to electric shock are subjected to medico legal autopsies¹⁶. Most of the deaths are accidental as the person comes under contact with the electric source¹⁷. Due to good safety measures accidental deaths are rare in other parts of the world, though rarely they do occur⁵. In Western countries, however, suicides by electrocution do occur^{18,19,20,21}. Due to rapid expansion and use of electricity, and less awareness of safety issues in low income countries electrical injuries are becoming an

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emerging health problem. To describe the magnitude and nature of burn with electrocution, a number of papers have been published^{22,23,24}. This study was conducted to evaluate the injury patterns and medico legal point of view of death due to fatal electrocution. Aims and objectives are to determine the socio-demographic pattern of the electrocuted victims in brief, to evaluate the injury patterns, seasonal and diurnal variations of the cases, to evaluate the forensic profiling of death resulting from fatal electrocution

Materials and Methods

This is a retrospective cross sectional study of three years from 1st January 2015 to 31st December 2017 conducted at Sir Salimullah Medical College Mortuary which revealed 90 (0.86%) electrocuted victims of the total 10400 postmortem examinations. All of these cases were brought for medico legal autopsy. Information regarding age, sex, residence, date & time of incidence, date & time of death were collected from Police inquest reports, Case files and Hospital records which were then compiled, tabulated and systematically analyzed.

Results

In table 1 it was observed 90 cases (0.86%) of fatal electrocution of the total 10400 medico legal autopsies. Maximum cases were observed in the year 2017 i.e 39 cases (1.05%) followed by 29 cases (0.84%) in 2016 and 22 cases (0.67%) in 2015. This observation clearly reflects an annual increase in the total number of death due to electrocution. In table 2 shows male victims i.e in 73 cases (81.11%) outnumbered the female victims i.e 17 cases (18.88%) of the total 90 cases of electrocution. In 2015, there were 15 (68.18%) male victims and 7 (31.81%) female victims of the total 22 cases. In 2016, we observed 23 (79.31%) male victims and only 6 (20.68%) female victims of the total 29 electrocuted victims. And in 2017, there were 35 (89.74%) male victims and only 4 (10.25%) female victims of the total 39 cases of fatal electrocution. In figure1 shows that most affected age group was 21-30 years i.e 50 cases (55.55%) followed by 25 victims (27.77%) from 31-40 years, 6 victims (6.66%) each from the age group 11-20 years and 41-50 years, 3 victims (33.33%) from 50 years & above. There were exactly no electrocuted victims from the age group 1-10 years. Figure 2 shows that as per our observation, most of the cases of electrocution occurred at home i.e in 53 cases (57.77%) followed by other places in 24 cases (26.66%) and working places in 14 cases (15.55%) out of the total 90 cases of electrocution. Figure 3 shows that regarding causative agent of electrocution, our study revealed in most of the cases home appliances i.e in 56 cases (62.22%) were the prime

causative agent followed by water pump in 18 cases (20%) and high tension wires in 16 cases (17.77%) out of the total 90 electrocuted victims. Table 3 shows cases of death due to electrocution were higher during the season of monsoon i.e 43 cases (47.77%) between July to September followed by 24 cases (26.66%) between April and June, 13 cases (14.44%) between January and March & 10 cases (11.11%) between October and December. Maximum electrocution took place during daytime i.e in 59 cases (65.55%) between 7:00 AM to 7:00 PM while in 31 cases (34.44%) electrocution occurred at night i.e between 7:00 PM to 7:00 AM. Table 4 shows upper limbs (73 cases/81.11%) were the most commonly involved body parts followed by lowe limbs (32 cases/35.55%), head-neck (5 cases/5.55%), trunk (4 cases/4.44%) and whole body (3 cases/3.33%). Table 5 shows type of electric injury, our study revealed 55 (61.11%) flame burns and 48 (53.33%) contact electrical wounds. Table 6 shows manner of death, we observed all cases of death due to electrocution were of accidental, while we observed no cases of homicidal or suicidal electrocution.

Table 1 : Year-wise distribution of the electrocution deaths

Year	Total No of Autopsies	No of cases of electrocution	Percentage
2015	3256	22	0.67
2016	3434	29	0.84
2017	3710	39	1.05
Total	10400	90	0.86

Table 2 : Sex-wise distribution of electrocuted victims (N=90)

Year	Total No of Autopsies	No of cases of electrocution	Percentage
2015	22	15 (68.18%)	7 (31.81)
2016	29	23 (79.31%)	6 (20.68)
2017	39	35 (89.74%)	4 (10.25)
Total	90	73 (81.11%)	17 (18.88)

Figure 1: Age-wise distribution of the electrocuted victims (N=90)

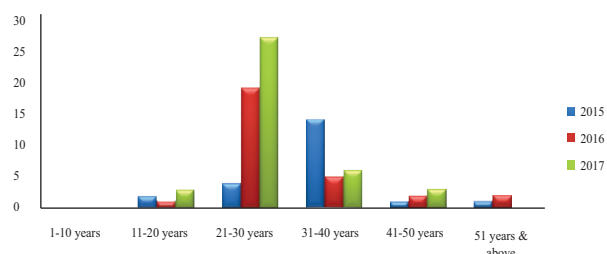


Figure 2: Place of Occurrence (N=90)

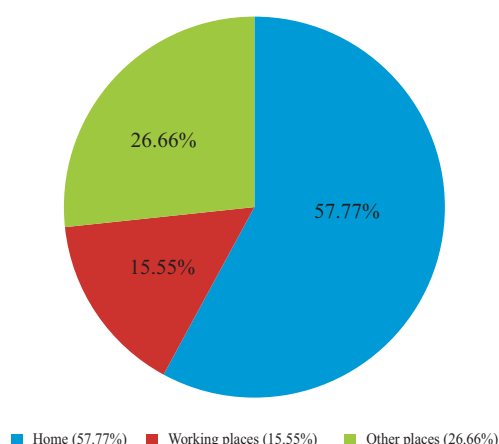


Figure 3: Causative agents of electrocution (N=90)

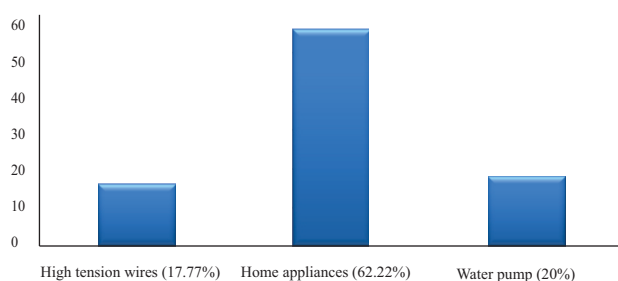


Table 3 : Seasonal and diurnal variations in death due to electrocution (N=90)

Month of incidence	During daytime (7 AM to 7 PM)	During nighttime (7 PM to 7 AM)	Total
January to March	6 (6.66%)	7 (7.77%)	13 (14.44)
April to June	19 (21.11%)	5 (5.55%)	24 (26.66)
July to September	26 (28.88%)	17 (18.88%)	43 (47.77)
October to December	8 (8.88%)	2 (2.22%)	10 (11.11)
Total	59 (65.55%)	31 (34.44%)	90 (100)

Table 4 : Distribution of cases according to involvement with body parts

Part of the body	Head-neck	Upper limbs	Lower limbs	Trunk	Whole body
Number of cases and Percentage%	5 (5.55%)	73 (81.11%)	32 (35.55%)	4 (4.44%)	3 (3.33)

Table 5 : Distribution of cases in relation to type of electric injury

Type of electric injury	Contact wounds	Flame burns
Number of the cases & percentage%	48 (53.33%)	55 (61.11)

Table 6 : Distribution of manner of death due to electrocution (N=90)

Manner of death	Number	Percentage
Accidental	90	100
Suicidal	0	0
Homicidal	0	0
Total	90	100

Discussion

Our study revealed 90 electrocuted victims (0.86%) out of the total 10400 autopsies in the three year study period. Most of the cases were observed in the year 2017 i.e 39 cases (1.05%) followed by 29 cases (0.84%) in 2016 and 22 cases (0.67%) in 2015. It signifies a yearly increase in the total number of electrocuted victims. Similar study revealed 43 cases (1.45%) of electrocution in the year 2002 out of the total 3034 autopsies and in the year 2001 there were 34 cases (1.28%) of the total 2722 medico legal autopsies²⁵. Sex-wise distribution revealed 73 (81.11%) male victims outnumbered the females i.e 17 vicims (18.88%) of the total 90 electrocuted victims. Similar overseas study revealed 30 (88%) male victims and 4 (12%) female victims of the total 34 electrocuted victims in the year 2001 and 38 (88%) male victims and 5 (12%) female victims of the total 43 cases of electrocution fatalities²⁵. Most of the cases were from the age group 21-30 years i.e 50 cases (55.55%) followed by 25 cases (27.77%) from 31-40 years, 6 cases each (6.66%) from the age group 11-20 years & 41-50 years respectively and only 3 cases (3.33%) from the age group 51 years & above. We found no electrocuted victims from the age group 1-10 years in our study. Similar study revealed 10 cases from the age group 21-30 years followed by 5 cases from 31-40 years, 4 cases from 41-50 years and 3 cases each from the age group 11-20 years and 51 years and above. There were also no cases of electrocuted victims observed from the age group 1-10 years²⁶. Our study revealed, maximum cases of electrocution took place in the house i.e in 52 cases (57.77%) followed by other places in 24 cases (26.66%) and working places in 14 cases (15.55%) of the total 90 cases of electrocution. Another overseas study revealed 56 cases (70%) of electrocution occurred in the house followed by working places in 14 cases (17.5%) & other places in 10 cases accounting for 12.4% of the total 80 cases of electrocution²⁷. Home appliances in 56 cases (62.22%) were the commonest causative agent of electrocution followed by water pumps in 18 cases (20%) and high tension wires in 16 cases (17.77%). While similar Indian study revealed commonest causative agents were high tension wires (60%) followed by home appliances (28%) and water pumps (12%)²⁶. Cases of electrocution were maximum

during the season of monsoon i.e we observed 43 cases (47.77%) from the month of July to September, 24 cases (26.66%) from April to June, 13 cases (14.44%) from January to March and only 10 cases (11.11%) from October to December. Most of the cases of electrocution took place by the day i.e 59 cases (65.55%) and 31 cases (34.44%) of the total 90 cases of electrocution. While similar overseas study revealed, maximum cases of electrocution i.e 38 cases (47.5%) took place from the month of July to September followed by 15 cases each (18.7%) from January to March & April to June, and 12 cases (15%) from October to December. Most incidences Occurred at day time i.e in 56 cases (70%) and the remaining 24 cases (30%) occurred at night²⁷. In our study upper limbs i.e in 73 cases (81.11%) were the commonest body parts to be involved followed by the lower limbs in 32 cases (53.55%), head-neck in 5 cases (5.55%), trunk in 4 cases (4.44%) and the whole body in 3 cases (3.33%) of the total cases of electrocution. Similar overseas study revealed upper limbs in 41 cases (51.2%) followed by lower limbs in 31 cases (38.7%), whole body in 25 cases (31.2%), trunk in 17 cases (21.2%), and head-neck in 7 cases (8.7%) were the involved body parts in fatal electrocution²⁷. In relation to type of electric injury our study revealed 55 (61.11%) flame burns and 48 (53.33%) contact wounds. Whereas Similar foreign study revealed 52 (65%) flame burns and 41 (51.2%) contact wounds²⁷. Our study revealed all the cases of electrocution i.e 90 cases were of accidental. We observed no homicidal or suicidal cases. In the Western World, accidental deaths caused by electrocution are not common owing to the good safety measures and high level of awareness²⁸. Although accidental electrocutions are reported rarely in the developed countries, electrocution takes place among leading causes of occupational deaths in the United States with an average of one death per day in the work place^{29,30}. A study from South Australia reported an average of 3.2 electrical deaths per year³¹. In Sweden, accidental electrocutions have been on a decreasing trend over 25 years, proving that preventive strategies to reduce electricity related fatalities were effective³². However, many cases of suicides³³ as well as homicides³⁴ are also reported. It is in contrast to studies done in West where suicidal cases were as high as 2/3rd³⁵.

Conclusion

Electrocution can produce various effects on the human body ranging from localized muscular spasm to instantaneous death of the electrocuted victims. All cases of electrocution related death should be properly investigated if there is question for compensation or insurance and for the future safety measures. The mortality rate in electrocution can be

cut down by immediate resuscitation as the victims often remain in the state of suspended animation. Public awareness and adopting good safety measures can play an important role in the prevention of fatal electrocution in the future.

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Visual Outcome of Nd: YAG Laser Capsulotomy in Posterior Capsular Opacity

Mizanur Rahman Molla¹, M Anwer Hossain², Mohammad Shakil³, Tahmina Akter⁴

Abstract

Background: Posterior capsular opacification (PCO) is a common late sequel of uncomplicated modern cataract surgery. Neodymium yttrium aluminum garnet (Nd:YAG) laser capsulotomy is a relatively noninvasive procedure that is used in the treatment of posterior capsular opacification (PCO). PCO is caused by proliferation of lens epithelial cells which causes fibrotic changes and wrinkling of the posterior capsule and results in decreased vision, glare, and other symptoms similar to that of the original cataract. **Objective:** To find out the visual outcome after performing Nd:YAG laser capsulotomy for PCO. **Materials and method:** This Prospective, observational study was performed in the department of ophthalmology at Combined Military Hospital Dhaka between Jul 2013 to Dec 2013 on purposively selected 50 adult subjects of both sexes who developed PCO within 2 months to more than 2 years after extracapsular cataract extraction with posterior chamber intra ocular lens implant. After thorough pre laser assessment Nd:YAG laser capsulotomy was carried out with Zeiss VISULAS YAG II through Zeiss slit lamp under topical anesthesia. Data were recorded and expressed as proportion. **Results:** Out of the 50 subjects 31 were male and 19 were female. Mean age was 63.5 ± 7.5 years for male patients and for female patients 65.5 ± 8.5 . Mean time to develop PCO was 12 months in 68% patient and 25 months in 32% patients and maximum patients had mild thickness 25 patients (50%). About fifty percent patients (48%) capsulotomy was successfully done with a total of 5-20 pulses with energy setting 1.0-1.50 mJ/pulse (50%). After 7 days of capsulotomy, two third of the patients (66%) gained 6/12 or better vision and after 30 days eighty percent patients visual acuity improved to 6/12 with refractive correction. In case of near vision about two third of the patients (64%) vision improve N_8 to N_{10} after 7 days without near vision correction and more than half of the patients with spectacle correction further improvement of near vision improve N_5 to N_6 after 30 days. **Conclusion:** Nd:YAG laser capsulotomy for PCO is safe, effective and a rewarding procedure for improvement of vision.

Key words: Nd:YAG laser capsulotomy, posterior capsular opacification, visual acuity

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Introduction

Visual Impairment is recognized as a global significant health problem which has a serious impact on the personal, economic, and social life of an individual. The World Health Organization has estimated that globally about 314 million people are visually impaired and among these the blind people are 45 million. The leading cause of visual impairment and blindness worldwide remains the cataract in both developed and developing countries in spite of the development in its surgical management.¹ Secondary cataract, also known as posterior capsule opacification (PCO), is the most common complication after cataract surgery, resulting from migration and proliferation of residual lens epithelial cells (LECs) onto the central posterior capsule, leading to decrease in visual function and ultimately in visual acuity. Unfortunately, PCO develops in a significant proportion of patients to such an extent that a

secondary loss of vision occurs.² Posterior capsular opacification of initially clear posterior capsule occurs frequently in patients after extra capsular cataract extraction of senile cataracts. In adults, the time from surgery to visually significant opacification varies from months to years and the rate of opacification declines with increasing age. The incidence of PCO is in the range of 18 – 50% in adults followed for 5 years. In infants and juveniles, an opacification rate of 44% was found within 3 months of surgery after in the bag intraocular lens (IOL) implantation with an intact posterior capsule.³ Nd:YAG laser capsulotomy has been the standard modality for treating PCO for over three decades. Over the last two decades the rate of Nd:YAG laser capsulotomy has decreased significantly occurring mainly to the transition from conventional extra capsular cataract extraction to phacoemulsification. But still whenever PCO is encountered, there is no option other than

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Nd:YAG laser posterior capsulotomy. It is an easily manageable outdoor procedure and has largely replaced the invasive surgical capsulotomy. Its indication is usually optical but can be performed for therapeutic purpose e.g. in the case of fibrotic exudative membrane formation, capsularphimosis and exudates on the anterior surface of lens. Its efficacy in terms of visual improvement is well appreciated over the years. Apart from the benefits of Nd:YAG laser capsulotomy, there is a risk of associated complications varying from harmless pitting of IOL to a sight threatening retinal detachment.⁴ Bangladesh is part of the South East Asia region of the World Health Organization, which comprises a quarter of the world's population, but is estimated to comprise a third of the world's 45 million blind. Cataract is responsible for 50–80% of blindness in this region. Low cataract surgical output (in some countries), combined with a rapid expansion of the population, particularly of the elderly, has led to an ever increasing cataract backlog.⁵ In this study Nd:YAG laser posterior capsulotomy is a routine procedure for managing PCO, so its merits and limitations should be addressed. This study is designed to see the visual improvement and related early complications after Nd:YAG laser posterior capsulotomy.

Material and Methods

This Prospective, observational study was performed in the department of ophthalmology at Combined Military Hospital Dhaka between Jul 2013 to Dec 2013. Informed written consent was taken from all study subjects after full explanation of the nature, purpose and potential risk of all procedures needed for the study. The tenets of the declaration of Helsinki were observed. BCPS ethical committee approval was obtained. In this study, a total number of 50 patients were examined. Significant result may be achieved by examining these patients. Research procedure may be convenient, less time consuming. Inclusion criteria: Either sex, Either eye, Patient suffering from PCO, 50 years to 80 years of age, VA- 6/12 to HM. Exclusion criteria: Corneal opacity, History of glaucoma, Vitreous opacity, Macular diseases, Optic nerve diseases, Patient unable or unwilling to fixate adequately for the procedure, Age: Below 50 years and above 80 years, Patient with cataract surgery less than 06 months, Cognitive disorder or psychiatric patient. Diagnosis of posterior capsule opacification was made from the symptoms presented by the patients and signs found during examination by an ophthalmologist. Symptoms of reduction of vision, glare or complain that seems that the cataract had returned and sign of loss of posterior capsule transparency detected either with an ophthalmoscope or retinoscope that confirmed by slit lamp biomicroscopy under dilated pupil

was taken as diagnostic. An arbitrary classification was made for thickness of the posterior capsule opacification as mild, moderate and dense using visual acuity, slit lamp examination and funduscopy. A proforma was prepared to record the data on particulars of the patients, pre-laser and post-laser assessment of the patients. The pre-laser ophthalmic evaluation includes a history and complete ocular examinations. None of the patients received any anti-inflammatory or hypotensive agents prior to laser surgery. Topical surface anesthesia (0.4% Oxybuprocaine HCl) was used in each patient before laser therapy. Tropicamide 1.0% eye drop was used to dilate the pupil half an hour prior to laser in a dose of 3 times at 10 minutes interval. Acetazolamide 250mg tablet was given to each patient just after the laser capsulotomy as a routine practice. Tropicamide 1% eye drop for 7 days and dexamethasone eye drop 0.3% for one week and tablet acetazolamide 250mg one tablet twice daily along tablet potassium chloride 600mg twice daily for 3 days was also given to every patient. An Abraham Capsulotomy Nd: YAG Laser contact lens with Methyl Cellulose visco-elastic substance was used in all cases. A slit lamp laser delivery performed after helium-neon aiming beam was clearly brought into focus. The pulse energy threshold for puncture of the posterior capsule was given 1.0 – 3.0 mJ/pulse. To puncture the posterior capsule, the surgeon used the lowest effective energy output setting. Higher energy level was required for area of dense fibrosis. Number of pulse required for each patient was also recorded. Capsulotomy was performed by applying a series of puncture either a cruciate pattern or circular pattern with the puncture aimed at the visual axis. An opening about 2.5mm to 3.0mm was created to improve the vision. The pre laser and post laser visual acuity for distant vision was measured with Snellen's test type and for near vision with printers type of 'N' series. Pre laser visual acuity was taken just before the laser given and post laser visual acuity was taken at least one week after the capsulotomy. A retinoscopic examination was done at least one month after the laser given to find out the best corrected visual acuity. Any complication found in relation to the laser capsulotomy was properly managed. Pre and post laser visual acuity was compared in the study.

Results

A total 50 patients were taken as sample of the study, of which 31 were males and 19 were females. Sixty eight percent patients underwent small incision cataract surgery (SICS) with PCIOL implantation and 32% patients underwent phacoemulsification (phaco) with PCIOL implantation. Fifty percent of the patients had mild, 36% moderate and 14% densely thickness of PCO. Thirty six

percent patients had pre-capsulotomy visual acuity 6/36 to 6/60, 30% patients had 6/18 to 6/24, 20% patients had 6/12 and 14% patients had <6/60. After seven days of capsulotomy 66% patients gained 6/12 or better vision. Visual acuity improved to 6/12 or better in 80% of patients with optical correction after thirty days. On the other hand, 50% patients had pre-capsulotomy near vision < N₁₀, 30% patients had N₁₀ and 20% patients had N₈. After 7 days of capsulotomy near vision improved in 40%, 32%, 24% & 4% patients to N₁₀, <N₁₀, N₈ & N₆ respectively without spectacle correction. After 30 days of capsulotomy near vision improved with correction in 36%, 24%, 20% 14% & 6% patients to N₆, N₈, N₅, N₁₀ & <N₁₀ respectively. We used the Nd: YAG laser to perform posterior capsulotomies on 50 eyes of 50 patients that had undergone extracapsular cataract extraction. A total number of 50 eyes of 50 patients (n) were included in the study. There were 31 (62%) male and 19 (38%) female patients. A total number of 50 eyes of 50 patients (n) were included in the study. Mean age was 63.5±7.5 years (range 50 to 80 years) for male patients was 62.5 ± 7 and for female patients 65.5 ± 8.5. A total number of 50 eyes of 50 patients (n) were included in the study. Mean age was 63.5±7.5 years (range 50 to 80 years) for male patients was 62.5 ± 7 and for female patients 65.5 ± 8.5. A total 34 patients (68%) underwent manual Small Incision Cataract Surgery with Posterior Chamber Intraocular Lens Implantation (SICS+PCIOL) and 16 patients (32%) underwent Phacoemulsification with posterior chamber Intraocular lens implantation (Phaco+PCIOL). Maximum patients had mild thickness 25 patients (50%), then followed by moderate thickness 18 patients (36%) and densely thick opacification 7 patients (14%) was found. Table 3 shows the laser energy settings and total number of pulses required to perforate posterior capsule. 25 patients (50%) needed laser energy setting 1.0-1.50 mJ/pulse. Another 25 patients (50%) needed more than 1.50 mJ/pulse. In 24 patients (48%) capsulotomy was successfully done with a total of 5-20 pulses, 14 patients (28%) required 21-30 Pulse and 12 patients (24%) required more than 30 pulses. In 10 patients (20%) had pre-capsulotomy visual acuity 6/12, 15 patients (30%) had 6/18 to 6/24, 18 patients (36%) had 6/36 to 6/60 and 7 patients (14%) had <6/60. After 7 days of capsulotomy, 33 patients (66%) gained 6/12 or better vision. Visual acuity improved to 6/12 or better in 40 patients (80%) after 30 days with refractive correction. In case of near vision 25 patients (50%) had pre- capsulotomy near vision less than N₁₀ and 10 patients (20%) had N₈. After Nd: YAG laser capsulotomy 2 patients (4%) improved near vision to N₆. In 12 Patients (24%), and 20 patients (40%) vision improve to N₈ and N₁₀ respectively after 7 days without near vision correction.

However with spectacle correction further improvement of near vision found after 30 days and it was 10(20%), 18(36%), 12(24%) and 7(14%) patients to N₅, N₆, N₈ and N₁₀ respectively. Failure of vision to improve following laser capsulotomy were found in 3(6%) patients who had pre capsulotomy vision <N₁₀.

Figure 1: Sex distribution of the respondents. (n- 50)

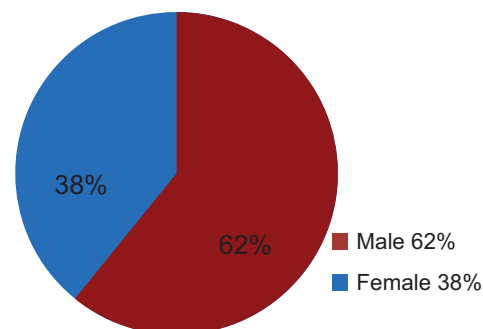


Table 1: Mean age distribution of the respondents. (n- 50)

mean age ± SD (year)		
All patient	Male	Female
63.5 ± 7.5	62.5 ± 7	65 ± 8.5

Table 2: Type of Operation & Mean time to develop PCO of the respondents. (n- 50)

Type of Operation	PCO (Number of Patients)	Percentage	Mean time to develop PCO (Month)
SICS with PCIOL	34	68%	12
Phaco with PCIOL	16	32%	25

Figure 2: Thickness of PCO of the respondents. (n- 50)

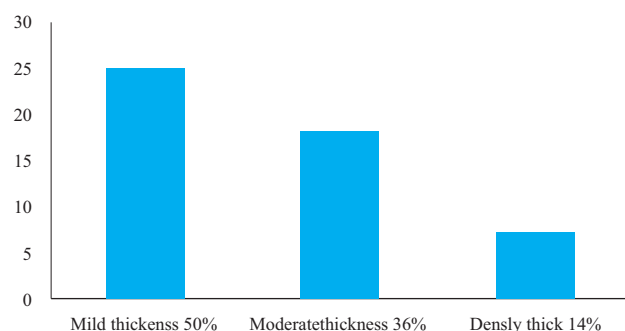


Table 3: Laser energy setting for Nd: YAG laser capsulotomy of the respondents.(n- 50)

Energy setting	Number of patients	(%)
1.0 mJ/Pulse	6	12
1.5 mJ/Pulse	19	38
2.0 mJ/Pulse	15	30
2.5 mJ/Pulse	6	12
3.0 mJ/Pulse	4	8

Table 4: Total number of pulses used for Nd: YAG laser capsulotomy of the respondents. (n- 50)

Number of Pulses	Number of patients	(%)
5-10 Pulse	8	16
11-20 Pulse	16	32
21-30 Pulse	14	28
31-40 Pulse	10	20
>40 Pulse	2	4

Table 5: Pre-laser visual acuity and post-laser visual acuity after 7 days and after 30 days (with best correction) of the respondents.(n- 50).

Visual acuity	Pre-laser		Post-laser after 7 days		Post-laser after 30 days with correction	
	N	%	N	%	N	%
6/6	Nil		7	14	10	20
6/9	Nil		9	18	18	36
6/12	10	20	17	34	12	24
6/18-6/24	15	30	8	16	5	10
6/36-6/60	18	36	5	10	3	6
<6/60	7	14	4	8	2	4

Table 6: Pre-laser near vision and post-laser with corrected near vision

Visual acuity	Pre-laser		Post-laser after 7 days		Post-laser after 30 days with correction	
	N	%	N	%	N	%
N ₅	Nil		Nil		10	20
N ₆	Nil		2	4	18	36
N ₈	10	20	12	24	12	24
N ₁₀	15	30	20	40	7	14
<N ₁₀	25	50	16	32	3	6

Discussion

Posterior capsule opacification is a major complication following cataract surgery, its incidence was found to be 20.7% at two years and increased to 28.5% at five years after cataract surgery. Although Nd:YAG laser capsulotomy has

been found to be the effective and safe treatment for PCO, it may affect the position of the IOL. In addition, the basic goal of Nd :YAG laser capsulotomy is increasing visual acuity, however, it is very important to improve contrast sensitivity and decrease disability.⁶ This Prospective, observational study was performed in the department of ophthalmology at Combined Military Hospital Dhaka between Jul 2013 to Dec 2013. A total number of 50 eyes of 50 patients (n) were included in the study. There were 31 (62%) male and 19 (38%) female patients. Mean age was 63.5±7.5 years (range 50 to 80 years). More than two third patients (68%) underwent Manual Small Incision Cataract Surgery with Posterior Chamber Intraocular Lens Implantation (SICS+PCIOL) where PMMA IOL was used and one third patients (32%) underwent Phacoemulsification with posterior chamber Intra ocular lens implantation (Phaco+PCIOL) where acrylic IOL was used. About one forth patients development of PCO causing significant visual symptom within 06 months to 1 year (24%), less than one third patients 1 year to 2 year (30%) and maximum patients development of PCO more than 2 years (46%) since cataract operation. In concern to capsular thickness half of the patients had Mild thickness (50%), followed by moderate thickness (36%) and densely thick opacification (14%). It was evident that a good number of patient gained better vision after seven days of capsulotomy. The vision has further improved after 30 days of operation. In concern to distant vision 10 patients (20%) had pre-capsulotomy visual acuity 6/12, 15 patients (30%) had 6/18 to 6/24, 18 patients (36%) had 6/36 to 6/60 and 7 patients (14%) had <6/60. After 7 days of capsulotomy, 33 patients (66%) gained 6/12 or better vision. Visual acuity improved to 6/12 in 40 patients (80%) after 30 days with refractive correction. The visual improvement co-relates with the findings of other studies. In a study of 70 patients by Khaleda Nazneen Bari found that The pre laser visual acuity (VA) of more than 61.06% of eyes was 6/36 or below while 41.12% had VA hand movements to finger count. After Nd:YAG laser capsulotomy VA of 6/18 or better was achieved in 63.9% of eyes while 9.94% recovered to 6/9 and 11.36% achieved 6/6⁷. Another study of 58 patients by Mohammad Younas Khan found that the pre laser VA of more than 70% of eyes was 6/36 or below while 44.8% had VA of hand movements or finger count. Visual acuity of 6/18 or better was achieved in 60.2% of eyes while 12.0% recovered to 6/9 and 3.4% achieved 6/6⁸. The visual improvement co-relates with Gantela Sirisha1, 500 patients the best corrected visual acuity of 6/9 – 6/6 was achieved in 328 patients (65.6%) and 6/12 – 6/18 in 163 patients (32.6%); 98% of the patients achieved improvement of visual acuity of more than 2 lines⁹.

Prevention Of Posterior Capsular Opacity

As yet no treatment prevents the development of PCO with a 100% success rate, the following steps can reduce the incidence of PCO.

- * IOL with sharp optic edges (square edge) should be preferred
- * New generation of IOLs should be used (Hydrophilic IOLs tend to have higher PCO and silicon IOLs have lower PCO Score)
- * Cleaning of capsular bag as much as possible during surgery.
- * Increasing the use of corticosteroids during the post-operative periods of 6 weeks.

Conclusion

Nd: YAG laser capsulotomy is a safe and effective method to treat PCO. It is non-invasive and avoids all the complications associated with surgical capsulotomy and local anaesthesia.

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Knowledge, Attitude and Practice of Chikungunya among the Resident of Dhaka city

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Abstract

Introduction: Fever due to *Aedes aegypti* causes a serious and emerging public health problem in and around the urban and sub urban areas of Bangladesh. Out of many viruses, Chikungunya virus is the most rapidly spreading virus and important for medical health perspectives. **Background:** Chikungunya is a known vector borne disease. *Aedes* mosquito are responsible for causing it. It is noted early in many countries. **Objective:** The objective of this study is to find out the knowledge, attitudes and practices of Chikungunya along with the socio-demographic variables of the resident in a area of Dhaka city. This is a cross-sectional descriptive type study with a sample size of 395 respondents at Uttara area within 4 months period (November 2017 to February 2018) in Dhaka city. **Result:** The study result shows-respondents are mostly adult (26.1%) of 20-30 years age group, females are more (57.5%), mostly housewives (36.2%). Married (68.6%), majorities educational level are SSC (23%), income (31.1%) are within 20000-30000 taka, Muslims 94.2%. Only 21.8% are suffered from Chikungunya. Regarding knowledge-respondents agreed (90.9%) caused by mosquito bites. Bite by *Aedes* 49.1%, others 50.9%. Daytime bite 54.4%, and 45.6% at night. Stagnant water 51.39% are the breeding place, usually in rainy season 54.2%. Common symptoms are fever (86.6%) and joint pain (10.6%). Regarding attitudes-respondents are aware about government program (74.7%), get information from television (64.8%), 12.7% from newspaper and social media. Majority agreed it is a serious disease (74.9%) and can be preventable (74.93%), management (44.8%) can be done both by government and people. Regarding practices-majority (89.1%) regularly checked mosquito breeding sites in and around their houses. They do not allow (90.9%) water to collect in tiers, broken pots. They used bed nets (75.7%) for personal protection. Mostly had bed nets (95.9%) but only 19.5% slept under it at daytime, whereas 80.5% not used it at day time. **Conclusion:** So, from above findings conclusion seems respondents have lots of awareness about Chikungunya. It is totally a preventable and curable disease. We just need to practice using curtains and cleaning our surroundings, homes and environment.

Key Word: Chikungunya, Mosquito, Virus.

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<https://www.amccomilla.edu.bd/jamcu>

Introduction

Chikungunya virus or the CHIK virus in short, is an RNA virus that belongs to the Alphavirus genus of the *Togaviridae* family. The letter comprising a number of viruses that are mostly transmitted by arthropods. Infection with CHIK virus results in Chikungunya fever. The name Chikungunya derives from a root verb in the Kimakonde language meaning "that which bends up", that is to become contoured. The name reflects the stooped appearance of sufferers with arthralgia. Epidemics of fever, rashes and arthritis resembling Chikungunya as fever which recorded as early as in 1824 in India and else where¹. However, the virus was first isolated in 1952-1953 in Tanzania from both men and mosquitoes during an epidemic of fever that was considered clinically indistinguishable from dengue². More outbreaks have subsequently occurred in both Africa and Asia. In Asia, CHIK virus strains were isolated in Bangkok in the 1960s³; from various parts of India including

Vellore, Calcutta and the states of Maharashtra in 1964; Sri Lanka in 1969; Vietnam in 1975; Myanmar in 1975 and Indonesia in 1982⁴. The disease occurs in victim of all ages and both sexes. Following a bite by an infected mosquito, the disease manifests itself after an average incubation period of 2 to 4 days. The disease has an abrupt onset with high fever, myalgia and intense pain in one or more joints. In a series of 876 patients admitted to a hospital in south India during January to September 2006. Abrupt onset of fever of short duration (100% of cases), severe and crippling arthritis involving the knees, ankles, wrists, hands and feet (98%) were the most significant clinical manifestation. Bleeding (3%), fulminant hepatitis (2%) and meningo-encephalitis (1%) were the rare manifestations of the disease⁵. In most series, fever and joint pain are almost universal at the onset. Fever was of sudden onset and of high grade (>40°C or 104°F) accompanied with chills and rigours. Fever was biphasic or saddle-back (fever subsided in two to three days and then comes back after one day); the second phase of fever may associated with relative bradycardia⁶. Fever, in

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general, tends to last for only three to four days. Ankle, knee, and wrist were the usual joints that are affected but the involvements of the small joints of hands and feet were also not uncommon. The joint involvements had two phases: initial severe eruptive arthritis followed later by disabling, protracted peripheral rheumatism that can last for several months^{7,8}. In general, the acute phase was severe and incapacitating in all cases with severe pain, tenderness, swelling and stiffness of joints. Skin rashes had been reported in about 40% to 50% of cases, usually appearing between the second and fifth day of onset of fever. Rashes were mostly of the pruriginous maculopapular type on the chest but bullous or other forms can also be seen. Bullous rash with sloughing was more common in children. Maculopapular rash can sometimes be accompanied by petechiae⁹. The acute phase of the Chikungunya fever lasts for 3 to 10 days but the convalescent phase can usually last from weeks to months with accompanying joint pain, swelling and tenderness. Sometimes it can last for even a year or more¹⁰. The incubation period of the Chikungunya virus ranges from one to twelve days, and was mostly typically three to seven¹¹. The disease may be asymptomatic, but generally was not, as 72% to 97% of those infected will develop symptoms¹¹. Characteristic symptoms include sudden onset with high fever, joint pain, and rash. Other symptoms may occur, including headache, fatigue, digestive complaints, and conjunctivitis¹². Information gained during recent epidemics suggests that Chikungunya fever may result in a chronic phase as well as the phase of acute illness¹³. Within the acute phase, two stages have been identified: a viral stage during the first five to seven days, during which viremia occurs¹⁴, followed by a convalescent stage lasting approximately ten days, during which symptoms improve and the virus can not be detected in the blood¹¹. Typically, the disease begins with a sudden high fever that lasts from a few days to a week, and sometimes up to ten days. The fever is usually above 39°C (102°F) and sometimes reaching 40°C (104°F) and may be biphasic- lasting several days, breaking, and then returning. Fever occurs with the onset of viremia and the level of virus in the blood correlates with the intensity of symptoms in the acute phase¹⁴. When IgM, an antibody that is a response to the initial exposure to an antigen, appears in the blood, viremia begins to diminish. However, headache, insomnia and an extreme degree of exhaustion remain, usually about five to seven days¹⁵. Following the fever, strong joint pain or stiffness occurs; it usually lasts weeks or months, but may last for years. The joint pain can be debilitating, often resulting in near immobility of the affected joints¹⁶. Joint pain is reported in 87-98% of cases and nearly always occurs in more than one joint, though joint swelling is

uncommon¹¹. Typically the affected joints are located in both arms and legs, and are affected symmetrically. Joints are more likely to be affected if they have previously been damaged by disorders such as arthritis¹³. Pain most commonly occurs in peripheral joints, such as the wrists, ankles, and joints of the hands and feet as well as some of the larger joints, typically the shoulders, elbows and knees^{11,13}. Pain may also occur in the muscles or ligaments. Rash occurs in 40-50% of cases, generally as a maculopapular rash occurring two to five days after onset of symptoms¹¹. Digestive symptoms, including abdominal pain, nausea, vomiting or diarrhoea, may also occur^{11,12,17}. In more than half of cases, normal activity is limited by significant fatigue and pain¹¹. Infrequently, inflammation of the eyes may occur in the form of iridocyclitis, or uveitis, and retinal lesions may occur¹⁸. Temporary damage to the liver may occur¹⁹. Rarely, neurological disorders have been reported in association with Chikungunya virus, including Guillain-Barre syndrome, palsies, meningo-encephalitis, Flaccid paralysis and neuropathy¹². In contrast to dengue fever, Chikungunya fever very rarely causes hemorrhagic complications. Symptoms of bleeding should lead to consideration of alternative diagnoses or co-infection with dengue fever or co-existing congestive hepatopathy¹⁴.

Materials and Method

Descriptive type of cross-sectional study. The study was carried out among the respondent of Uttara in Dhaka city. The study was carried out from November 2017 to February 2018. The respondents of Uttara in Dhaka city. A total 395 respondents were selected. Purposive sampling was done.

Result

Table 1 shows that among the total 395 respondents majority 103 (26.1%) were in the age group 20-30 years. Very few (2.3%) were less than 10 years age group. Table 2 shows that among the total 395 of the respondents female were 57.5% and male were 42.5%. Table 3 shows that among the total 395 respondents majority were Muslims (94.2%) and very few were Christians (0.3%) and Buddhist (0.5%). Table 4 shows that among 395 respondents majorities educational level were S.S.C (23%). Higher secondary level of education 21.8% and Honors level 21.3%. Few were Illiterate (7.6%) and Masters level (9.1%). Table 5 shows that among the 395 respondents majority 47.1% were employed. Besides, 36.2% were housewives and rest 16.7% were unemployed. Table 6 shows that majority were 31.1% (20000-30000 taka income group) followed by 26.1% were 30000-40000 taka income group and 16.5% were less than 20000 taka income group. Few (12.2%) were in above 50000 taka income group. Table 7 shows that 68.6% were married and unmarried (30.1%). Table 8 shows that among 395 respondents majority

78.2% were not suffered from Chikungunya. Only 21.8% had. Table 9 shows that among 395 of the respondents majority had no history of sufferings among friends or families (78.2%) only 21.8% had family or friends with Chikungunya. Table 10 shows that 90.9% agreed Chikungunya was caused by mosquito bite. Only 9.1 % were disagreed. Table 11 shows that among the 395 respondents 50.9% thoughts were others and rest 49.1% were Aedes mosquitoes. Table 12 shows that among 395 of the respondents 54.4 % agreed about day time and 45.6% were night time biting period. Table 13 shows that 51.4%agreed with stagnant water, 21.0% garbage, 19% clean water, 0.8% mud and did not know7.8%. Table 14 shows that among 395 respondents said 54.2% rainy season,36.7%summer, 7.8%winter,1.3% spring for Chikungunya. Table 15 shows that 86.6% were agreed fever, 10.6 % were joint pain,1.8% were rashes and 1% were headache. Table 16 shows that among 395 of the respondents 74.7% were yes and rest 25.3% had no knowledge about government's program. Table17 shows that among 395 of the respondents majority (74.9%) agreed about it as serious disease and rest 25.1% were not aware. Table 18 shows that among the 395 respondent 74.93% knew that it could be preventable, and rest 25.06% did not knew. Table 19 shows that majority got information from television 64.8%. newspaper and social media were 12.7% and very few from family members 9.9%. Table20: shows that 44.8% agreed both government and people were responsible, 29.6% government only, themselves 12.2%, don't know 10.1% and rest 3.3% were nobody. Table 21 shows that majority checked 89.1% and rest 10.9% did not checked. Table 22 shows that majority had bed nets 75.7%, 19.5% used coil,3.5% used full sleeves shirt and 1.3% used repellent cream. Table 23 shows that majority had nets 95.9% and had not 4.1%. Table 24 shows that majority didn't sleep under net during day time were 80.5% and 19.5% were slept under net at day. Table 25 shows that 90.9% were don't allow water to collect in tiers broken pots, 8.4% were covered over head water tank.

Table 1: Age distribution of the respondent

	Frequency(n)	Percentage
Less than 10 yrs	09	2.3
10-20 yrs	82	20.8
20-30 yrs	103	26.1
30-40 yrs	101	25.6
40-50yrs	60	15.2
Above	40	10.1
Total	395	100

Table 2: Sex distribution of the respondent.

Sex	Frequency(n)	Percentage
Male	168	42.5
Female	227	57.5
Total	395	100

Table 3: Distribution of religion of the respondents.

Religion	Frequency(n)	Percentage
Hindu	20	5.1
Muslim	372	94.2
Buddhist	02	0.5
Christian	01	0.3
Total	395	100

Table 4: Educational status of the respondents.

Education	Frequency(n)	Percentage
Illiterate	30	7.6
Primary	68	17.2
S.S.C	91	23.0
H. S.C	86	21.8
Honors	84	21.3
Masters	36	9.1
Total	395	100

Table 5: Distribution of occupation of the respondent.

Occupation	Frequency(n)	Percentage
Un-employed	66	16.7
Employed	186	47.1
House- wife	143	36.2
Total	395	100

Table 6: level of Income of the respondents.

Income	Frequency(n)	Percentage
Less than20000taka	65	16.5
20000-30000taka	123	31.1
30000-40000taka	103	26.1
40000-50000taka	56	14.2
More than 50000taka	48	12.2
Total	395	100

Table 7: Marital status of the respondents.

Marital status	Frequency(n)	Percentage
Single	119	30.1
Married	271	68.6
Divorce	02	0.5
Widow	03	0.8
Total	395	100

Table 8: Chikungunya sufferer.

Suffered	Frequency(n)	Percentage
Yes	86	21.8
No	309	78.2
Total	395	100

Table 9: Sufferer of family or friend with Chikungunya.

Sufferer	Frequency(n)	Percentage
Yes	86	21.8
No	309	78.2
Total	395	100

Table 10: Chikungunya was caused by mosquito bite.

Bite	Frequency(n)	Percentage
Yes	359	90.9
No	36	9.1
Total	395	100

Table 11: Identification of mosquitoes that transmit Chikungunya.

Mosquitoes	Frequency(n)	Percentage
Aedes	194	49.1
Others	201	50.9
Total	395	100

Table 12: Chikungunya mosquito biting periods.

Time	Frequency(n)	Percentage
Day time	215	54.4
Night time	180	45.6
Total	395	100

Table 13: Breeding place of Chikungunya mosquitoes.

Places	Frequency(n)	Percentage
Clean water	75	19.0
Stagnant water	203	51.4
Mud	03	0.8
Garbage	83	21.0
Don't know	31	7.8
Total	395	100

Table 14: Seasons of Chikungunya.

Season	Frequency(n)	Percentage
Summer	145	36.7
Rainy	214	54.2
Winter	31	7.8
Spring	05	1.3
Total	395	100

Table 15: knowledge of symptoms of Chikungunya.

Symptoms	Frequency(n)	Percentage
Fever	342	86.6
Rashes	07	1.8
Headache	04	1.0
Joint pain	42	10.6
Joint pain >1month	0	0
Total	395	100

Table 16: knowledge about government's awareness program of Chikungunya.

Knowledge	Frequency(n)	Percentage
Yes	295	74.7
No	100	25.3
Total	395	100

Table 17: Chikungunya was serious disease.

Awareness	Frequency(n)	Percentage
Yes	296	74.9
No	99	25.1
Total	395	100

Table 18: Chikungunya is preventable.

Prevention	Frequency(n)	Percentage
Yes	296	74.93
No	99	25.06
Total	395	100

Table 19: Source of information of Chikungunya.

Source	Frequency(n)	Percentage
Television(TV)	256	64.8
Radio	0	0
Newspaper	50	12.7
Family members	39	9.9
Social media	50	12.7
Total	395	100

Table 20: Responsible for management.

Responsibility	Frequency(n)	Percentage
No body	13	3.3
Themselves	48	12.2
Government	117	29.6
government and people	177	44.8
Don't know	40	10.1
Total	395	100

Table 21: Check mosquito breeding site in and around house.

Checking sites	Frequency(n)	Percentage
Yes	352	89.1
No	43	10.9
Total	395	100

Table 22 : Use of personal protective measures against mosquitoes.

Protection	Frequency(n)	Percentage
Wear full sleeves shirt	14	3.5
Mosquito repellent cream	5	1.3
Bed nets	299	75.7
Insecticide spray/coil	77	19.5
Nothing	0	0
Total	395	100

Table 23: Have mosquito nets.

Nets	Frequency(n)	Percentage
Yes	379	95.9
No	16	4.1
Total	395	100

Table 24: sleep under net during day time.

Sleep	Frequency(n)	Percentage
Yes	77	19.5
No	318	80.5
Total	395	100

Table 25: Action taken against mosquito breeding.

Action	Frequency(n)	Percentage
Empty and dry airconditioner when not in use	3	0.8
Don't allow water to collect in tiers, broken pots	359	90.9
Covered over head water tank	33	8.4
Total	395	100

Discussion

This is a descriptive type of cross sectional study. The objective of the study is to find out the knowledge, attitudes and practices along with socio- demographic variables. The age of the respondent's included in this study ranged between less than 10 years to above 50 years. Majority of respondents were within 20-30 years of age(26.1%) and30-40years age group(25.6%).Young adults suffered most as they usually neglect to use mosquito nets at day time especially. Among the 395 respondents majority were females (57.5%). Where

male were (42.5%).Female were more as they occupied at home most of the time. Places of mosquito are also near home due to presence of unused container. Regarding religion, Islam found more (94.2%) and rest are other religions. This is consistent with our national context. Regarding educational status of the respondents majority have SSC (23%), HSC(21.8%),Honors(21.3%).Few are illiterate (7.6%) and (9.1%) masters level of education. As most of them are students. Regarding occupation of the respondents majority 47.1% are employed. Only 16.7% are unemployed that mostly of them were students.Rest are housewives(36.2%). Regarding level of income among the respondents more found (31.1%) at income group (20000-30000tk/month).Few has less than 20000tk/month (16.5%) and more than 50000tk/month (12.2%).This was due to their service hold condition. Regarding marital status of the respondents majority are married 68.6%,(0.5%)divorced and widow(0.8%).Single are (30.1%) because most of them are students and unmarried. Regarding knowledge of the respondents suffered(21.8%) and not had chikungunya 78.2%. Regarding, sufferer of family and friend with chikungunya majority had not (78.2%),few suffered(21.8%). Majority of respondent (90.9%) knew that chikungunya is caused by mosquitos bite only disagreed(9.1%). Regarding identify mosquitoes 50.9% didn't know the name of mosquito only (49.1%) knew about Aedes. Only 54.4% respondent knew that this mosquito mostly bites at day time,rest (45.6%)at night .Most (51.4%) respondents knew that these mosquito breed in stagnant water and usually occur in rainy season (54.2%) . Knowledge about symptoms 86.6% told about fever.Only 74.7% respondent knew about government program on vector borne .All these question for knowledge are in some but not complete knowledge of Chikungunya. Regarding attitude towards Chikungunya 74.9% believes that Chikungunya is a serious disease. All most(74.93%) respondents believe that Chikungunya can be prevented .Most(64.8%) respondents believe that information about this diseases can get from Television. Regarding responsible for management 44.8% agreed both government and people should take part. All these measures create awareness about their prevention. Regarding practice 89.1% respondents acknowledge that they or their family members for the checking regularly breeding sites of mosquitoes in and around their houses. Regarding use of personal protective measures against mosquito nets 75.7% had. Regarding sleep under net during day time 80.5% not slept. When asked about action taken against mosquito breeding 90.9% don't allow water to collect in tiers, broken pots. Regarding these practices are good and satisfactory.

Conclusion

From the above results and discussion awareness of respondent is an important factors for preventing Chikungunya in the community. Further more, this study describes the existing knowledge regarding Chikungunya among the respondent of Dhaka city. So, mass practice should be taken into media like newspaper, television, radio, workshop, facebook. Thus, every corner of Bangladeshi could prevent and treat Chikungunya and live a healthy life.

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A review of the use and potential of *Azadirachta indica* in the field of agriculture, industry, medicine and environment

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Abstract

Azadirachta indica (Neem), endemic to Indian subcontinent, is one of the most versatile trees with enormous potential. It possesses highest number of useful parts i.e. leaves, bark, fruits, seed, flowers, exudates, oil, cake etc. Each part has some biological activities and commercial use. Some of the activities of neem have been investigated at least in some species of animals of medical and veterinary significance. Industrially neem, the environment friendly tree is usable for its activity. The review is designed to explore the significance of this endemic tree in the area of agriculture, industry, medicine and environment to promote the economy of Bangladesh.

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Introduction

The neem tree (*Azadirachta indica*) is a versatile tropical evergreen tree from the Meliaceae family. The species is commercially very important mainly due to its medicinal and biopesticidal properties. Most of the plant parts such as seeds, fruits, bark, leaves and roots contain compounds with proven antiseptic, antiviral, antipyretic, anti-inflammatory, antiulcer and antifungal uses. It has great potential in the fields of pest control, environment protection and medicine and that's why in industry. Neem is a natural source of insecticides, pesticides and agrochemicals.^{1,5} Neem is a large tree with semi-straight to straight trunk. A neem tree normally begins fruiting later than 3-5 years. In about 10 years it becomes fully productive. From the tenth year onwards it usually generates up to 50 Kg of fruits yearly. The plant is reported to live up to two centuries. The tree has adaptability to a wide range of climatic, topographic and edaphic factors. Neem tree requires little water and plenty of sunlight. However, it has been introduced successfully even in areas where the rainfall is as low as 150 to 250 mm. Neem grows on altitudes up to 1500 m.^{8,20} It can grow well in wide temperature range of 0°C to 49°C. It cannot withstand water-logged areas and poorly drained soils. The pH range for the growth of neem tree lies in between 4 to 10. It grows on almost all types of soil including clay, saline and alkaline soil, but does well on black cotton soils and deep well drained soil with good sub-soil water.

Neem in Agriculture^{2,7,8,10,18}

As a feeding deterrent: When an insect larva sits on the leaf, the larva is hungry and it wants to feed on the leaf. As the leaf is exposed to neem product, due to the presence of Azadirachtin, Salanin and Melandriol there is an anti peristaltic wave in the alimentary canal and this creates something alike vomiting feeling in the insect. Because of this feeling the insect does not feed on the neem treated plane and swallowing ability is blocked.

As an insect growth regulator: Neem works on juvenile hormone. The insect larva feeds when it develops and it sheds the old skin and again starts developing. This particular peeling of old skin is the occurrence of ecdysis or moulting influenced by an enzyme ecdysone. When the neem component Azadirachtin enters the body of larvae, the activity of ecdysone is suppressed and the larva cannot moult, stays in the larval stage and lastly dies. If the content of Azadirachtin is not adequate, the larva can enter the pupal stage but deforms at this stage and if the concentration is still less, the adult emerging from the pupa is 100 % malformed, completely sterile without any capability for reproduction.

As an ovipositional deterrent: Another way in which neem can decrease pests is preventing the female to deposit eggs. This characteristic is known as ovipositional deterrence, and comes in very handy as the seeds in storage are covered with neem kernel fine particles and neem oil. The seeds or grains achieved from the market are already swamped with some insects. Even these granules could be undergone neem kernel powder or neem oil; after this treatment the insects cannot feed on them. There will be no additional damage to the already smashed grains and simultaneously as the female

comes to the egg laying period of its life cycle, egg laying is barred.

Other pesticidal activity includes : (1) The formation of chitin is also inhibited. (2) Mating as well as sexual communication is interrupted. (3) Larvae and adults of insects are resisted. (4) Adults are made germ-free. (5) Larvae and adults are poisoned.

Neem as a bio-fungicide : As a fungicide, neem oil is mostly used as a protective and when disease is just at preliminary stage. It coats the leaf surface which in turn interrupts the germination of the fungal spores. Neem oil is useful against rots, rusts, leaf spot, mildews, scab and blights.

Neem as soil conditioner: Neem cake, the by-product attained in the procedure of cold pressing of neem fruits and kernels can be utilized as raw organic fertilizer. It has sufficient quantity of NPK (nitrogen, phosphorus and potassium) in organic form for plant development. Neem cake typically holds about 6% neem oil and 4% nitrogen, 0.5% phosphorus and 0.5% potassium. Being totally botanical product, it contains 100% natural NPK content and other necessary micro nutrients. It is loaded with both sulphur compounds and bitter limonoids. As per research estimates, neem cake seems to make soil more rich due to an ingredient that obstructs soil bacteria from converting nitrogenous compounds to nitrogen gas. It is a nitrification inhibitor and lengthens the accessibility of nitrogen to both short duration and long duration crops. It is a natural manure with pesticidal activities.

Neem as organic manure: Neem cake fertilizers guards plant roots from nematodes, soil grubs and white ants most likely due to presence of the residual limonoids. Neem cake is extensively used in India to grow paddy, sugarcane, cotton, wheat etc. It is safe to earthworms in fact earthworms reproduce in plots undergone neem cake treatment.

Neem as a fertilizer efficiency improving product: Neem is decayed merely gradually, leading to a slower discharge of nutrients contained in it. The slow discharge of nutrients is credited to the existence to the a variety of extractable materials in seed and cake and these extractives are utilized as worthy adjuvant for nitrogenous manures. It is approximated that out of the whole amount of urea applied to crops, almost 50- 70% is lost in a range of forms, thus reducing the availability of nitrogen to crops. Neem seed cake helps the phosphorus uptake a little but had no consequence on potassium uptake.

Neem as a feed to live stock: In some parts of India, neem cake is also fed to livestock and poultry on precise doses for definite time period.

Veterinary uses: Neem leaves contain substantial extent of proteins, minerals, carotene and sufficient quantity of trace minerals except zinc. They also have extensive amount of digestible crude proteins (DCP) and total digestible nutrients (TDN). ¹²Neem extracts have antiulcer, antibacterial, antiviral characteristics and are used effectively to treat stomach worms, ulcers, cutaneous diseases, intestinal helminthiasis. Leaves have been mostly used as antiviral agents against vaccinia, variola, fowl cholera and Newcastle disease viruses.

Medicinal uses^{4,8,9,11,12,14,16,18,22}

Immunostimulant activity: The aqueous part derived from neem bark and leaf have anticomplement and immunostimulant property. Neem oil possess activity by selectively activating the cell-mediated immune mechanisms to bring out an enhanced reaction to successive mitogenic or antigenic challenge.

Hypoglycaemic activity: Aqueous extract of neem leaves appreciably diminishes blood sugar level and puts off adrenaline as well as glucose-induced hyperglycemia. Lately, hypoglycemic effects of leaf extract and seed oil in normal as well as alloxan-induced diabetic rabbits have been experimented.

Antiulcer effect: Neem leaf and bark aqueous extracts generate extremely strong antacid secretory and have antiulcer activity.

Antifertility effect: Application of neem oil to vagina, prior to coitus, can put a stop to pregnancy. It is a natural method of contraception.

Antimalarial activity: Neem seed and leaf extracts are helpful against both chloroquin-resistant and sensitive strain malarial parasites.

Antifungal activity: Extracts of neem leaf, neem oil seed kernels are effective against certain fungi including *Candida*, *Trichophyton*, *Epidermophyton*, *Geotrichum*, *Microspor* *Trichosporon* etc

Antibacterial activity

Neem oil has a broad scale of antibacterial activity against Gram-negative and Gram-positive microorganisms, including *M. tuberculosis* and streptomycin resistant strains. In vitro, it restrains *Vibrio cholerae*, *Klebsiella pneumoniae*, *M. tuberculosis* and *M. pyogenes*. It has antimicrobial effects against *S. mutans* and *S. faecalis*. Efficacy of NIM-76, a spermicidal fraction from neem oil was investigated for its antimicrobial action against certain bacteria, fungi and poliovirus as compared to whole neem oil. This shows that NIM-76 has a strong broad spectrum antimicrobial activity. Available antimicrobial agents can control the infection but

they are costly and can cause rapid emergence of anti-microbial resistance. Neem may be used for its easy availability and significant effect against bacteria^{23,24}.

Antiviral activity: Neem leaf extract has antiviral activity against Vaccinia virus, Chikungemya and Measles virus.

Anticancer activity: Neem leaf aqueous extract efficiently represses oral carcinoma induced by 7, 12-dimethylbenz anthracene (DMBA), as exposed by decreased incidence of neoplasm. Neem has chemo preventive effect in the oral mucosa.

Antioxidant activity: The antioxidant activity of neem seed extract has been established in horse- grain germination.

Effect on central nervous system: Central nervous system (CNS) depressant activity in mice was observed with the leaf extract. Fractions of acetone extract of leaf showed significant CNS depressant activity.

Neem in industry: Almost every part of the neem tree has multipurpose uses. Neem is an outstanding source of pesticides: It also offers good fodder, fuel and timber. So, Neem tree very potentially profitable.

Timber: The sapwood is grayish white but the heartwood is reddish brown. The wood is fragrant. It can be handled both manually and with machine, but it does not take polish well. Neem timber is long-lasting even in extensive exposed environment. It is resistant to termites and woodwarms. neem wood has long been used as firewood and charcoal made from Neem wood is of excellent quality.

Bark: Neem bark contains tannins which can be used in tanning, dyeing etc. Compounds extracted from neem bark are used in manufacture of dental-care products like toothpaste.

Seed: Neem seed pulp is helpful for methane gas production. It is also useful source of carbohydrates for other industrial fermentations. Biodiesel can be produced from neem seed oil.

Leaves: Neem leaves own outstanding medicinal properties. It is useful in pest management and disease control. They can be given to livestock with other fodders. Neem leaves can be used as compost in crop fields. Neem leaves are also used as mulch in tobacco and tomato cultivating lands. They are efficiently used to kill weeds and to store woolen and silk clothes.

Neem cake: Neem cake is very useful. It can be utilized as livestock feed, fertilizer and pesticide. It gives organic nitrogen and restrains the nitrification course, when assorted with urea. Such use of the neem coated urea in 90:10 quantity can contribute up to 30% of the total chemical nitrogen

necessity of the crops which or else would go waste. This results in cost decrease of agricultural production. Neem cake acts as organic pesticide when added to soil, which protects plant roots from soil-insects, nematodes and other harmful materials.

Neem oil: Neem oil is used for production of industrial products like oil, soaps, skincare products. Such medicated soaps with neem odour are incredibly useful and have antigerms properties. Neem oil is a valuable mosquito repellent.

Environment and neem^{8,12,15,17,18,21}

Neem compared to other species is well adapted to stress conditions. It is also known to increase soil fertility and water retaining capacity. Today, modern societies, finding themselves confounded in the web of their creation, are willing to revert tonature for remedies and neem tree provides a promising means in this matter. Neem has elevated rate of photosynthesis and releases more oxygen than many other tree species, thus purifying the atmosphere. The temperature beneath the neem tree has been ~10oC less than the surrounding temperature, during hot summer months. A noticeable impact on the regions microclimate, microflora, microfauna and sand soil properties was observed. Full-grown neem tree gives in about 10- 100 tons of dried out bio fertilizer comprised of leaves (50%) and fruits and wood (25% each). Neem wood is long-lasting and termite resistant and can be utilized for house construction, furniture production etc. In rural area, neem is a good firewood and fuel. Its charcoal holds high calorific value. Neem is extremely suitable for pole production. Neem goods have water purifying action. Neem leaf powder could be used as biosorbent for the elimination of dyes like Congo red from water.

Conclusion

Owing to its versatile characteristics neem is rightly called the 'Village pharmacy' or 'Doctor tree' or 'Wonder tree of India' or 'The bitter gem'. National Research Council (NRC), Washington, USA considers the neem, "One of the most promising of all plants and the fact is that it may eventually benefit every person on this planet. Probably no other plant yields as many strange and varied products or has as many exploitable byproducts. As neem is a tree of great use, it can be exploited as a source of the development of the economy of Bangladesh and thus alleviate poverty of our country.

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Virtual Autopsy emerging in Forensic science

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Abstract

Autopsy or post-mortem is classically carried out by performing several incisions and a few specific techniques on the dead body. It is carried out for either medico-legal or pathological reasons, with the intention to determine cause of death, time of death, manner of death and identification e.g. in mass disaster, as well as documentation and expert testimony. Forensic pathologists face difficulties in advanced decomposed, completely charred bodies, matching dismembered and mutilated remains. The classical technique in some situation gives rise to problem in physical storage. For most people, the idea of an autopsy is uncomfortable, especially in situations such as the death of an infant. Some religious group forbid autopsy outside legal necessity. Virtopsy is not a generally accepted method to entirely replace autopsies. Virtopsy technique uses the modern radiographical aids like computed tomography (CT) and/or magnetic resonance imaging (MRI) to scan the dead bodies and obtains a more sensitive, specific, and accurate result than that of the conventional autopsy. The comparison between conventional autopsy and CT has shown that CT is a superior tool in identifying entry and exit pattern of wounds (fracture patterns), pathological gas collections, and gross tissue injury. The postmortem CT though has the above advantages, is less specific and sensitive in assessing intravenous contrast. Postmortem MRI is highly sensitive, specific, and mainly used for assessing soft tissue injuries, neurological/non-neurological trauma, contusions, and hematomas.

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Introduction

Autopsy is the scientific examination of bodies after death, where whole surface of the body as well as all the body cavities are explored to record the findings. While doing so, we have to collect all the possible findings which will help in establishing the circumstances leading to the death and also may help the law enforcing agencies. At the same time, it is also equally important to consider the sentiment of the relatives of the deceased, who are always upset at the conventional autopsies. So, if there exists a means by which all the findings in the body can be collected, it should be accepted by all. It is long back that the autopsy procedures were invented and till now the same age old techniques for autopsy are being used, though in the other fields of Forensic Medicine, there is rapid growth and advancement in the procedures performed and technology employed. Virtopsy is one step towards this end. The term Virtopsy came from Virtual autopsy, which is a scalpel free procedure of imaging and measuring technology¹. Here, there is no need of any dissection of the body for opening the body cavities or dissection of the different organs of the body. Using the different imaging techniques, which provide a complete three dimensional view of the inside as well as outside of the body, all the vital information like position and

dimensions of the wounds, or other pathological conditions in the body can be known and documented without use of any scalpel. The technique could offer an alternative to the standard invasive procedure that upsets many families and is prohibited by some religions, the developers say. Virtopsy is a virtual alternative to a traditional autopsy, conducted with scanning and imaging technology. The name is a portmanteau of 'virtual' and 'autopsy' and is a trademark registered to Prof. Richard Dirnhofer (de), the former head of the Institute of Forensic Medicine of the University of Bern, Switzerland². The term "virtual" in this context apparently is meant in both the modern and original senses. Virtual's Latin root word "virtus" (virtue) implies the qualities of capability, efficiency, effectiveness and objectivity. However, some proponents propose to replace traditional autopsy with this approach³. "Virtual" also has the sense of "digital" or refers to virtual reality respectively. Dirnhofer claimed that Virtopsy fully satisfies the requirement that medical forensic findings provide "a complete and true picture of the object examined"⁴. Furthermore, Virtopsy also achieves the objective "that the pathologist's report should 'photograph' with words so that the reader is able to follow his thoughts visually".

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Origin: 1977 - Forensic application of computed tomography (CT) scan described first as the pattern of a gunshot injury to the head by wulleweber. 1989 - Kalender et al. introduced spiral CT opening the door for three-dimensional (3D) data acquisition and processing. 1990 - Concept of objective, non-invasive documentation of the body surface for forensic purpose with the development of photogrammetry. 2000 - Observer independent documentation of the body surface is combined with observer independent documentation of the interior of the body. This has now been made possible by the virtopsy project of the institute of forensic medicine, diagnostic radiology and neuroradiology at the University of Bern, Switzerland by the team led by Richard Dirnhofer, Thali et al^{5,6}.

Operative aspects: The Virtopsy project started as a research project that was initiated at the end of the twentieth century by Prof. Richard Dirnhofer, and now covers both applied methods and research. Virtopsy contains applied research into various methods of high-tech imaging with the goal to introduce them into the practice of forensic pathology. With Prof. Michael Thali as operative head of the group, the Virtopsy research team operates out of the Institute of Forensic Medicine at the University of Zurich, Switzerland since early 2011⁷.

Procedure: Step 1: Prepare the body for imaging. (Fig. 1). Step 2: Virtobot, marks on the external of the cadaver. (Fig. 2). Step 3: After marking virtobot takes a 3D color model to the body. (Fig. 3). Step 4: Uses stereoscopic cameras for capturing the color image and then a projector cast a mesh pattern on the body. Step 5: After the creation of the image picture can be manipulated on a computer screen for further identification of the tattoos by the investigators. Step 6: Tripods and cameras are placed by virtobot at various points around the body. The robot then glides over the body creating a 3D image. (Fig. 4). Step 7: After the surface scanning the body is carried to the CT and MRI labs doubly enfolded in blue bags through which X-rays can be passed. Step 8: The bag remains closed while the body is scanned and hence the body's privacy is protected, and cleanliness in the room is also maintained. Step 9: X-ray slices of the body are reconstructed by the computer within 19 min into detailed images of bone and tissue. Step 10: There are color coding as pockets are blue, soft tissues are beige, blood vessels are red, and bone is white. Step 11: Manipulation of patterns and images can be done and turned to various angles. (Fig. 4). Step 12: The virtobot can also perform needle biopsies if samples are required⁶.

Figure 1: Virtrobot



Figure 2 : Virtrobot scanning



Figure 3: 3D color model to the body



Applications: It helps in diagnosing the cause of death, especially in drowned bodies information about the volume, density, size of the lungs, and the amount of liquid observed in them (Fig. 5)⁸. Injuries of firearm projectile Entrance and exit wounds (Fig. 6)⁹. Human identification in mass disaster cases describes for the comparison between AM and PM reconstructed panoramic radiographs, CT, and magnetic resonance imaging¹⁰. Determination of age of charred bodies¹¹. Authors worked on restorative materials related on the virtual technique. They expressed in Hounsfield Units the different density of restoration materials, such as composites, temporary fillings, and ceramics, by ultra-high-resolution CT imaging¹². Oosterhelweg et al. reported a case where the victim was

collided with by respiratory obstruction from a foreign body (food bolus) which was very well appreciated in combined CT and MRI rather than conventional autopsy examinations¹².

Figure 4: Images turn various angles



Forensic reconstruction: Impact direction, entrance and exit wounds, medicolegal issues, specific forensic findings, such as burnt corpses and putrified corpses, bite mark registration and analysis, application of minimally invasive technique for collection of tissue samples and also urine, bile, blood for toxicology or deoxyribonucleic acid analysis, “shaken baby syndrome” cases, and morphologic fingerprints.

Figure 5: Virtopsy in drowned body

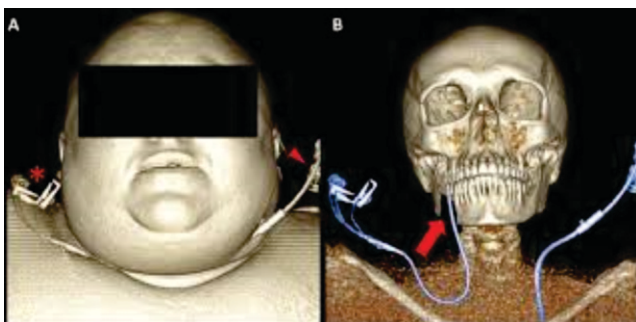


Figure 6: Path of bullet entry and exit wound



Success: Virtopsy methods have helped to solve a range of cases that would have been difficult or impossible to solve otherwise¹³. While academically, case-reports tend to be

looked down on by medical faculty, they can expand the existing experience by significant contributions.

Advantages are⁶: Preservation of the body in a virtual form. Observer-independent documentation of the evidence – “delegation of seeing to the machine”. Complete, non-destructive gathering of findings from head to toe. Data acquisition in parts of the body that otherwise would not be examined out of respect for the deceased (e.g. the face). Data acquisition in regions that are difficult to dissect and access (e.g. atlanto-occipital joints), and in cases of advanced decomposition. Visualization of the cardiovascular system. Replacement of manual dexterity by the “virtual knife” of the automatic sectional imaging technique. Standardized data acquisition procedure. High-precision, contamination-free sampling (poisons, infections, tissue, etc.) accurate to the millimeter. True-to-scale 3D documentation for precise forensic reconstructions. Clean, bloodless visualization of the documentation. Improvement in the quality of forensic reports – simultaneous examination by different experts via tele-forensics. Simplification of the assessment of evidence by improved comprehensibility of the visual 3D findings. Acceptance by relatives and religious communities over conventional autopsies. The complete saved data-set can be re-examined at any time if a second expert opinion is required, even after burial or cremation of the body. Rapid and complete data acquisition as part of analyses following disasters (terrorist attacks, plane crashes, etc.).

Disadvantages are⁶: High equipment costs. The limitations for radiology apply: Metal foreign objects, one cannot determine the color of internal organs and color changes, one cannot determine all the pathological conditions (e.g. inflammation), one cannot determine the infection status of tissue, it is difficult to differentiate antemortem from postmortem wounds and postmortem artifacts, small tissue injuries may be overlooked. The limitations for surface scanning apply: Recording concave features, out of view, turning the body over for total body recording can alter the body shape due to gravity (e.g. stomach) which may disturb the merging of recorded surfaces. recording reflective or transparent surfaces (e.g. the eye), merging data from multiple techniques will always result in some loss of precision, a reliance on imagery alone may lead to omissions (e.g. bruising under the scalp not visible with surface scanning). Validity: No proper validation of the method has been made using closely prepared prospective studies, no error rate available, no juridical validity (yet), as applicable

to all simulated evidence presented in the court room, there are concerns of suggestiveness.

Conclusion

As with any new technique there will be resistance or comments that question the validity and reasoning of the method. As the data concerning virtopsy increases in magnitude the benefits of the technique far outweigh the burdens of it. It is important to note that the conventional autopsy has its own advantages which still enable it to be a modality of great effect in forensic sciences. The Swiss pioneers who gave virtopsy to the world conclude that, with the use of imaging techniques, such as CT and MRI, photogrammetry and 3D optical measuring techniques a reliable, accurate geometric presentation of the forensic findings can be achieved. Thus, in conclusion, the method of documenting forensic findings in a virtopsy are investigator independent, objective and noninvasive and will lead to a qualitative improvement in forensic pathologic investigation, since the digitally stored data can be recalled at any time to provide fresh, intact topographic and anatomic clinical information. Virtopsy combines very powerful scanning and radiographic technology with the power and resolution of modern computing. This makes it a tool which could tip the scales back to more regular use of the autopsy to help identify the manner and cause of death in individuals allowing researchers and investigators to discover important clues without the need to physically dissect the cadaver.

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A case of Tubal Ectopic Pregnancy

Shayesta Parvin Sadeque¹, ATM Rezaul Karim², Mamun-UR- Rashid³, Pervez Altaf Hossain⁴

Abstract

A 23 years old lady para nil presenting with regular menstruation with a very short period of amenorrhea was diagnosed to have left tubal ectopic pregnancy after vaginal examination and abdominal ultrasonography. The case illustrates the need for careful history taking and the need for considering Ectopic Pregnancy in women in the reproductive age group, who have missed period even if they are on contraception.

Key words: Ectopic Pregnancy

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For Authors Affiliation, see end of text.

<https://www.amccomilla.edu.bd/jamcu>

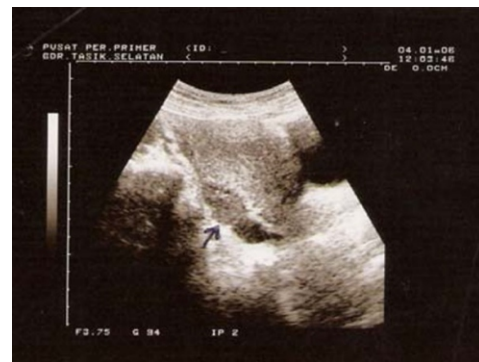
Introduction

Ectopic pregnancy is potentially fatal emergency condition if early diagnosis is missed^{1,2}. The multitude of presentations to the primary care physician on first contact can be misleading in the absence of high index of suspicion. The presentations vary widely from being asymptomatic to hemodynamically compromised. This case illustrates a woman who has been on contraception without the classical symptoms of ruptured ectopic pregnancy.

Casereport

A 23 years old lady Para nil presented to Mainamoti Cantonment General Hospital Cumilla on 15th May 2018 with the complaints of missed period 3 days. Her last menstrual period was on 12th April 2018. Her cycle was regular with normal flow and mild lower abdominal pain prior to her menstruation. She also mentioned that she took OCP regularly for the last 3 months. On further question she admitted that she initially taken treatment from a nearby chemist to regular her menstruation. Upon treatment her menstruation didn't started but she became faint at home which was spontaneously recovered. She has been married for 6 months. She has no H/O medical, surgical or gynecological problems. On examination she appears comfortable and there were no signs of anemia. Her BP was 110/70 mm of Hg, Pulse was 86b/min. Abdominal examination revealed mild lower abdominal tenderness. Vaginal examination done due to exclude local cause, on digital examination there was tenderness in the posterior fornix. The urine for pregnancy test was advised and it was positive. This was complimented by empty uterine cavity with the presence of fluid in the pouch of Douglas. Hb count was 11.4 gm/dl and TC was 7500/Cmm of blood.

Figure 1: USG showing collection in POD



The possibility of ectopic pregnancy explained to her and admitted into Mainamoti Cantonment General Hospital Cumilla. The patient underwent laparotomy at the same evening. There was hemoperitonium and leaking left tubal pregnancy at the ampullary region. Both Ovaries and right tube were healthy. Then left sided salpingectomy was done and patient was discharged on 3rd post operative day.

Figure 2: Ruptured left tubal pregnancy



Discussion

“Pregnancy in the fallopian tube is a black cat in a dark night. It may make its presence and be felt in subtle ways and leap at you or it may slip past unobserved although it is difficult to distinguish from cats of other colours in darkness, illumination early identifies it.” Ectopic pregnancy is relatively common in tertiary healthcare centers. It comprises only 2% of all pregnancies². The incidence has been on the rise^{2,3}. It is associated with high mortality, if diagnosis and management are delayed. Early intervention carries a significantly better prognosis⁴. Even surgery can be avoided if management starts before tubal rupture and cardiovascular compromise¹. As illustrated in the case, diagnosis can be missed in the absence of classical symptoms of ectopic pregnancy compounded by incomplete patient assessment. The presentations of ectopic pregnancy vary from lower abdominal pain to profound cardiovascular compromise. Common clinical presentations are shown in Table 1. Approximately 43-55% of ectopic pregnancies do not present with the classical triad of lower abdominal pain, period of amenorrhea and vaginal bleeding^{3,5}. Early symptoms of abdominal pain, although the commonest, is not specific to ectopic pregnancy⁶. About 9-30% of women may not have abdominal pain at presentation^{2,3}. Differential diagnosis for a young lady includes appendicitis, miscarriages, pelvic inflammatory disease and ovarian torsion⁵. Absence of a period of amenorrhoea in ectopic pregnancy is rather common and occurs in about 25% of cases^{4,5}. A detailed menstrual history is important and any sudden changes in menstrual pattern should alert the physician to think of the possibility of tubal ectopic pregnancy even in the absence of a clear period of amenorrhoea in women in their reproductive age group.

Table 1: Common clinical presentation of ectopic pregnancy

Common clinical presentation of ectopic pregnancy ^{5,6,8,9}	
Signs and symptoms	Number (%)
Abdominal pain	90-97
Abdominal tenderness	87-91
Nausea or vomiting	80
Vaginal bleeding	79-83
Amenorrhoea	75
Dizziness	55-60
Adnexal tenderness	54-57
Shoulder or neck or pleuritic pain	50
Cardiovascular compromise	50

This was a challenging case as the presentation was not the typical sequence of events. Absence of typical symptoms tends to mislead the physician from the possibility of an ectopic pregnancy. It also highlights that any period of amenorrhoea in a reproductive woman should not be ignored.

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Corresponding author

As principal investigator Dr

had full access to all of the data in the study and takes responsibility for the integrity of the data and the accuracy of the data analysis.

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