EDITORIAL

COVID-19 Outbreak and Mental Health Issues

The latest threat to global health is the ongoing outbreak of the novel coronavirus (COVID-19) disease that emerged at the end of 2019. The lives of infected individuals, family and friends, and the society are at stake due to the perpetuated potential effects of the virus. As the highly contagious coronavirus pandemic turns across the world, it is causing widespread fear and stress which all are natural reactions to the uncertain situations that everyone finds themselves in.

Fear and anxiety about a disease can be overwhelming and cause strong emotions in adults and children. There is a neuropsychiatric linkage between the outbreak of acute respiratory infections and mental disorders which date back to the prevalence of influenza and severe acute respiratory syndrome (SARS) that took place years ago. The situation with COVID-19 is not different which infiltrates fear and worries among the public with increased anxiety levels and poses a more significant mental health effect.[1]

Children and adolescent are likely to be experiencing worry, anxiety and fear, and this can include the types of fears that are very similar to those experienced by adults, such as a fear of dying, a fear of their relatives dying, or a fear of what it means to receive medical treatment. Regarding older people and also those with underlying health conditions, having been identified as more vulnerable to COVID-19. The psychological impacts for these populations can include anxiety and feeling stressed or angry. Its impacts can be particularly difficult for older people who may be experiencing cognitive decline or dementia.[2,3]

Both confirmed and suspected COVID-19 patients may experience the fear of the consequences of this infection, including death and severe physical disability. Furthermore, boredom, loneliness, and anger could be experienced by individuals in quarantine.[4] It is also suggested that anxiety symptoms and distress may be worsened not only by the infection symptoms, but also by the adverse effects of the treatment. It is also worthwhile to presume that many medical practitioners face post traumatic stress disorder (PTSD), depression, anxiety, and burnout after the cessation of the incidence of such infections. The results are consistent with studies on the SARS outbreak which demonstrated that 18%-57% of medical providers experiencing emotional distress at the onset, during, and after the outbreak of the infection.[3]

The infectious disease outbreaks commonly cause anxiety and fear, uncertainty, and stigmatization that can be prevented by medical and psychiatric treatment. Mental health care must be comprehensive and target the population as a whole. Special management and prevention interventions should focus on patients with psychiatric illnesses. Simple strategies that can address this can include giving young people the love and attention that they need to resolve their fears, explaining what is happening in a way that they can understand, even if they are young. Parents also need to be supported in managing their own stressors so that they can be models for their children. Helping children to find ways to express themselves through creative activities, and providing structure in the day through establishing routines. To protect mental health of the older people at this time, strategies such as undertaking physical activity, keeping to routines or creating new ones, maintaining social connections and engaging in activities which give a sense of achievement.[2,3]

This is indeed an unprecedented time for all of us, especially for children who face an enormous disruption to their lives. While preventive and medical action is the most important at this stage,

emergency psychological crisis interventions for people affected by COVID-19 are also critical. So, need certain precautionary measures as well as timely psychological intervention to lower psychological impact of the outbreak and to lower levels of stress, anxiety, and depression.

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ORIGINAL ARTICLE

Clinical Profile of Dengue Patients Admitted in A Tertiary Care Hospital of Bangladesh

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ABSTRACT

Backgroud: Dengue is the most common arbovirus worldwide. The escalating dengue situation in Bangladesh in recent years appears to be a serious public health problem in terms of mortality and morbidity. Outbreak in 2019 was the most severe. **Objectives:** Current study was aimed at assessing clinical profile of dengue patients admitted in a tertiary care hospital in Bangladesh. **Methods:** This was a retrospective descriptive study done in dengue patients who were admitted in medicine inpatient department of Shaheed M. Monsur Ali Medical College Hospital Sirajgonj during the period of July to November 2019. Data of 512 patients were retrieved from hospital medical records. Diagnosis of dengue was made by positive non-structural protein 1 antigen (RDT NS1) or anti dengue immunoglobulin M (RDT anti-dengue IgM). Anti-dengue IgG positive but NS1 & anti dengue IgM negative patients with suggestive clinical presentation and other laboratory results were also included in this study. **Results:** Majority of the patients were male 325(63.47%). Among the patients 497(97.07%) were diagnosed as dengue fever (DF), & 15(2.92%) as dengue haemorrhagic fever (DHF). 456(89.06%) patients were diagnosed by positive NS1 & 38(7.42%) by positive anti-dengue IgM; 18(3.52%) patients were diagnosed by positive IgG only (they were NS1 & anti dengue IgM negative). All patients had fever as a presenting complaint. Other common presenting features were headache (81.25%), body ache (73%), anorexia/nausea (53.12%) and abdominal pain (10.74%). **Conclusion:** Though this is probably the biggest study outside Dhaka city, in terms of study population, broad based multi centered long-term longitudinal study could be carried out to draw inferences.

Keywords: Dengue, Clinical profile, Tertiary care hospital

INTRODUCTION

Dengue is a mosquito borne viral infection. The virus responsible, is called dengue virus (DENV), which is a single-stranded RNA virus of Flaviviridae family member. There are four distinct, but closely related, serotypes of the virus that cause dengue (DENV-1, DENV-2, DENV-3 and DENV-4). Dengue causes a wide spectrum of disease. This can range from subclinical to severe flu-like symptoms in those infected. Although less common, some people develop severe dengue, which can be any number of complications associated with severe bleeding, organ impairment and/or plasma leakage. Severe dengue

has a higher risk of death when not managed appropriately.[1]

The incidence of dengue has grown dramatically around the world in recent decades. One modelling estimates390 million dengue virus infections per year, of which 96 million manifest clinically with any severity of disease,[2] despite a risk of infection existing in 129 countries,[3] 70% of the actual burden is in Asia.[2] Bangladesh is situated in the tropical and sub-tropical regions like other Southeast Asian (SE) countries and like them has become a suitable habitat for the dengue vector and its increased transmission. Before 2000, only sporadic dengue cases were reported from Dhaka and other parts of the country.[4,5] Dengue caused a serious public health concern, following a sudden outbreak in 2000, when 5,551 cases and 93 deaths occurred in the country. During the dengue outbreaks from 2000–2017, both types of the vectors (Aedes aegypti and Aedes albopictus) were identified in Bangladesh.[6,7]

In Bangladesh, limited studies are available showing clinical features, laboratory parameters and outcomes of patients with dengue & most of those are Dhaka based. Sirajganj is a district in Rajshahi division but very close to Dhaka (130 K.M.). Due to close proximity & ease of transport, it is possible that patients as well as vector enters there rather easily & frequently, from Dhaka, where dengue hits hard in recent years. These circumstances have influenced the researcher to conduct a research that was aimed at assessing clinical profile of dengue patients admitted in medicine inpatient department of Shaheed M. Monsur Ali Medical College Hospital, Sirajganj. This study will give baseline information about demography, laboratory parameters common clinical features & management outcome in adult dengue patients. Findings of the study will help to generate a database which will allow to carry out further study in this field in future.

MATERIALS AND METHODS

This was a retrospective study carried out in dengue patients admitted in medicine ward of Shaheed M. Monsur Ali Medical College Hospital, Sirajgonj, Bangladesh from July to November 2019. All patients aged 10 years or more with positive NS1 or anti-dengue IgM were included. Anti-dengue IgG positive but NS1 & Anti-dengue IgM negative patients with suggestive clinical presentation and laboratory results were also included. A total of 512 patients were identified from registry of adult medicine wards; demography, clinical information, laboratory records and the details of management within the hospital were retrieved from their medical records after ensuring confidentiality of the patients. The patients were categorized into dengue fever (DF), dengue hemorrhagic fever (DHFI & DHF II), dengue shock syndrome (DSS, i.e. DHF III, IV) and expanded dengue syndrome (EDS) according to the World Health Organization (WHO) severity grading scale.[8] Data were processed and analyzed using SPSS (Statistical Package for Social Sciences), version 24.0. The categorical data were expressed as frequency and percentage.

RESULTS

Data of 512 patients were retrieved; 63.35% were male and 36.52%, female. Majority of the study population were from 21-30 years age group (Male: 22.65%, Female: 9.55%). Almost 60% (307) of the patients were ≤ 30 years old (Table I). All patients had fever as a presenting complaint. Other common presenting features were headache (81.25%), anorexia/nausea (53.12%) body ache (52.73%), vomiting (34.96%), pain at different joints (31.77%), abdominal pain (10.74%), loose motion (9.76%), retro-orbital pain (9.6%), back pain (1.36%), minor bleedings (1.36%) and cough (0.78%) (Table II). Only 0.39% patients developed dehydration and 2.14% patients had rash (as a clinical sign). Tourniquet test was positive in 2.92% patients (Table III).

456(89.06%) patients were diagnosed by positive NS1 antigen and 38(7.42%) by positive anti-dengue IgM. 18(3.52%) patients were diagnosed by positive IgG only. Other investigation findings of the study population revealed that, thrombocytopenia (platelet<1,00000/mm^3) was present in 106(20.71%) patients. Severe thrombocytopenia (<20,000/mm^3) was found in 13(2.5%) patients. 18(3.51%) patients had platelet between 20,000 - 50,000/mm^3 and 75(14.68%) patients had it between 50-100,000/mm^3. Leucopenia (WCC< 4,000/mm^3) was found in 315(61.52%) cases. All these haematologic values were determined from the first available reports/samples of patients (Table IV).

Among 512 patients, 497(97.07%) were diagnosed as Dengue Fever (DF), 12(2.34%) as Dengue Haemorrhagic Fever I (DHFI), 01(0.19%) as Dengue Haemorrhagic Fever II (DHFII) and 02

(0.39%) as Dengue Shock Syndrome (DSS). There was no patient of Expanded Dengue Syndrome (EDS) (Figure I).

Table I: Age distribution according to sex of the study population (n=512)

Age group	Male (n=325) (%)	Female (n=187) (%)
10-20 years	105(20.50%)	37(7.22%)
21-30 years	116(22.65%)	49(9.55%)
31-40 years	54(10.5%)	47(9.17%)
41-50 years	17(3.32%)	30(5.85%)
51-60 years	29(5.66%)	19(3.71%)
61-70 years	3(0.58%)	4(0.78%)
>70 years	1(0.19%)	1(0.19%)
Total 512	325(63.35%)	187(36.52%)

Table II: Symptoms of the population (n=512)

Symptoms	Number (%)
Fever	512(100%)
Headache	416(81.25%)
Anorexia/Nausea	272(53.12%)
Bodyache/Myalgia	270(52.73%)
Vomiting	179(34.96%)
Joint pain	163(31.77%)
Abdominal pain	55(10.74%)
Loose motion	50(9.76%)
Retro-orbital Pain	51(9.6%)
Rash	26(5.07%)
Back pain	7(1.36%)
Minor bleeds (Gum, Haematemesis)	7(1.36%)
Cough	4(0.78%))

Table III: Clinical signs of the study population (n=512)

Parameters		Number (%)
Temperature	High	477(93.16%)
	Normal	35(6.84%)
Dehydration	Yes	2(0.39%)
	No	510(99.61%)
Rash	Yes	11(2.14%)
	No	501(97.86%)
Tourniquet test	Positive	15(2.92%)
	Negative	497(97.08)

Table IV: Investigations of the study population (n=512)

Investigations		Number (%)
NS1 Ag (Positive)		456(89.06%)
Anti-Dengue IgM (Positive)		38(7.42%)
Anti-Dengue IgG (Positive)		18(3.52%)
Platelet count	0-20,000	13(2.54%)
(During admission)	20,000-50,000	18(3.52%)
	50,000- 100,000	75(14.65%)
	≥100,000	406(79.29%)

TC of WBC (During admission)	≤4000	315(61.52%)
	≥4000	197(38.47%)

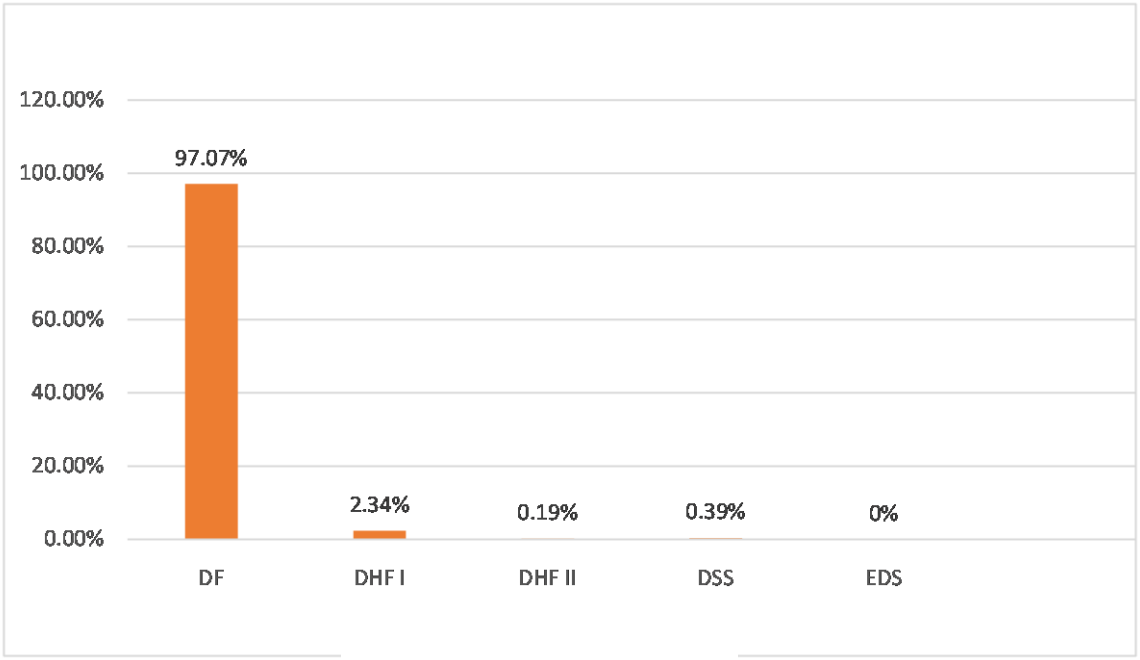

Figure I: Diagnosis of the study population (N=512)

DISCUSSION

The escalating dengue situation in Bangladesh has been emerging as a serious public health problem in terms of morbidity and mortality. 40,476 cases occurred in Bangladesh during 2000–2017, with 268 deaths (case fatality ratio was 0.66%).[9] Outbreak 2000, had 5551 people affected with 93 accounted fatalities.[10] During latest outbreak in 2019, countrywide confirmed cases & death were 101,354 & 164 respectively, which have been officially documented by the government surveillance systems (After reviewing 263 deaths, IEDCR confirmed 164 dengue deaths).[11]

The study we conducted here was based on 512 patients record retrieved from admission registry & medical records of the hospital. Male patients predominated the series (325 male, 187 female), which is similar to studies conducted in India, [12,13] where Chatterjee et al.,[12] found 572 males and 346 females. Similar findings (male predominant) were found in Pakistan & Nepal.[14,15] In our country as well as in Southeast Asian region, male are more involved in outdoor activities which might make them more vulnerable for disease transmission, or female seek medical attention less often, might be the explanation for male preponderance.

Majority of the study population were young, 307 were younger than 30 years. In one study conducted in Pakistan, by Irfan et al.,[16] 64 out of 106 patients age were ≤ 30 years. Studies in India had younger population preponderance; Chatterjee et al.,[12] found 34.1% patients were between 20-39 years and Sharma et al.,[17] found 76.57% were ≤ 30 years. Fever and headache were the most common presenting symptoms in our study. Similar observation was found in other study conducted in Bangladesh,[10] & neighboring countries.[12,13,16,17,19,20] Bodyache/myalgia are also common in this series, which is similarly common in some other study conducted in the neighboring countries & in Bangladesh.[12,13,16,17,19,20] Nausea (53.12%), vomiting (34.96%) were also predominant features in our series, which we observed as major clinical feature in other series as well.[12,13,16,19,20] Rash is an important clinical feature of dengue spectrum disorder. Initial rash is due to capillary vasodilation, present as transient facial flushing erythema typically occurs before or during first 1-2 days. The second 'convalescent rash' is seen at 3 days to 1 week following the fever, as maculopapular or morbilliform eruption.[1] In our series rash was present in only 26(5.07%)

& 11(2.14%) patients as symptom & sign respectively, which is almost similar (3.3%) to a study conducted by Kenopama et al. in Nepal,[19] but many studies presented rash with a greater proportion.[12,13.16.17,20] Joint pain was present in a significant proportion of patients (163,31.77%), which was also a significant manifestation in other study.[13,20,21] Retro-orbital pain, one of the defining clinical features of dengue was present in 51(9.6%) in our series. Study by Rauf et al. had similar (47%, 'eye pain') finding.[18] Other studies had lower frequencies of retro-orbital pain.[12,19] None of our study population had any significant bleeding despite significant thrombocytopenia(<100,000/ mm^3) in 106(20.7%) patients. Only 7(1.36%) patients had minor bleeds (bleeding gum, haematemesis). In one study Kenopama et al. found no haemorrhagic manifestation, Nandini et al. found it only in 2% of their patients,[19] which is almost similar to our study. Some other studies like, Rauf et al. (12%), Mahbub et al. (46%) and Jiaqi et al. (16.28%) documented bleeding in significant proportion patients.[18,19,21] Investigation revealed, leucopenia in 315(61.52%) patients, an anticipated finding in dengue patients. It (leucopenia) was observed in almost all studies.[12,13,16,18,19,21]

Diagnosis of dengue was made by positive NS1 (RDT NS1) or anti-dengue IgM (RDT IgM). Patients presenting within 5 days of onset of symptoms were tested with RDT NS1, & those who presented after 5 days were tested with RDT IgM. Due to unavailability of reverse transcriptase-polymerase chain reaction (RT-PCR) & enzyme-linked immunosorbent assays (ELISA), which are better diagnostic tools, we applied rapid diagnostic test which is also recommended by WHO[1] & also the National Guidelines for Clinical Management of Dengue Syndrome.[22]

We had some limitation in our study. It was a retrospective one. Due to resource constraint & unavailability of technical support we couldn't ask for viral culture, viral RNA detection, serotypic & genotypic identification & ELISA NS1 & IgM/IgG. Renal & liver function tests were also not done in the majority of the patients.

CONCLUSION

This is probably the biggest study outside Dhaka city, in terms of study population (n=512). From the present study it can be concluded that, quite a significant number of patients suffer from dengue outside Dhaka & other major cities in Bangladesh, although the study result may not reflect overall situation of the country. A broad based country-wide epidemiological study in future may validate our study findings.

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ORIGINAL ARTICLE

Ventriculoperitoneal Shunt Related Abdominal Complications in Children: Relation with the Length of the Peritoneal Catheter

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ABSTRACT

Background: Ventriculoperitoneal (VP) shunt is the well-established treatment for hydrocephalic children. The complications of VP shunt are very high about 48%; among this 7-25% are abdominal complications. The specific abdominal complications are related to the peritoneal catheter length and its position. **Objectives:** The study was designed to find out the etio-patho-physiological relation between peritoneal catheter length and the abdominal complications after VP shunt surgery for hydrocephalic children. **Methods:** This was a cross sectional retrospective observational study done at Pediatric surgery department of Bangabandhu Seikh Mujib Medical University (BSMMU), Neurosurgery department of BSMMU, Neurosurgery department of Dhaka Medical College Hospital, Neurosurgery department of Rajshahi Medical College Hospital and some private hospitals of Dhaka city from January 2008 to October 2010. A total of 40 patients who underwent VP shunt surgery for hydrocephalus evaluated purposively after getting informed written consent from their parents. **Results:** The mean peritoneal catheter length was 32.15 cm in cases of abdominal complications and 22.10 cm in cases without complication and the difference was highly significant (P<0.001). Among the abdominal complications intestinal obstruction was on the top of the list (40%). **Conclusion:** Abdominal complications were more in case of long peritoneal catheter but, it needs further study in a larger population to draw a definite conclusion.

Keywords: VP shunt, Abdominal complications, Length of the peritoneal catheter

INTRODUCTION

Children with hydrocephalus have abnormal dilatation of cerebral ventricles, which is the result of imbalance between cerebrospinal fluid (CSF) production and absorption. Hydrocephalus is a common pediatric problem ranges from 3 to 5 per 1000 live birth.[1] If these children remain untreated, death may occur due to tonsillar herniation, secondary to raised intracranial pressure (ICP). Left untreated, hydrocephalus leads to poor development of cognitive function and visual impairment.[2] For the management of these patients VP shunt is the preferred method of CSF diversion in childhood hydrocephalus.VP shunts are made by different companies with different length, valve designs and materials. But all

shunt systems consists of three parts. These are: (a) Proximal catheter-placed into the brain ventricle (b) Valve system- placed just distal to the cranial burr-hole site at the occipital region which allows one way flow of CSF (c) Distal catheter-which extends from the valve to the tip. It has two parts, subcutaneous and intra peritoneal. The intra peritoneal part is regarded as the peritoneal catheter.[3,4]

The peritoneal catheter extends from the entry point of the peritoneal cavity to the tip of the distal catheter. The length of the distal catheter varies according to manufacturing company. To place appropriate length of the peritoneal catheter in small babies it needs to trim the distal catheter. Some surgeons prefer very short about 10-20 cm intra peritoneal length but others like to use long, even upto120 cm of distal catheter.[4,5] There is no rigid guide line but there are some principles, according to which distal catheter can be tailored, if necessary.

Though VP shunt is the universally accepted way of CSF diversion for the treatment of hydrocephalus in children but it is not free of complication. Some complications are common to all types of CSF shunts like blockage, migration, leakage, and infection and some complications are specific to the specific part and material used in the VP shunt tube. Complications related to the peritoneal catheter are, intestinal obstruction, hollow viscus perforation (like bowel, bladder, uterus, vagina etc.), migration to unusual sites (like scrotum, pleural cavity etc.), pseudocyst formation and CSF ascites etc..[6]

The intra-abdominal complications after VP Shunt insertion are about 7.9-25%.[7-9] The length of the peritoneal catheter should be appropriate for the age and sex of the patient and placing the tip of the catheter in the pelvic cavity along the paracolic gutter. We observed that abdominal complications are more common when the length is relatively longer according to the age of the children.[10-12] These circumstances have influenced the researcher to conduct a research designed to find out the causative relationship between peritoneal catheter lengths and its position with the development of different abdominal complications. Many of these complications can be prevented by appropriate measures during abdominal procedure so that overall burden of the patient will be reduced.

MATERIALS & METHODS

This was a cross sectional retrospective observational study done at Pediatric surgery department of BSMMU, Neurosurgery department of BSMMU, Neurosurgery department of Dhaka Medical College Hospital, Neurosurgery department of Rajshahi Medical College Hospital and some private hospitals of Dhaka city from January 2008 to October 2010. Total 40 children up to the age of 36 months who underwent VP shunt surgery for hydrocephalus and attended for follow up with or without complication were selected purposively. Then 40 patients were grouped on the basis of post-operative abdominal complications, length of the peritoneal catheter and its tip position into the peritoneal cavity. 20 patients had abdominal complications and were grouped as Group A and 20 patients were found free of complication and were grouped as Group B. On the basis of the peritoneal catheter length (PCL) they divided into two categories. 28 had short PCL (Those cases having PCL<30cm),[13] and 12 had long PCL (Those having PCL≥30cm) and finally on the basis of tip position of the peritoneal catheter, they were categorized as pelvic (In those cases where the peritoneal catheter tips of the VP shunt were found in pelvic peritoneal cavity) and extra pelvic (In those cases where the peritoneal catheter tips were found in other than pelvic peritoneal cavity). The placement of peritoneal catheter in the abdominal cavity was done with mini laparotomy at the upper right quadrant of the abdomen in all cases and all patients were evaluated with Plain X-ray abdomen AP and lateral view and USG of whole abdomen. The detailed information regarding the study was communicated with the doctors working in the selected places. Proper counseling was done to all patients' guardians about the purpose of the study, the investigations which might be required and regarding the ethical issues. Then after taking the written consent data sheets were filled up by the investigator himself after evaluation of the individual cases. All patient's information were recorded in the data sheet including particulars of the patient, name of the hospital/institute, findings of the abdominal X-ray and

ultrasound, types of abdominal complication, length of the peritoneal catheter and its tip position. Data were processed and analyzed using SPSS (Statistical Package for Social Sciences), version 12.0. The categorical data were expressed as frequency and percentage and were compared among variables using cross-tabulation and Chi-square (χ^2) Test. The level of significance was set at 5% and p-value<0.05 was considered significant.

RESULTS

In this study, the ages of the study samples were found ranging from 1-36 months. In group A it was 1-36 months and in group B it was 1-35 months. The mean age of study population was found 16.0±2.9(±SE) months in group A and 12.8±2.7(±SE) months in Group B. The difference of mean age between the two groups was not statistically significant (P>0.05). Regarding the age distribution, the majority of the patients were within the age range of 1-6 months (40%) (Table I). The sex distribution of the study found in group A, 11(55.0%) cases were male and 9(45.0%) were female and in group B 12(60.0%) cases were male and 8(40.0%) were female. Male were predominant in both groups with the male to female ratio 11:9 in group A and 12:8 in group B. The difference also was not statistically significant between two groups (P>0.05) (Table II). 20 patients developed 6 different types of abdominal complications. These are intestinal obstruction (40%), prolonged paralytic ileus (25%), peritoneal catheter extrusion through abdominal wall (15%), CSF hygroma at abdominal incision site (10%) bowel perforation (5%) and peritoneal catheter extrusion per rectally (5%) (Table III).

The lengths of the peritoneal catheter of the study samples were ranges from 15 cm to 45 cm with a mean value of 27.12±6.74cm (±SD). Among them 12 had long PCL and 28 had short PCL (Table IV). In group A the range of PCL was 25-45 cm with mean value of 32.15 cm with 12 long PCL and 8 short PCL. In Group B the range of PCL was 15-24 cm with mean value 22.1 cm and all had short PCL. The difference of length of the peritoneal catheter between sample A and B were found statistically significant (Table V).

Complications were found more in Long PCL (60%) than short PCL (40%). A significant association was observed between long (≥30cm) peritoneal catheter and abdominal complications for VP shunt surgery (P<0.001) (Table VI).

The observed tip positions of the peritoneal catheter in all patients were categorized depending on the radiological findings. In group A, tip position was pelvic in 6 cases and extra pelvic 14 cases. In group B, the tip position was pelvic in 8 cases and extra pelvic in 12 cases. The positional difference was analyzed by Chi square test in a contingency table and found insignificant (P>0.5) (Table VII).

Table I: Age distribution of study patients (n=40)

Age in months	Group A (n=20)		Group B (n=20)		P value
	n	%	n	%	
1-6	7	35.0	9	45.0	
7-12	4	20.0	4	20.0	
13-24	2	10.0	3	15.0	
25-36	7	35.0	4	20.0	
Mean±SE	16.0±2.9		12.8±2.7		0.422^{NS}
Range (min-max)	(1-36)		(1-35)		

Group A: Who developed abdominal complication, Group B: Who did not developed any complication, t value=0.81, df=38, NS=Not significant, P value matched from unpaired t-test.

Table II: Sex distribution of study patients (n=40)

Sex	Group A (n=20)		Group B (n=20)		P value
	n	%	n	%	
Male	11	55.0	12	60.0	0.749^{NS}
Female	9	45.0	8	40.0	

Group A: With abdominal complication and Group B: With no complication; Chi value=0.10; NS=Not significant.

Table III: Distribution of abdominal complications after VP shunts surgery (n=20)

Abdominal complications	Number	Percentage
Intestinal obstruction	8	40%
Prolonged paralytic ileus	5	25%
Peritoneal catheter extrusion through abdominal wall	3	15%
CSF hygroma at the abdominal incision site	2	10%
Bowel perforation	1	05%
Peritoneal catheter extrusion per rectally	1	05%

Table IV: The lengths of the peritoneal catheter of 40 patients irrespective of complication (n=40)

Number of cases	Range in cm	Mean PCL in cm	SD	SE	Long PCL≥ 30cm	Short PCL< 30cm
40	15-45	27.12	±6.74	±1.07	12	28

Table V: Result of difference of mean PCL between Group A and Group B (n=40)

	Group A (n=20) Mean±SE	Group B (n=20) Mean±SE	t value	df	P value
PCL (cm)	32.15±1.31	22.1±0.54	7.08	38	< 0.001
Range (min-max)	(25–45)	(15–24)			

Group A: With abdominal complication and Group B: With no complication.

Table VI: Contingency table describing the association between PCL category and abdominal complication (n=40)

	Group A (n=20)		Group B (n=20)		P value
	n	%	n	%	
Long PCL	12	60.0	00	000.0	
Short PCL	08	40.0	20	100.0	$< 0.001^{S}$

Group A: with abdominal complication and Group B: with no complication; Chi value 17.14; df=1; S= Significant.

Table VII: Contingency table for peritoneal catheter tip positions in group A and group B (n=14)

	Pelvic		Extra-pelvic		P value
	n	%	n	%	
Group A	06	30	14	70	
Group B	08	40	12	60	$P > 0.5^{NS}$

Group A: Who developed abdominal complication and Group B: Who did not developed any complication; Chi value 0.6629; NS=not significant.

DISCUSSION

The modern era of surgical treatment of hydrocephalus began with the invention of valve regulated shunts made of biocompatible synthetic material in 1952.[14] This current study was carried out to evaluate the etio-patho-physiological relationship between abdominal complication and the length of the peritoneal catheter among 40 patients undergone VP shunt surgery for hydrocephalus.

In this study, majority of the patients were within the age range of 1-6 months (40%). This early age of presentation may be due to increased parental awareness together with working professional awareness as well as proper motivation of the parents by the neonatologists for early surgery. It is also advocated that early shunt placement among the hydrocephalic children within 5 months of age may achieve normal or near normal brain development.[15]

The post-operative complications after VP shunt surgery were very high in this study (60%). Among these abdominal complication was about 40%. But other studies showed only 7-25%.[7-9] The abdominal complications were, intestinal obstruction (40%), paralytic ileus (25%), peritoneal catheter extrusion through abdominal wall (15%), CSF hygroma at the abdominal incision site (10%), bowel perforation (5%) and per rectal peritoneal catheter extrusion (5%). Among the abdominal complications, the incidence of intestinal obstruction was found highest (40%). All the patients with intestinal obstruction needed laparotomy. Five had volvulus, two had abdominal cocoon and one had morbid intestinal adhesions. Among the intestinal volvulus, two had the sigmoid volvulus and three had ileal volvulus. In cases of ileal volvulus the terminal ileum was found rotated around the shunt tube but in sigmoid volvulus no definite relation was found. In cases of sigmoid volvulus the peritoneal cavity was full of fibrin rich fluid and the sigmoid colon was loaded with feces and the sigmoid mesocolon was found thickened and hypertrophied. Both the children also had the history of constipation since birth. In these cases loaded gut may be the predisposing cause for the complications. There were two cases of abdominal cocoon found as the cause of intestinal obstruction. In these cases the bowel loops were found wrapped with the fibrin exudate and there were severe adhesions among the bowel loops. Excessive chemical reaction from the exposed larger length of shunt material to the peritoneal cavity may be the cause of such morbid adhesions. Sigaroudinia, et al. in 2008 reported one case of sclerosing encapsulating peritonitis (abdominal cocoon) as the cause of intestinal obstruction.[16] In one case there was multiple adhesions between the bowel loops but were not encapsulated like the abdominal cocoon. In this case the cause maybe the same as abdominal cocoon with less severity. In our study prolonged paralytic ileus more than 5 to 7 days was 25%. Paralytic ileus is a common feature after laparotomy for any cause of intestinal surgery or extensive mobilization of intestine for extra intestinal abdominal surgery. In this study the peritoneal catheter was placed into general abdominal cavity through a mini laparotomy with minimal disturbance of the bowel. Peristalsis after abdominal surgery usually regains within 48-72 hours but in some cases the ileus after VP shunt was extended even after 5 days and they were considered as abdominal complication. In these cases the abdomen was found distended but not tender. All the patients improved with conservative management. They had dyselectrolytemia and excessive free fluid within their peritoneal cavity on investigation. This prolonged paralytic ileus may be due to irritation from CSF or tube itself. Same findings were reported by the other authors.[17] In three cases peritoneal catheter were extruded through abdominal wall. Among them two were through the abdominal incision site and one through the intact abdominal wall at the left inguinal region. These patient developed abdominal wound infection and

with regular dressing it was not improved subsequently the peritoneal catheter was extruded through the wound. The adhesion of the shunt tube to the abdominal wall and continuous irritation may be the cause of such complications. Same types of complication were reported by other authors.[18,19] Spontaneous bowel perforation was found in one case. On laparotomy site of perforation was found in the terminal ileum near the ileocecal junction it may be due to irritation of the tip of the catheter to the relatively fixed ileocecal junction. In one case peritoneal catheter was found extruded per rectally. In this case the site of perforation was near the splenic flexure of the transverse colon. This also may be due to the irritation by the peritoneal catheter to the relatively fixed splenic flexure of the large gut. Previously these types of complications were reported by many authors.[4,11,12,20-23] In our findings in cases of spontaneous bowel perforation and per rectal catheter extrusion the distal slit valve was found trimmed which usually preserved during shunt placement. So trimming of the distal slit valve may be another cause of such types of complication. CSF hygroma at abdominal incision site developed in two cases. The CSF collected along the distal catheter was referred as CSF hygroma which may be due to the breakage or perforation at the shunt tube. In our cases CSF collected at the abdominal incision site probably due to blockage of the peritoneal catheter and back flow of CSF along the shunt tube and collected beneath the skin. In this study no cases of abdominal CSF pseudocyst or ascites was found. But the above mentioned cases of CSF hygroma at the abdominal incision site may be a subcutaneous extension of intra peritoneal pseudocyst which actually not evident in abdominal ultrasonogram.

There is no definite guideline about the length of the peritoneal catheter. Some author advocates to use short peritoneal catheter and some author suggests long peritoneal catheter.[4,5,24] In our observation the mean PCL in all 40 cases was 27.12± 6.74 cm irrespective of complication. In complication group it was 32.15±5.87 cm and in no complication group it was 22.15±2.40 cm. This finding showed that the complications occurred more when longer peritoneal catheter were used and there was significant difference between the two mean value ($P<0.001$).

The position of the tip of the peritoneal catheter is also an important factor in prevention of abdominal complications. Some author suggests pelvic positioning of the peritoneal catheter tip.[3] In our observations the positions of the peritoneal catheter tip in abdominal cavity was found with many variations. We found peritoneal catheter tip in extra pelvic position in 26 cases (65%) and pelvic position in 14 cases (35%). There was no significant difference of peritoneal catheter tip position in both groups ($P>0.5$). In all cases the tip of the peritoneal catheter was placed with the help of mini laparotomy at the upper right quadrant of the abdomen. During operation the tips were positioned in pelvic cavity blindly but as it remains free in the peritoneal cavity so it has the chance of attaining any position.

This was a cross sectional retrospective observational study. We observed abdominal complications were more in case of long peritoneal catheter with the peritoneal catheter tips in extra pelvic position. We also found that the trimming of distal slit valve plays some role in bowel perforation. In this study it is very difficult to determine a conclusion regarding the length and position of the peritoneal catheter for small children during VP shunt surgery. However it would be better to carry out the study for longer period and by evaluating the large number of patients.

CONCLUSION:

Though the abdominal complications of VP shunt are relatively less frequent than the other complications but some of these are life threatening if not managed timely. Some of those are preventable by using appropriate length and position of the peritoneal catheter. In our study we found the higher incidences of abdominal complications which were related to the unusual length of the peritoneal catheter. It needs more future study in a larger population to draw a definite conclusion regarding the appropriate length and position of

the peritoneal catheter to prevent abdominal complications in children.

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ORIGINAL ARTICLE

Etiology and Clinical Profiles of Patients with Sigmoid Volvulus: A Prospective Study in Tertiary Care Hospital in Bangladesh

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ABSTRACT

Background: Sigmoid volvulus is a life-threatening condition that results from the rotation of the sigmoid colon on its mesenteric axis leading to a closed-loop obstruction.Volvulus can occur in any part of small and large intestine including stomach. Of these sigmoid volvulus is most common. **Objectives**: The aim of the study was to observe the clinical profiles and etiology of patients with sigmoid volvulus in a tertiary care hospital in Bangladesh. **Methods:** This was a prospective observational study carried out in the department of general surgery, Shaheed Ziaur Rahman Medical College, Bogura from December 2006 to December 2009. Total thirty (30) consecutive patients of different age group of sigmoid volvulus had been taken purposively who underwent surgery for sigmoid volvulus during the study period after getting written consent. **Results:** Results showed that, maximum number of patients (33.3%) felt into 5th decades. Majority of the cases were male (70%) and regarding occupation, farmers represented the highest in percentage (40%). All the patients presented with abdominal pain (100%) and abdominal distension (100%) followed by absolute constipation (90%). Tachycardia (100%) and features of dehydration (100%) was found among all of the patients. 93.9% had absent bowel sound and 86.7% patients had empty rectum. During operative procedure it was found that, the narrow attachment of the sigmoid mesocolon at its base with long pelvic colon was the commonest cause (70%). **Conclusion:** Sigmoid Volvulus is the most important cause of intestinal obstruction. Delay in diagnosis leads to serious complications.The research findings will help us for early diagnosis and to start better treatment plan which will reduce patients sufferings.

Keywords: Etiology, Clinical profiles of patients, Sigmoid volvulus

INTRODUCTION

Volvulus describes the condition in which the bowel becomes twisted on its mesenteric axis, a situation that results in partial

or complete obstruction of the bowel lumen and a variable degree of impairment of its blood supply. Volvulus can occur in any part of small and large intestine including stomach. Sigmoid volvulus generally affects adults, and it is more common in males. Sigmoid volvulus is the most common form of volvulus of the gastrointestinal tract and is responsible for 8% of all intestinal obstructions.[1]

Sigmoid volvulus is particularly common in elderly persons. Patients with sigmoid volvulus may present with as acute or sub-acute intestinal obstruction with signs and symptoms indistinguishable from those caused by cancer of the distal colon. Most of the patients present with abdominal pain, distension, and absolute constipation. Predisposing factors include chronic constipation, megacolon, and an excessively mobile colon. There is usually sudden onset of severe abdominal pain, vomiting and obstipation. The abdomen is usually markedly distended and tympanic; with the distention often more dramatic than would be associated with other causes of obstruction and rebound tenderness and tachycardia are ominous signs.[2]

Although acute Sigmoid volvulus has a sudden onset, patients usually present with a mean delay of 1 to 4 days. Abdominal pain, distention, and constipation are the classical triad of symptoms in acute Sigmoid volvulus. Additional complaints include vomiting, nausea, diarrhea, anorexia, rectal bleeding, and hematemesis. The main physical findings are asymmetrical abdominal distention and tenderness. Other findings include absent bowel sounds, tympany, empty rectum, visible peristalsis, abdominal mass, and fecal odor of the breath. Presence of rectal melanotic stool or rebound tenderness and muscular defense generally show gangrene or perforation and peritonitis.[3]

The etiology of sigmoid volvulus is: A. Congenital: Idiopathic, narrow attachment of the sigmoid mesentery, long mobile loop of the sigmoid colon, Hirschprung disease, pseudo megacolon and congenital bands. B. Acquired. Predisposing factors are: post-operative adhesions, loaded colon resulting from chronic constipation, dietary-large, heavy course diet, old age and drugs like anticholinergics, ganglion blockers antiparkinsonian drugs-and tranquilizers also have been said to produce megacolon or megacolon syndrome.[4]

Sigmoid Volvulus is a rare but most important cause of intestinal obstruction typically presenting with pain abdomen, abdomen distention of sudden onset and constipation. Aetiology of sigmoid volvulus is multifactorial and controversial. Delay in diagnosis leads to serious complications like bowel gangrene, perforation, peritonitis and sepsis. Sigmoid volvulus is a surgical emergency requiring prompt diagnosis and treatment. The aim of this study is to analyse sigmoid volvulus; socio-demographic factors related to it, its presenting complaints and per-operative etiological factors.

MATERIALS & METHODS

This was a prospective observational study of well documented patients with clinical features suggestive of sigmoid volvulus, subsequently proved by plain X-ray abdomen A/P view in errect posture including both dome of diaphragm and underwent surgery for it at our surgical department between December 2006 to December 2009. Total thirty (30) consecutive patients of different age group of sigmoid volvulus had been taken, who underwent surgery for sigmoid volvulus during the study period. Sample was taken purposively. Strict selection crieteria was applied. Patients with sigmoid volvulus proved by taking history, clinical examination, plain x-ray abdomen and was confirmed on laparotomy and patients or their guardians who agreed to comply with the study protocol were included. Patient or patient's guardian who refused to be included in the study and patient who had compound volvulus (A loop of ileum wrapping around the root of sigmoid colon forming loop torsion) were not included in this study. Radiology confirmed only 86.7% of cases and all cases were confirmed after laparotomy.We did laparotomy all of the patients. Residents and fellow surgeons performed the operations under the supervision of senior surgeons. Data analysis was performed according to the objective of the study using computer software program Statistical Package for Social Sciences (SPSS) version 16.0.

RESULTS

Results showed that among the 30 patients age varies from 18 to 68 years. Maximum number of patients fell into 5^{th} decades followed by 6^{th} decades and percentage being 33.3, and 26.4 percent respectively. Majority of the cases were male (70%) and the male:female ratio was 7:3. Regarding occupation, farmers represented the highest in

percentage (40%) followed by housewives (30), day laborer (23.3%) and Rickshaw puller (6.7%) (Table I).

All the patients presented with abdominal pain (100%) and abdominal distension (100%). Among the patients, 27 cases (90%) came with absolute constipation followed by tympanic tube like feeling all over the abdomen in 25 cases (83.3%), Nausea & vomiting in 20 cases (66.7%) and diarrhea in 5 cases (16.7%) (Table II).

Regarding physical findings of those patients revealed that, all of the patients had tachycardia (100%) and features of dehydration (100%). 28 cases (93.9%) had absent bowel sound and 93.9% patients had empty rectum. Auscultation over the abdomen found that, 13.3% patients had localized and 60% had generalized tenderness. 60% patients had come with features of shock. Patients with rebound tenderness, visible peristalsis and fever were found 60%, 30% and 23.3% respectively (Table III).

During operative procedure it was found that, the narrow attachment of the sigmoid mesocolon at its base with long pelvic colon was the commonest cause (70%). Faecal overloading was found in 3 cases (10%). In 2 cases (6.7%) of sigmoid volvulus sigmoid colon was found floating with long mesentery (Table IV).

Table I: Distribution of demographic variables among the patients (n=30)

Demographic variables	Frequency	Percentage
Age groups (years)		
11-20	1	3.3
21-30	5	16.7
31-40	5	16.7
41-50	10	33.3
51-60	8	26.7
61-70	1	3.3
Sex		
Male	21	70
Female	9	30
Occupation		
Farmer	12	40.0
Day laborer	7	23.3
Rickshaw puller	2	6.7
Housewife	9	30.0

Table II: Presentations of the patients (n=30)

Symptoms	Frequency	Percentage
Abdominal pain	30	100.0
Abdominal distention	30	100.0
Absolute constipation	27	90.0
Tympanic tube like feeling all over the abdomen	25	83.3
Nausea & Vomiting	20	66.7
Diarrhea	5	16.7

Table III: Physical findings of the patients (n=30)

Physical signs	Frequency	Percentage
Tachycardia	30	100.0
Dehydration:		
• Mild to moderate	20	66.7
• Severe	10	33.3
Absent Bowel sound	28	93.9
Empty rectum	26	86.7
Abdominal tenderness:		
	4	13.3

• Localized • Generalized	18	60.0
Features of shock	18	60.0
Rebound tenderness	18	60.0
Visible peristalsis	9	30.0
Fever	7	23.3

Table IV: Etiology found during operative procedure (n=30)

Operative procedure	Frequency	Percentage
Narrow attachment of the sigmoid mesocolon at the base with long pelvic colon	21	70.0
Redundant colon	4	13.3
Overloaded colon	3	10.0
Floating sigmoid colon	2	6.7
Bands at the anti-mesenteric border	0	0

DISCUSSION

Sigmoid volvulus is considered a medical emergency and should prompt immediate treatment. In our study it was found that, the age of the patients varies from 18 to 68 years. Maximum number of patients fell into 5th decades followed by 6th decades and percentage being 33, and 26.4 percent respectively. Sigmoid Volvulus is commonly regarded as a disorder of old age. Garth H. Ballantyne et al. showed in his study of 59 cases of sigmoid volvulus mean age was 61 years and median age was 64 years.[5] Professor M. Rahman showed that 52% of sigmoid volvulus occurred between 50-60 years of age in our country.[6] These results are almost similar to those of ASM Shamsuddin Mahmood and also with Rezaul Karim.[7,8]

Most authors have reported high preponderance of male patients. Rezaul karim has reported male and female ratio 1.5:1.[8] In the present series these is also male preponderance. Here male to female ratio is 7:3. High incidence in male in our country may be due to irregular bowel habits in male who remain most of the time out of home for work. On the other hand, it has been suggested that the low incidence of sigmoid volvulus in female is due to larger pelvis and more relaxed abdominal musculature permitting greater freedom of sigmoid colon but this explanation appears to be inadequate.[9]

The economic condition of almost all of the patients were poor. Due to poor communication facilities patients did not arrive at the hospital until several days had been passed. In the present study most of the patients were farmers, day-laborers and housewives. The diet consisted of mainly coarse grains. In the present series, majority of the patients were constipated and their dietary quality was poor fibrous and bulky in nature. These results are also similar to those of some other studies in our country.[9]

Many authors described the clinical feature of sigmoid volvulus of the following type. The onset may be acute or insidious. Sutcliffe observed the finding in his series such as distension of abdomen in 50 cases (94%) abdominal pain 41 cases (77%), constipation 28 cases (51%), nausea and vomiting 35 cases (66%) altered bowel sound 43 cases (81%), empty rectum in 30 cases (57%), clinical evidence of dehydration 11 cases (21%) and diarrhoea in 7 cases (13%).[10]

Srivasta et al. studied 75 cases of sigmoid volvdlus in Kanpur, India from January, 1966 to March, 1970 and clinical features recorded such as abdominal distension 75 cases (98.4%) abdominal pain in 72 cases (96%) absolute constipation in 72 cases (96%) nausea and vomiting in 27 cases (36%), dehydration in 57 cases (76%), empty rectum in 30 cases (52%), diarrohea in 3 cases (4%), bowel sound accentuated in 27 cases (36%).[11]

In the present series the abdominal distension was 100% (n=30), abdominal pain 100% (n=30). Absolute constipation 90% (n=27) nausea and vomiting 66.7% (n=20), signs of dehydration 100%, peristalsis in 30% (n=9). Bowel sound feeble on absent 93.9% (n=28), empty rectum 86.7% (n=26). These are more or less similar to Rezaul Karim.[8]

During operative procedure it was found that, the narrow attachment of the sigmoid mesocolon at its base with long pelvic colon was the commonest cause (70%). In all cases of sigmoid volvulus

sigmoid colon was grossly distended, thin walled, filled up with gas and liquid faeces. Faecal overloading was found in 3 cases (10%). In 2 cases (6.7%) of sigmoid volvulus sigmoid colon was found floating with long mesentery. In most cases small gut was also distended.

The etiology of sigmoid volvulus is unclear. Various theories have been proposed for centuries, each explaining the prevalence of sigmoid volvulus in different groups of people. Many of these theories, however, can be unified by a single underlying mechanism. Sigmoid volvulus tends to occur in people with floppy redundant colons with narrow mesosigmoid parietal attachments. In Brazil, megacolon most commonly develops in patients with Chagas' disease and is indicated as the major cause of volvulus. A long floppy sigmoid colon with a narrow mesocolon at its parietal attachment appears to be the unifying feature of many of these theories. Sigmoid volvulus commonly occurs in groups of patients with congenitally redundant colons.[12]

Though the mechanisms of volvulus of the sigmoid colon, are yet not fully understood, but might be related to a long sigmoid colon, age, a prolonged mesentery, scarring of the sigmoid mesentery, narrow mesenteric fastenings and no repair of the mesentery after surgery. The fecal overload makes the colon distended and elongated, which eventually makes the colon rotate around its mesenteric axis. The elongation is greater at the anti-mesenteric border, as the mesentery and vessels fastens its border, and as the distention intensifies, the sigmoid rotate to balance out the size difference. The distension further increases with the proximal peristaltic movements, along with bacterial fermentation, resulting in an impaired blood supply.[13]

The etiology of sigmoid volvulus is multifactorial and controversial. The anatomical constitution of the sigmoid colon is a prerequisite for sigmoid volvulus. The redundancy of the sigmoid colon, dolichomesentery which is described as ‘mesentery that is wider than long’ and the narrowing of the base of the sigmoid mesentery are considered effective factors for the development of sigmoid volvulus. These anatomical characteristics may be acquired, and, in rare cases, they are congenital.[3]

It was a hospital based prospective study and researchers did the study in one hospitals in Bangladesh. So, it did not represent the whole group of such patients. Further researches should be aimed to include a larger sample size selected from a larger number of different hospitals of different parts of the country.

CONCLUSION

Sigmoid volvulus is generally seen in adult men. It presents in the form of large bowel obstruction, and a triad of colic abdominal pain, asymmetrical distention, and constipation is valuable for diagnosis. Without a consideration of the atypical demographics for sigmoid volvulus, the case illustrates the potential morbidity due to a delayed diagnosis. Early identification and management are crucial in treating sigmoid volvulus before the appearance of gangrene and necrosis because non-severe ischemic change is reversible at an early stage. Early diagnosis and intervention will decrease the mortality rate. Overall, this may help to reduce the burden of life of the patient.

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REVIEW ARTICLE

Flu, Global Perspective: A Narrative Review

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If influenza is a riddle wrapped in mystery inside an enigma, then the viral genes are the riddle, the variable surface antigens for which they code are the mystery, and the course and cause of epidemics the ultimate enigma.

E.D. Kilbourne

ABSTRACT

Background: Influenza, commonly called the flu, is an acute self-limiting viral infection that attacks the respiratory system. It occurs in distinct outbreaks of varying extent every year throughout the world which is highly contagious and spreads through droplets produced by the coughs and sneezes of an infected person. **Objectives:** Considering the significance of the disease burden we reviewed this article to focus on different aspects of influenza globally. **Methods:** For this purpose we obtained pertinent articles through internet search and reviewed the latest findings about influenza. **Findings:** Our narrative review demonstrated current status of influenza throughout the world including genetic diversity, mode of transmission, pathogenicity, diagnosis, clinical case management and successful measures to prevent spread in the community. This literature also figured out that influenza can pose a significant burden to the global health. **Conclusion:** Baseline data of this article may help to construct an overview on influenza & optimize medical care for the management of this disease.

Keywords: Influenza, Different aspects, Global perspective

INTRODUCTION

Flu or Influenza is caused by influenza viruses. Human, as well as animals & birds are affected by influenza viruses. The illness affects the upper and/or lower respiratory tract and is often accompanied by systemic signs and symptoms such as fever, headache, myalgia, and weakness. Influenza virus infection is also associated with hospital admission for circulatory & other problems and deaths occurred, especially among older adults.[1,2] Some studies estimated both respiratory and non-respiratory (e.g. circula-

tory) deaths and found that non-respiratory deaths accounted for more than half of all influenza-associated deaths.[3,4] There are 4 types of influenza viruses: types A, B, C and D. Type A causes influenza in humans as well as in animals. Influenza C virus is detected less frequently and usually causes mild infections in human. Influenza D viruses primarily affect cattle. Influenza A and B viruses cause seasonal epidemics of disease. It is only the type A influenza virus which has pandemic potential.The WHO estimates that annual epidemics of influenza involves 1 billion cases, 3-5 million of them with severe illness and up to 650,000 deaths worldwide.[5] According to United States Centers for Disease Control and Prevention (US-CDC), most deaths due to influenza occur among people aged over 75 years, and in the world's poorest regions. Sub-Saharan Africa accounts for the world's greatest flu mortality risk, followed closely by the Eastern Mediterranean and Southeast Asia.[6]

The focus of this review is to discuss different aspects of this readily transmissible, yet preventable life threatening illness which still appears to be a big public health threat.

METHODOLOGY

For the present narrative review, study documents were identified through searching Google Scholar, Health Inter Network Access to Research Initiative (HINARI) and Medline database independently. Used searching keys were mainly historical aspects, epidemiology, etiological agents, clinical profiles, complications, treatments and preventive strategy regarding influenza. Selection criteria included both original and review articles written in English that examined latest findings about global perspectives of influenza. Reference lists of articles were also examined. Thus, a total of 60 articles were finally selected after primary selection of 86; findings were summarized after reviewing.

FINDINGS & DISCUSSION

Historical aspects of epidemics and pandemics:

Influenza outbreaks were recognized by their common clinical features, and widespread epidemics occurred in Europe in 1510, 1557, and 1580. The first pandemic followed the 1580 epidemic where spread occurred from Europe to Asia and Africa. The pandemics of the 18th century occurred during the years of 1729 to 1730, 1732 to 1733, and 1781 to 1782 (the most severe 18th century pandemic).[7,8,9] During the 19th century, three influenza pandemics occurred in 1830 to 1831, 1833 to 1834, and 1889 to 1890 ('Russian flu pandemic' 1889-1890).

In 1918 a mysterious and deadly disease spread around the world (later discovered as H1N1) in three consecutive waves (spring 1918, autumn 1918, and winter 1918–19). This pandemic infected over one third of the world's population and killed an estimated 50 million people,[9] with unusually severe clinical manifestations in previously healthy young adults[10]; death was caused by primary viral pneumonia & secondary bacterial pneumonia.[11] Now we know that it was an influenza pandemic, often colloquially referred to as the "Spanish" influenza (H1N1) pandemic. As a neutral country in World War I, Spain did not practice censorship in the press, but other countries like Germany, Britain and France most likely limited the news of this deadly pandemic, so as not to lower the moral of the troops.[12] Today, the general consensus is that the 1918 influenza virus originated in the Midwest of the United States of America (around March 1918 in military camps in Kansas).[13]

There were other less severe pandemics in the 20th century; 1957 ("Asian" influenza, subtype shifted from H1N1 to H2N2), 1968 ("Hong Kong" influenza, H3N2),[14] 1977(H1N1, primarily affected younger individuals i.e., those born after 1957). Death toll from the former two epidemics were 1-4 million, for each epidemic.[15]

The first association of avian influenza H5N1 with clinical respiratory disease occurred in Hong Kong in 1997, which reemerged there in 2003,[16] Since then more than 590 human cases have been reported to the WHO with a case-fatality rate (CFR) of approximately 60 percent.[17]

In 2009, an outbreak of H1N1 influenza A (swine influenza) virus infection was detected in Mexico, with subsequent cases observed in many other countries including the United States.[18,19] There had been 61 million estimated cases of H1N1 in the USA,[20] & 18,500 deaths.[21] The pandemic was declared to be over in August 2010.[22]

Table I: Antigenic subtypes of influenza A virus associated with pandemics or epidemics[23]

Year	Subtype	Severity of outbreak
1889-90	H2N8	Severe pandemic
1900-03	H3N8	Moderate epidemic

1918-19	H1N1 formerly HswN1	Severe pandemic
1933-35	H1N1 formerly H0N1	Mild epidemic
1946-47	H1N1	Mild epidemic
1957-58	H2N2	Severe pandemic
1968-69	H3N2	Moderate pandemic
1977-78	H12N1	Mild pandemic
2009-10	H1N1	Mild to moderate pandemic

Epidemiology:

Influenza occurs in distinct outbreaks of varying extent every year. Localized (inter-pandemic) outbreaks take place at variable intervals, usually every 1–3 years. Global pandemics have also occurred at variable intervals,[23] but much less frequently.

Inter-pandemic influenza A outbreaks usually begin abruptly, peak over a 2 to 3 week period, generally last for 2–3 months, and often subside almost as rapidly as they began.[23] The first indication of such influenza activity is an increase in the number of children with febrile respiratory illnesses who present for medical attention. This increase is followed by increases in rates of influenza-like illnesses among adults and eventually by an increase in hospital admissions for patients with pneumonia, worsening of congestive heart failure, and exacerbations of chronic pulmonary disease. An increase in the number of deaths caused by pneumonia and influenza is generally a late observation in an outbreak. Such inter-pandemic outbreaks occur almost exclusively during the winter months in the northern and southern hemispheres, but may occur throughout the year in the tropics.

In contrast, pandemic influenza may begin with rapid transmission at multiple locations, have high attack rates, and extend beyond the usual seasonality, with multiple waves of attack before or after the main outbreak.[23]

Because of high attack rates, the morbidity caused by seasonal influenza (that occurs every year) in the general population is substantial, with most of the infections occurring in children. It is estimated that 15–42% of preschool and school-age children become infected with influenza each year, only a portion of whom seek medical treatment [24,25,26]; although most of the severe cases involve either very young (children<59 months) or elderly individuals or those with underlying comorbidities.

Studies on the transmission of seasonal influenza A virus in humans have proposed that populations in southeast Asia, eastern Asia and/or the tropics act as permanent sources for seeding seasonal epidemics.[27,28]

Etiologic agent and pathogenesis:

The influenza virus: All influenza viruses are enveloped negative- sense single- strand RNA viruses of the Orthomyxoviridae family, with a segmented genome. The virions are irregularly shaped spherical particles, measure 80–120 nm in diameter, have a lipid bilayer envelope from the surface of which glycoproteins project. Influenza A and influenza B viruses contain eight RNA segments, which encode: RNA polymerase subunits, viral glycoproteins- namely, haemagglutinin (HA), with its distinct globular 'head' and 'stalk' structures, which facilitate viral entry, and neuraminidase (NA), which facilitates viral release, viral nucleoprotein (NP), matrix protein (M1) and membrane protein (M2), and nuclear export protein (NEP) (Figure I).[29]

The HA and NA viral glycoproteins are the most antigenically variable region of the virus, so they are the main targets for protective antibodies induced by the virus infection and vaccination. In influenza A virus, a total of 16 antigenically different HA and 9 antigenically different NA serotypes have been identified.

Antigenic properties of the viruses has changing nature due to the changes in their HA & NA portion (facilitated by the presence of segmented genome that can result in high rates of re-assortment among viruses co-infecting the same cell). Re-assortment between animal and human viruses

may result in the emergence of pandemic strains.[23,30] These major changes in the hemagglutinin and neuraminidase glycoproteins are referred to as antigenic shifts (responsible for pandemics), and minor changes are called antigenic drifts.

Epidemiologic pattern of influenza reflects the changing nature of the antigenic properties of the viruses, and their subsequent spread depends upon multiple factors, including transmissibility of the virus and the susceptibility of the population.

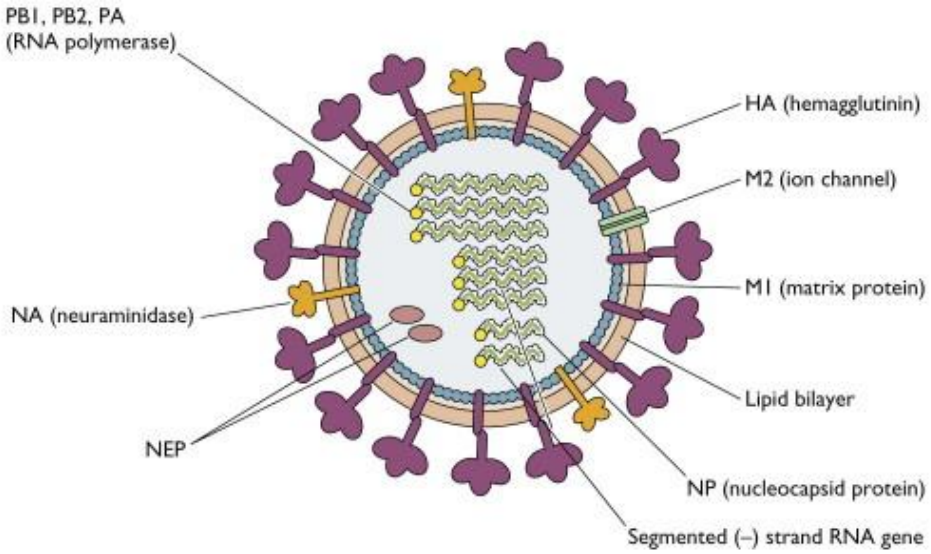

Figure I: Diagrammatic representation of structure of influenza virion[29]

Signs and symptoms:

After a typical incubation period of 1-4 days (average 2 days),[31] uncomplicated Influenza characteristically begins with the abrupt onset of fever, headache, myalgia, and malaise.[30] Temperature varies, between 38° & 41°C (100.4°–105.8°F). A rapid temperature rise within the first 24 h of illness is generally followed by gradual defervescence over 2–3 days, although, on occasion, fever may last as long as 1 week.[23] Headache, either generalized or frontal, is often particularly troublesome. Arthralgias may also develop; myalgias may involve any part of the body but are most common in the legs and lumbosacral area. Symptoms are accompanied by manifestations of respiratory tract illness, such as non-productive cough, sore throat, and nasal discharge. In some cases, the onset is so abrupt that patients can recall the precise time at which illness began. However, patients may present with afebrile respiratory illnesses similar to the common cold to severe illness in which systemic signs and symptoms predominate.[32]

In the elderly, and in individuals with compromised immune systems presentation can initially be less dramatic, with relatively subtle presentation, possibly because of a diminished cytokine response.[33] Typical features such as sore throat, myalgia, and even fever may be absent, and general symptoms such as anorexia, malaise, weakness, lassitude confusion and dizziness may predominate.

Physical findings generally are few in cases of uncomplicated influenza. The patient may appear hot and flushed. Examination of the pharynx may yield surprisingly unremarkable results despite a severe sore throat, but injection of the mucous membranes and postnasal discharge are apparent in some cases. Mild cervical lymphadenopathy may be present especially in younger patients. Physical examination of the chest is generally unremarkable in uncomplicated influenza, although imaging & investigations reveals mild ventilatory defects and increased alveolar-capillary diffusion gradients in such patients.[34]

In uncomplicated influenza, the acute illness generally resolves over 2–5 days, and most patients

largely recovers in 1 week, although cough may persist 1–2 weeks longer. In a significant minority (particularly the elderly), however, symptoms of weakness or lassitude (post-influenza asthenia) may persist for several weeks and may prove troublesome.

Complications:

High risk groups for complications of influenza are listed below:

- All children from birth to <5 years, especially <2 years
- All persons ≥50 years
- Pregnant women
- Adults and children who have chronic pulmonary (including asthma) or cardiovascular (except isolated hypertension), renal, hepatic, neurologic, hematologic, or metabolic disorders (including diabetes mellitus)
- Persons who have immunosuppression (including that caused by medications or by HIV infection)
- Children <19 years of age and receiving long-term aspirin therapy
- Residents of nursing homes and other long-term care facilities
- Persons who are morbidly obese (body mass index ≥40 kg/m^2)

A. Pulmonary Complications

Pneumonia

The most significant complication of influenza is pneumonia (Figure II)[35]; primary influenza viral pneumonia, secondary bacterial pneumonia, or mixed viral and bacterial pneumonia. Studies on respiratory viruses & pneumonia revealed that up to 50% of pneumonia cases are linked to respiratory viruses, and up to 45% of pneumonia cases in children show evidence of viral–bacterial coinfections.[34,36,37]

1. Primary influenza viral pneumonia: Is the least common but most severe of the pneumonic complications. It occurs when influenza virus infection directly involves the lung, typically producing a severe pneumonia. It presents as acute influenza that does not resolve but instead progresses relentlessly, with persistent fever, dyspnea, and eventual cyanosis.[38] Sputum production is generally scanty, but the sputum can contain blood. Few physical signs may be evident early in the illness. In more advanced cases, diffuse rales may be noted, and imaging findings consistent with diffuse interstitial infiltrates and/or acute respiratory distress syndrome may be present. It is more common in individuals with cardiac diseases, particularly mitral stenosis, but has also been reported in otherwise-healthy young adults as well as in older individuals with chronic pulmonary disorders.

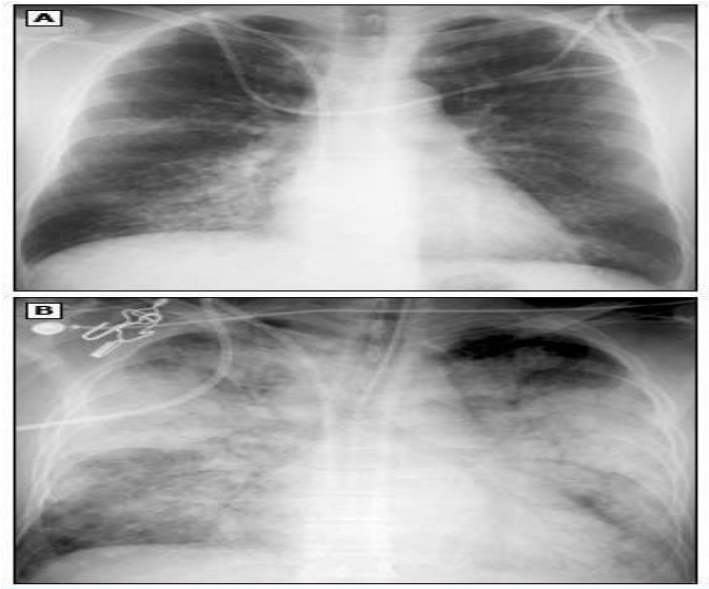

Figure II: Postero-anterior chest radiograph (CXR, P/A) of a 44-year-old man with influenza pneumonia

Postero-anterior chest radiograph (CXR, P/A) of a 44-year-old man with influenza pneumonia showing: (A) Poorly defined nodular opacities and small areas of consolidation in the right middle and lower lung zones (B) CXR (one week later) extensive bilateral consolidation and poorly de-

fined nodular opacities. Also noted are an endotracheal tube and a central venous line (Figure II).[35]

2. Secondary bacterial pneumonia: Follows acute influenza. Improvement of the patient's condition over 2–3 days is followed by a reappearance of fever along with clinical signs and symptoms of bacterial pneumonia, including cough, production of purulent sputum, and physical and x-ray signs of consolidation. The most common bacterial pathogens in this setting are Streptococcus pneumonia (48% in one series),[39] Staphylococcus aureus, and Haemophilus influenza, organisms that can colonize the nasopharynx and that cause infection in the wake of changes in broncho-pulmonary defenses. It occurs most frequently in high-risk individuals with chronic pulmonary and cardiac disease and in elderly individuals, contributes to approximately 25 percent of all influenza-associated deaths.[40]

3. Mixed viral and bacterial pneumonia: Perhaps the most common pneumonic complications during outbreaks of influenza have mixed features of viral and bacterial pneumonia. Patients may experience a gradual progression of their acute illness or may show transient improvement followed by clinical exacerbation, with eventual manifestation of the clinical features of bacterial pneumonia. Sputum cultures may contain both influenza A virus and one of the bacterial pathogens.

4. Other pulmonary complications: Associated with influenza include worsening of chronic obstructive pulmonary disease and exacerbation of chronic bronchitis and asthma. In children, influenza infection may present as croup.

B. Extrapulmonary complications: Myositis, rhabdomyolysis, and myoglobinuria are occasional complications of influenza infection.

C. Central nervous system (CNS) complications: Such as encephalitis,[41-44] and transverse myelitis,[45] aseptic meningitis,[46] and Guillain-Barré syndrome(GBS),[47] have all been reported to have association with influenza.

D. Reye's syndrome (RS): Is a serious complication in children that is associated with influenza B and to a lesser extent influenza A virus infection as well as with varicella-zoster virus and other viral infections. It is an acute, non-inflammatory encephalopathy characterized by alterations in the level of consciousness.[48] A statistically significant association of RS with the ingestion of salicylates during the antecedent illness, was observed by case-control study.[49,50]

E. Toxic shock syndrome (TSS): TSS associated with Staphylococcus aureus infection and acute influenza has been described.[51,52]

F. Others: Gradual deterioration of underlying cardiovascular, pulmonary, or renal function-changes that occasionally are irreversible and lead to death.

Diagnosis:

During outbreaks: During an influenza outbreak, acute febrile respiratory illnesses brought to the attention of clinicians can be diagnosed as influenza with a high degree of certainty by clinical criteria (The best multivariate predictor was the combination of fever and cough within 48 hours of the development of symptoms, which had a positive predictive value of 79% for documented influenza.[32] Yet diagnostic tests should be offered to the following group of patients, if the testing result will influence clinical management, such as[53]:

- On admission in all patients requiring hospitalization with acute respiratory illness, including pneumonia, with or without fever
- Patients who, while hospitalized (due to other reasons), develop acute onset of respiratory symptoms, with or without fever, or respiratory distress, without a clear alternative diagnosis
- High risk (including immune compromised) patients in out-patient department who present with influenza-like illness, pneumonia, or nonspecific respiratory illness (eg, cough but no fever)
- Patient in out-patient department who present with acute onset of respiratory symptoms with or without fever, and either exacerbation of chronic medical conditions (eg, asthma, chronic obstructive pulmonary disease, heart failure) or known complications of influenza (eg, pneumonia)

Sporadic cases: Influenza cannot be differentiated from infections caused by other respiratory viruses on clinical grounds alone (outside of outbreak situations) and influenza virus infection

may account for only a small number of such cases.[32] Diagnostic tests should be offered in this situation, if the testing result will influence clinical management, such as:

- On admission in all patients requiring hospitalization with acute respiratory illness, with or without fever, who have an epidemiological link to a person diagnosed with influenza, or acute febrile respiratory illness of uncertain cause, or who recently traveled from an area with known influenza activity
- Hospitalized patients with acute, febrile respiratory tract illness, especially children and adults who are immunocompromised or at high risk of complications, or if the results might influence antiviral treatment or chemoprophylaxis decisions for high-risk household contacts

Laboratory tests:

Viral diagnostic tests options include:

- Rapid molecular assays (ie, nucleic acid amplification tests)
- Reverse-transcription polymerase chain reaction (RT-PCR) (Gold- standard, differentiate between influenza types, A or B and subtypes including pandemic H1N1 and avian H5N1 influenza)
- Rapid influenza diagnostic tests (RIDTs)
- Immunofluorescence assays for influenza virus
- Direct & indirect fluorescent antibody staining
- Neuraminidase detection assay (does not distinguish between influenza A and B)
- Viral culture (highest specific, tissue culture or chick embryo)
- Serologic tests (hemagglutinin inhibition, ELISA, complement-fixation, and neutralization, available only in reference laboratories)

Specimen collection

Specimen should be collected (from nasopharyngeal, upper respiratory tract, nasal/throat swab or sputum) as soon after illness onset as possible, preferably within 4 days of symptom onset.[32]

Other laboratory tests

Generally are not helpful in the specific diagnosis of influenza virus infection. Leukocyte counts are variable, frequently being low early in illness and normal or slightly elevated later. Severe leukopenia has been described in overwhelming viral or bacterial infection, whereas leukocytosis with >15,000 cells/μL raises the suspicion of secondary bacterial infection.

Differential diagnosis:

The infection of other respiratory viruses e.g. rhinovirus, respiratory syncytial virus, parainfluenza and adenovirus can also present as Influenza-like Illness (ILI).[5] An acute respiratory illness caused by Mycoplasma pneumoniae, severe streptococcal pharyngitis or early bacterial pneumonia may mimic acute influenza.

Flu Vs Common Cold

The common cold is the most frequent infectious disease in human. It is a benign self-limited syndrome representing a group of diseases caused by members of several families of viruses, Rhinovirus most common, responsible for up to 50% cases of common cold[23]; other viruses are Corona, Adeno, respiratory syncytial virus.[23] The term "common cold" refers to a mild upper respiratory viral illness involving to variable degrees- sneezing, nasal congestion and discharge (rhinorrhea), sore throat, cough, low grade fever, headache, and malaise. Risk factors include going to child care facilities, not sleeping well, and psychological stress. The symptoms of influenza are similar to those of a cold, although in influenza systemic symptoms are more severe with usually marked rise of temperature but a runny nose is less likely.

Flu Vs Corona/ COVID-19

The COVID-19 (caused by the coronavirus, SARS-CoV-2) pandemic is the defining global health crisis of our time, and the greatest challenge we have been facing since World War Two. People who have the flu will typically experience symptoms within 1-4 days, but the symptoms for COVID-19 can appear between 1-14 days (the median incubation period is 5.1 days). Symptom onset is gradual in COVID 19 but abrupt in Flu. Bodyache & headache is common in flu, not so in COVID 19. Mortality of COVID 19 varies according to geographical location, but is

higher than flu. Covid 19 is more contagious (RO for influenza is 1.28, vs 2-2.5 for Covid 19).[54]

Treatment:

Although acutely debilitating, influenza is usually a self-limited infection. However, it is associated with increased morbidity and mortality in certain high-risk populations. Antiviral therapy should be used judiciously in selected patients. When initiated promptly, antiviral therapy can shorten the duration of influenza symptoms by 1-3 days; the benefit is greatest when given within the first 24 to 30 hours and in patients with fever at presentation.[55,56,57] Little to no benefit has been demonstrated when treatment is initiated two days or more after the onset of uncomplicated influenza.[58]

Indications for treatment:

Prompt initiation of antiviral therapy should be considered for individuals with suspected or confirmed influenza infection and any of the following features[59]:

- Illness requiring hospitalization
- Progressive, severe, or complicated illness, regardless of previous health or vaccination status
- Risk factors for influenza complications, including: age ≥65 years
- Pregnant women and women up to two weeks postpartum (Including those who have had pregnancy loss)
- Individuals with certain medical conditions

All patients with the risk factors described above, including those with mild illness not requiring hospitalization, should be treated with antiviral therapy.[59]

Adults with mild illness without high risk conditions who are younger than 65 years of age do not require antiviral treatment. All they require is symptomatic treatment (e.g. antipyretic) with advice, if symptomatic, to stay home in order to minimize the risk of infecting others in the community. Patients should monitor themselves to detect if their condition deteriorates when medical attention should be sought.

Antiviral drugs:

The neuraminidase inhibitors:

- Zanamivir: 10mg (2 inhalations) twice daily for five days (treatment), 10mg (2 inhalations) once daily (chemoprophylaxis)
- Oseltamivir: 75mg twice daily-5 days (treatment), 75mg once daily-5 days (chemoprophylaxis)
- Amantadine and Rimantadine: are not recommended for the treatment of influenza. Because high rates of resistance

Newer Food & Drug Administration approved influenza antiviral drugs:

- Peramivir: 600mg IV as a single dose
- Baloxavir marboxil

Prevention:

The most effective way to prevent the disease is vaccination. Safe and effective vaccines are available. Immunity from vaccination wanes over time; moreover periodic changes of antigenic properties of viruses do occur. So annual vaccination is recommended to protect against influenza. Vaccines are typically given to people six months and older. Inactivated tri-valent (two influenza A, one influenza B strain covered) influenza vaccines (TIV)[60]—given by intramuscular injection annually, are most commonly used throughout the world, given to people six months and older.

The flu shot live attenuated vaccine (LAIV)[60]—also includes three strains, given by nasal spray. Healthy, non-pregnant people ages 2 to 49 may receive this vaccine; it cannot be given to high risk persons with medical risk factors for influenza-related complications.

Apart from vaccination and antiviral treatment, the public health management includes personal protective measures like:

- Regular hand washing with proper drying of the hands
- Good respiratory hygiene–covering mouth and nose when coughing or sneezing, using tissues and disposing of them correctly
- Early self-isolation of those feeling unwell, feverish and having other symptoms of influenza
- Avoiding close contact with sick people
- Avoiding touching one's eyes, nose or mouth with unclean hands

CONCLUSION

Understanding of disease burden globally as well as in our part of the world, i.e. Southeast Asia, is needed to support decisions involving the allocation of limited resources toward influenza control programs. No single study or study design can provide all of the information needed to estimate influenza-related morbidity and mortality, although well-designed and executed vaccine probe studies of sufficient size can add substantially to our knowledge base.

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CASE REPORT

Kikuchi's Disease: An Unusual Presentation and A Therapeutic Challenge

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ABSTRACT

Background: Kikuchi-Fujimoto disease (KFD), or histiocytic necrotizing lymphadenitis, is a rare benign, self-limiting cervical lymphadenitis of unknown etiology. It predominantly affects young women and can closely mimic infective and immunological disorders. **Case findings:** A 20–year-old female reported to us with fever, and cervical lymphadenopathy. She had multiple enlarged cervical nodes. Examination of other systems was normal. Laboratory investigations were also normal. Fine needle aspiration cytology of the cervical node showed features suggested the diagnosis of Kikuchi's disease. The Patient was treated symptomatically and complete remission occurred in few weeks. **Conclusion:** Although the incidence of Kikuchi-Fujimoto disease is rare, clinicians should be aware of this condition so that early recognition of the disease will minimize potentially harmful and unnecessary evaluations and treatments.

Keywords: Kikuchi-Fujimoto disease, Histiocytic necrotizing lymphadenitis, Lymphadenopathy

INTRODUCTION

Kikuchi-Fujimoto disease (KFD) or histiocytic necrotizing lymphadenitis is an uncommon, idiopathic, generally self-limited cause of lymphadenitis.[1,2] In 1972, Kikuchi first described the disease in Japan (276 cases). Fujimoto and colleagues independently described Kikuchi's disease in the same year. The cause of Kikuchi-Fujimoto disease is unknown. Some kind of viral or post viral etiology has been proposed. There have also been reports of a possible link between KFD and systemic lupus erythematosus (SLE). Kikuchi-Fujimoto disease is an extremely rare disease. Incidence has been reported worldwide with a higher prevalence among Japanese and other Asiatic individuals. KFD is more common in females compared to males with a male to female ratio of 1:4. People under 30 years of age are more affected by this disease than any other age group.[3] Only six of the 108 patients

surveyed in a study of Kikuchi's disease diagnosis were African-American and showed an age range from 11 to 75 years, while the typical age of presentation is in the third to fourth decades of life.[4]

The first documented cases outside of Japan were described by Pileri et al., depicting cases in West Germany, Iran, Italy, Korea, and Spain.[6] There has been no strong genetic predisposition established for this disease. Rare familial cases have been reported primarily from Japan and Saudi Arabia.[5,7]

CASE STUDY:

A 20-year-old female presented to us with left sided neck swelling involving lymph node level-IB, II and V with high grade fever and polyarthritis of 20 days duration. There was no weight loss and no history of previous tuberculosis or contact with tuberculosis patient. She did not have any history of drug intake, atopy or any other significant medical problems. Clinical examination revealed mobile and tender left cervical lymphadenopathy, larger lymph node which measured about 2.5x3cm & smallest one was1x1cm in diameter (Figure I & II). Lymph nodes were not palpable in other parts of the body. The blood pressure was 125/85 mm Hg and the pulse rate was 98/min. Her cardiovascular, respiratory and neurological examination was normal. The abdomen was soft with normal bowel sounds. Skin and ear,nose,throat examination was also normal. Our patient had no pertinent travel history. She lives in Dhaka city and none of her family members who had an illness with symptoms similar to her. Routine hematological parameters like hemoglobin, complete blood count, peripheral smear were within normal limits. ESR was 20mm in1st hr. Blood glucose, urea, creatinine levels and electrolytes were normal. Renal and liver function tests were normal. Blood and urine cultures were negative. Mantoux test showed induration of 4 mm. Ultrasound abdomen and Chest radiograph was normal. Antinuclear antibody (ANA) and anti-DNA antibody were negative. Staining for AFB (Acid-Fast Bacilli) was also negative. Fine needle aspiration cytology (FNAC) of the left posterior cervical node show lymphocytes in various stages of development, histiocytes features suggestive of histiocytic necrotizing lymphadenitis (Figure III and IV). CD 68 positive histiocytes were found in Immunohistochemistry. CD20 positive 'B' cells were also present in the preserved lymphoid areas (Figure V). The patient was treated symptomatically with nonsteroidal anti-inflammatory drugs and the lymph nodes regressed in four weeks.

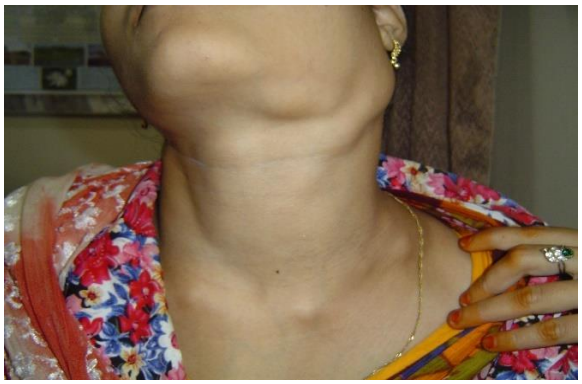

Figure I: Cervical lymphadenopathy

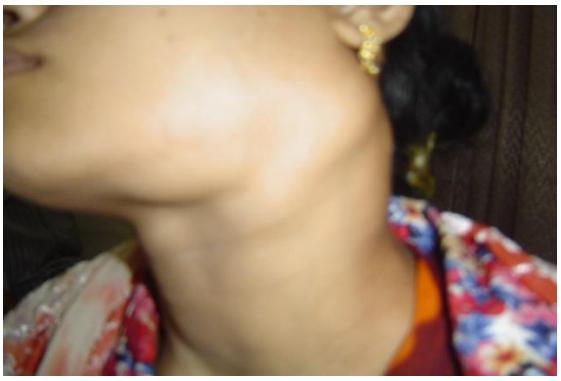

Figure II: Cervical lymphadenopathy

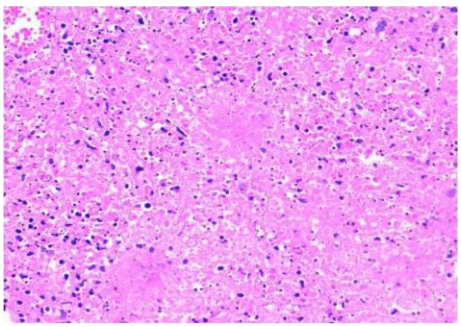

Figure III: Lymph node biopsy section showing patchy areas of necrosis, proliferation of pale histiocytes, increase number of apoptotic cells, cellular debris and nuclear dust (karyorrhexis) (H&E, x100)

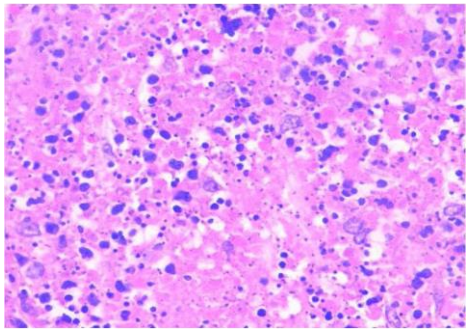

Figure IV: Lymph node biopsy section showing prominence of apoptotic cells, cellular debris and nuclear dust (karyorrhexis) (H&E, x200)

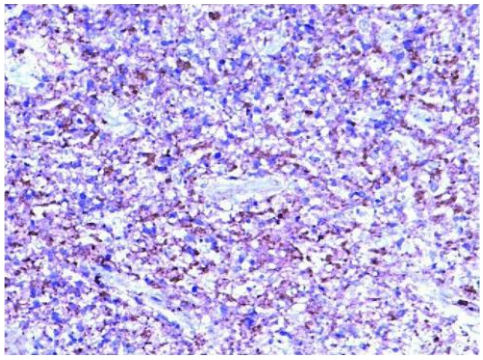

Figure V: Immunohistochemistry showing CD68 positive histiocytes. CD20 positive 'B' cells were also present in the preserved lymphoid areas

DISCUSSION

Kikuchi's disease most often presents with cervical lymphadenopathy which may be tender and can be accompanied by fever, upper respiratory tract symptoms. Less common symptoms include arthralgia, skin rashes, weakness and night sweats. Weight loss, diarrhea, anorexia, chills, nausea, vomiting, chest and abdominal pain have also been reported. Some patients may also have hepatosplenomegaly. The exact etiology of Kikuchi's disease is not known. Viral agents such as Epstein barr virus (EBV), Human immunodeficiency virus (HIV), Herpes simplex virus, dengue virus, Human T lymphotrophic virus 1 (HTLV1) and Parvovirus B19 have been suggested as possible etiological agents, but none have been confirmed so far. Toxoplasma and other bacterial agents like Yersinia enterocolitica, Bartonella, Brucella have also been implicated.[8] An autoimmune mechanism has also been proposed because KFD is seen in conjunction with SLE. There are several reports suggesting an association between Kikuchi's disease and systemic lupus erythematosus. However no convincing evidence is available to confirm such association. The pathogenesis of Kikuchi's disease is still not fully understood. It is supposed that the primary event may be the acti-

vation of T lymphocytes and histiocytes. Proliferating T cells enter the cycle of apoptosis, which may form the areas of necrosis in lymph nodes and then the cellular debris is removed by histiocytes.[9]

Routine laboratory investigations usually do not aid in the diagnosis except for erythrocyte sedimentation rate which might be elevated in some patients and many patients have a low white blood count. Moreover, 25% to 31% of patients have atypical peripheral blood lymphocytes.[10] Fine-needle aspiration cytology (FNAC) only has a limited role in establishing the diagnosis of Kikuchi's disease with the overall diagnostic accuracy estimated at 56%.[8] Diagnosis is based on histopathalogical findings of a lymph node biopsy. Morphologically, it is characterized by irregular paracortical areas of coagulative necrosis with abundant karyorrhectic debris, which can distort the nodal architecture, and large number of different types of histiocytes at the margin of the necrotic areas. The karyorrhectic foci are formed by different cellular types, predominantly histiocytes and plasmacytoid monocytes but also immunoblasts and small and large lymphocytes. Neutrophils are characteristically absent and plasma cells are either absent or scarce. The immunophenotype of KFD is primarily composed of mature CD8-positive and CD4-positive T lymphocytes. High rate of apoptosis is also seen among lymphocytes and histiocytes. The histiocytes express histiocyte-associated antigens such as lysozyme, myeloperoxidase (MPO) and CD68 which can be detected by immunohistochemistry. Plasmacytoid monocytes are also positive for CD68 but not for myeloperoxidase.[11]

Clinically KFD may mimic systemic lupus erythematosus or lymphoma (especially Tcell non-Hodgkins lymphoma) as both these diseases can present with lymphadenopathy and fever and the skin lesions of KFD patients can resemble those seen in SLE. Careful histopathologic examination will thus help us distinguish KFD from other diseases. Histological feature which helps in the differentiation of KFD from the lymphadenopathy of systemic lupus erythematosus is almost total absence of plasma cells in the involved nodal tissue in KFD. Moreover appropriate serologic tests should be done to exclude systemic lupus erythematosus.[12] Antinuclear antibodies (ANA) and anti-DNA antibodies were done in our patient and were negative. Features that distinguish KFD from malignant lymphoma include incomplete architectural effacement with patent sinuses, presence of numerous reactive histiocytes, relatively low mitotic rates, absence of Reed-Sternberg cells.[11]

No specific treatment is available for KFD. Treatment is generally supportive. Nonsteroidal anti-inflammatory drugs (NSAIDs) may be used to alleviate lymph node tenderness and fever. The use of corticosteroids has been recommended in severe form of disease.[13] Intravenous Immunoglobulin has also been tried with some success.[14]

CONCLUSION

Although the incidence of KFD is rare, this disorder must be considered among the differential diagnosis when a young female patient presents with fever and cervical lymphadenopathy. Clinically Kikuchi's disease may mimic lymphoma or systemic lupus erythematosus (SLE). Therefore a careful histopathological examination is necessary in arriving at the diagnosis. Early recognition of the disease is of crucial importance in minimizing potentially harmful and unnecessary evaluations and treatments.

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