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Tairunnessa Memorial Medical College

TMMC

INTRODUCING TAIRUNNESSA MEMORIAL MEDICAL COLLEGE

The college is housed in a 10 storied building. It has a floor space of 1,07,550 Sq-ft which accommodates 8 departments with laboratories and 6 lecture galleries filled with multimedia facilities. Due importance was given to Anatomy Dissection Hall and Museum which are situated on the second floor of the academic building. Total number of full time teachers in the college is 140; among them 11 Professors, 14 Associate Professors and 17 Assistant Professors. Academic activities of the college began in the session 2003-2004. So far 201 students have been graduated from TMMC. Total number of students in MBBS course is 520 in TMMC. A state of art medical library is present on the 5th floor with 4000 books, 1500 journals and magazines. A rich computer laboratory, 10 computers with internet connection to facilitate students and faculties, is located next to the library. Para-clinical students undertake field visits round the year as demanded by the curriculum. A 500-bed hospital is situated within 200 yards of the college. Gynecology and Obstetrics, Medicine and Surgery departments run with their allied subjects in this premise. In each department 2 beds are reserved for poor patients. On Mondays, all specialists provide free service for poor patients and they also receive discount on investigation. Free camping from the departments of Ophthalmology, Gynecology and Surgery are arranged on regular basis. The EPI (Expanded Programme on Immunization) is conducted in the premises on Mondays and Thursdays. The cafeteria 'Niloy' situated on the ground floor next to the college building managed by the college authority ensures availability of snacks and small meals for all in TMMC&H and it buzzes with students during their break. A 250 separate bedded girls' hostel is situated within the campus, very close to the college building. A 250 bedded boys' hostel is located within one kilometer of the campus. The hostels are taken care of by superintendents as assigned from the faculties. Students commute between the college and hostel by bus operated by the college management.

Location

The College is situated on Dhaka Mymensingh Highway at Konia (Targach), Board Bazar, Gazipur. It is 14 km from Hazrat Shahjalal International Airport, Dhaka.

Objective

The objective of the Tairunnessa Memorial Medical College Journal is to produce world class physicians who through their discourse will attempt to produce a forum for the medical teachers and administrators to share their creativity and ideas which can in future envision the future of the health care system.

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IMPACTS OF MOBILE PHONE ON STUDENTS

Asma Kabir

Mobile phones use a network of short range transmitters located in overlapping cells through a region with a central station making connections to regular telephones. Mobile phone, the most used gadget, in the present era is considered as the greatest gift to the mankind. The world has become a global village and an important aspect in this new found world is the communication network where telecommunication is a key player. In Bangladesh the total number of mobile phone subscribers has reached to 118.493 million at the end of September 2014.[1] Mobile phone has affected almost every field of life but its effect on students of all ages are deep and multidimensional.[2] Across the world, students bring and use their mobile phones in class rooms. Some students might be using the devices for course related purposes but others may use it to communicate with friends through social networking, text messages or messaging apps. Study on students revealed that those who did not use their phone, scored 62 percent better at taking notes, remembered more information from lectures than students who frequently use their mobile phones.[3] Academic distractions found to be caused by keeping phones in classroom, even in library and also distracting other students and teachers.[3] Radiofrequency have been classified by the International Agency for Research on cancer as possibly carcinogenic to humans. Other health effects of using mobile phones are: change in brain activity, reaction time, sleep pattern. It has been shown that there are 3-4 times increased risk of traffic accident due to mobile phone usage while crossing roads and driving.[4] The FDA have suggested to reserve the use of cell phone for shorter conversation and use a hands free device for more distance between phone and head of user.[5] Because of tremendous increase in number of mobile users, associated risk, even if small, has become great concern to cause significant public health problems.

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INFLUENCE OF MALNUTRITION ON SIMPLE CLINICAL SIGNS TO PREDICT CHILDHOOD PNEUMONIA

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Abstract

Background: Morbidity and mortality due to pneumonia is unacceptably high in malnourished children. Despite notable progress in reducing childhood mortality, pneumonia remains the single largest killer of young children worldwide. Malnutrition is an underlying cause of death of 2.6 million children each year - a third of child deaths globally. The present study evaluated the impact of severe malnutrition on WHO defined simple clinical signs of pneumonia in under five children presenting for the first time. **Materials and Methods**: This hospital based case control study was carried out between Jan 2006 to May 2007. Study included 170 eligible children, age range from 2 months to 5 years. The subjects consisted of Cases (Group A), severely malnourished with pneumonia); Group B (Controls), better nourished with pneumonia and Group C, malnourished with out pneumonia and primary lung disease. Sampling method was purposive and study population was diagnosed according to WHO guidelines and pneumonia was confirmed by chest radiography. **Results:** History of cough, blocked nose, fast breathing and lower chest indrawing were better indicators of pneumonia in better nourished than malnourished children. History of fever was not common finding in pneumonia of severely malnourished children. Fifty three (71%) of cases did not present with fast breathing compared to 8 (11%) in controls (p<0.001, OR=20) and 56 (77%) of cases (Group A) did not present with lower chest indrawing compared to 17 (24%) in controls (p<0.001, OR=10). Respiratory rate among three groups in study population was significantly different (p<0.01) and respiratory rate of the severely malnourished children was significantly lower than that of the anthropometrically normal child. **Conclusions:** Age specific respiratory rate cut-off of fast breathing and lower chest indrawing for clinical diagnosis of pneumonia recommended by WHO are not sufficiently sensitive to predict pneumonia in children suffereng from severe malnutrition. Cough may be the only symptom in a severely malnourished child which should create high degree of clinical suspicion for the presence of pneumonia and should be confirmed by chest radiology.

Key Words: Malnutrition, pneumonia, fast breathing, lower chest indrawing

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Introduction

Pneumonia is the major cause of childhood morbidity and mortality in the developing world where malnutrition in chldren is relatively common.[1] Recent UNICEF estimates reported that pneumonia accounts for 15 percent of all under-five deaths and killed 920,000 children in 2015. Most of its victims were less than 2 years old.[2] In Bangladesh, it is responsible for around 28% of the deaths of children under five years of age and around 50,000 children died of pneumonia each year (Glob Bur Dis 2013).

Malnutrition reported to affect 2 billion people globally and 45% of deaths of children under-five years of age are attributable to undernutrition. In Bangladesh, severe acute malnutrition found to affect 450,000 children while close to 2 million children have moderate acute malnutrition.[3] At least 53,000 children of them die every year due to complications related to malnutrition.[4] It was observed that severely malnourished children have three times higher risk of death from acute lower respiratory tract infection (ALRI) than children with normal or mild malnutrition developed ALRI.[5]

Among the hospitalized severely malnourished children, with pneumonia, a substantial number of cases seldom have cough but consolidation often found on chest radiography. These hospitalized malnourished children, even with mild cough or mild breathing difficulty, need to have a chest radiography done though they did not show WHO defined clinical signs of pneumonia. X-ray interpretation, however, require careful attention because obvious radiological findings is not be always evident due to poor inflammatory and host response considering the fact of lower induration due to inadequate cell mediated immune response. Radiographic changes may be vague or inconclusive or even absent despite the presence of clinical signs of pneumonia.[6] Conversely clinical signs of pneumonia can be absent in the presence of its radiological features.[7]

In spite of standard protocolized management of PEM to reduce the burden of death from pneumonia, it is unfortunate that the median case fatality is still very high. Pneumonia in severely malnourished children can often remain occult and yet be significantly lethal.[8] For the sake of case management strategy to be effective, episodes of pneumonia need to be promptly identified and treated. We therefore undertook the study to evaluate the value and impact of WHO defined simple clinical signs of pneumonia in under five children with severe malnutrition presenting for the first time.

Materials and Methods

It was a case control study carried out at Dhaka Shishu (Children) Hospital (DSH) from January 2006 to May 2007. The hospiatl is a 467 bedded tertiary care and Post-graduate teaching hospital situated at Dhaka, the capital of Bangladesh. Total of 170 hospitalized children enrolled for this study following strict inclusion and exclusion criteria.

Inclusion Criteria for Cases

Children, age rage 2 months to 5 years, of both sexes having bilateral symmetrical pedal oedema and /or weight for length/height < 70% of NCHS mean or ⩽ SD score presenting with cough and with or without difficulty in breathing as evidenced by fast breathing and /or chest indrawing were taken as Group A (Cases). All the cases had X-ray chest suggestive of pneumonia. Cases were selected purposively as per inclusion criteria admitted into Nutrition Unit of Dhaka Shishu Hospital. Severely malnourished children admitted into other wards, fulfilling the inclusion criteria were also recruited in the study.

Exclusion Criteria for Cases

Children aged < 2 months and > 5 years of both sexes having no bilateral symmetrical pedal oedema and/or weight for length/height > 70% of NCHS mean or ⩾3SD score. Children having malnutrition due to non-nutritional causes like

cerebral palsy, congenital hemolytic anemia, congenital heart disease etc and associated lung diseases other than pneumonia like pulmonary tuberculosis, bronchial asthma, bronchiolitis, bronchiectasis were excluded. Protein energy malnutrition with primary clinical condition other than pneumonia like bronchiolitis, septicemia, congenital heart disease, severe dehydration or meningitis or any other factor which might influence the respiratory rate and respiratory pattern were excluded. Children with very severe pneumonia was excluded from study. Patient's attendant provided history of antibiotics administration within previous 24 hours prior to hospital admission was also excluded.

Inclusion Criteria for Control

Age-matched children with weight for length /height 80% of NCHS mean or 2 SD -score having no bilateral symmetrical pedal oedema, presented with cough and /or difficulty in breathing fulfilling the WHO criteria for pneumonia and also had radiological evidences of consolidation, admitted into different units of Dhaka Shishu (Children) Hospital during the study period served as control (Group B).

Case Detection and Data Collection

A comprehensive clinical examination of the child with detailed medical history was carried out. Children's attendants were interviewed and study variables of anthropometry, to assess malnutrition and respiratory variables were recorded in a pretested case record from.

Nutritional status of the children entered in the study was determined immediately after the admission. A thorough clinical examination especially of respiration rate, chest in drawing and auscultation of chest was conducted in all cases and controls within 24 hours of admission. Respiratory rate was counted using Respiratory Rate Timer manufactured for UNICEF/WHO by Moneray International Ltd, China. The rate was counted by observing the chest movements for a full one minute, with the child lying down, without crying, and without fever, awake and quiet, or while breast feeding. If the count was interrupted by coughing the procedure was repeated. Fast breathing /increased respiratory rate (IRR) was determined according to criteria recommended by WHO: in children between 2 months upto 12 months old ≥ 50/ minute, and in children of 1 year upto 5 years ≥ 40/minute. Lower chest indrawing (LCI), WHO recommended sign of pneumonia, defined as an inward movement of the bony structures of the lower chest wall during inspiration, was observed and recorded. Weight was measured with minimum clothes and socks or naked without shoes and using standard weighing scale (MISAKI Japan, capacity 12 kg or 26 lbs; GRAD, 0-10 kg, Precision 50 gm, Accuracy 5 gm). Length/height was measured with locally constructed wooden board (Infantometer which has a head-board and a sliding foot piece) or wooden frame (stadiometer) following WHO recommended standard. For children having length < 85 cm, or too weak to stand the length measurement was taken while on supine position. It case of their height 85 cm or more but could not be measured standing, 0.5 cm was subtracted from the supine length. Accuracy in taking anthropometric measurements was carefully maintained and inter-observational error was minimized by involving two trained personnel and taking average of the two records.

Reference standard was taken as 50th centile of National Centre for Health Statistics (NCHS). Weight for height and height for age was converted into Z-score after standardizing with NCHS reference data. Clinical varieties were noted according to WHO classification.

Clinical diagnosis of pneumonia was made on the basis of WHO criteria for patients having fast breathing, lower chest in drawing, other physical signs and findings of respiratory system

(basal crepitations) examination on auscultation and chest radiological examination of the patients in the form of patchy opacities, streaky opacities or consolidation etc. During clinical examination and diagnosis, vital signs were recorded in case recording form. X-ray chest in all cases and controls including Group C was done within 24 hours of admission. X-ray interpretation was taken separately from two different radiologists of pediatric experiences for more reliable diagnosis in order to avoid interpersonal opinion differences and pneumonia was considered to be present when both the radiologists agreed to have radiological pneumonia. The chest X-ray was also evaluated by a senior paediatrician.

The nutritional status of the study population was categorized according to WHO classification of PEM into malnourished group which included anthropometrically severe malnutrition (Group A) and better-nourished group which included well-nourished and mild malnutrition (Group B) and another 20 patients with severe malnutrition having no pneumonia or primary lung disease were also enrolled (Group C) in the study in order to compare the respiratory rate, presence or absence of chest indrawing with Group A and Group B.

Case Definition

WHO Classification

Pneumonia- Pneumonia may be defined as definite radiological pneumonia or probable radiological pneumonia associated with crackles on auscultation particularly the children who are severely malnourished.

Non-severe pneumonia - child having cough or difficulty in breathing and respiratory rate beyond age specific value (age 2 months upto 12 months: $\geqslant 50$/ minute and age 1 yr 5 years: $\geqslant 40$/ minute).

Severe pneumonia- child having cough or difficult breathing plus at least one of the following sings-

lower chest indrawing and/or nasal flare and absence of signs of very severe pneumonia (central cyanosis/inability to breastfeed or drink/ vomiting everything/convulsions, lethargy or unconsciousness/severe respiratory distress) plus respiratory rate beyond age specific value may or may not present. In addition to above, chest auscultation signs of pneumonia like bronchial breath sounds/crackles may or may not be present.

Protein Energy Malnutrition (PEM)

WHO definition: A range of pathological conditions arising from coincidental lack in varying proportion of protein and calories, occurring most frequently in infants and young children and commonly associated with infection.

WHO Classification of Protein-Energy-Malnutrition

	Moderate malnutrition	Severe malnutrition
Symmetrical oedema	No	Yes
Weight for height -	SD score - 2 to - 3 (70 - 79%)	SD score - 3 (<70 %) (severe wasting)
Height for age -	SD score - 2 to - 3 (85 - 89%)	SD score - 3 (<85%) (severe stunting)

Statistical Analyses

Data were expressed as mean $\pm$ SD, number (percent) as appropriate. Statistical tools, One Way Analysis of Variance (ANOVA), odds ratio (OR) were carried out as applicable. Data were managed and statistical analyses performed by statistical package for social science (SPSS) for Windows, Version 16. P value <0.05 was taken as level of significance.

Results

Fifty two (69%) Group A (case) and 56 (75%) from control group were within 2 months to 12 months of age. Twenty three (31%) in Group A and 19 (25%) from Froup B (Control) were within 1 year to 5 years. Majority of the children 40 (53%) in case and 51(68%) in control were male. In Group A (case) 36 (48%) of children came from urban area compared to 53 (71%) in Group B (control). Twenty one (28%) from Group A and 16 (21%) from Group B came from rural area. Of the 75 children of Group A 68 (90%) came from poor socioeconomic background whereas 45 (60%) in Group B from lower middle income group (Table 1). In Group A 26 (35%) were completely, 21 (28%) partially immunized and 23 (30%) with immunization schedule whereas in Group B the distribution was 22 (29%), 0 and 51 (68%) respectively for immunized, partially immunized or not immunized respectively (Table 1). Children not immunized were 5 (7%) and 2 (3%) in Group A and Group B respectively. In Group C male and female distribution was of equal proportion and in two age groups the distribution was equally (50%) (Table 1). Nineteen (95%) came from poor socioeconomic background and 85% of them from slum and rural area. Three (15%) of them were not immunized and 4 (20%) were partially immunized (Table 1).

The mean nutritional status (wt for ht/length, ht for age; expressed in Z score) of case (Group A) was -1.93 ± 1.52, -3.25 ± 1.68 and in control (Group B) -0.35 ± 0.89, -0.82 ± 0.72 respectively. In group A 50 (67%) out of 75 children had bipedal symmetrical oedema. As a result, children with wt for ht/length though 1.93 ± 1.52 in Z score, all were severely malnourished according to WHO classification of PEM. In Group C, mean nutritional status (wt for ht/length, ht for age) was -2.084 ± 1.29, -4.065 ± 1.63 (Table 2).

Respiratory rate (RR) in the three groups was shown in table 4. Mean ($\pm$SD) respiratory rate was 41.01 ± 10.98, 56.17 ± 09.36 and 24.40 ± 02.45 in the age group of 2 months upto 1 year of Group-A, Group-B & Group-C respectively. The respiratory rate in the control group was higher and ANOVA analysis showed significant statistical difference ($p < 0.01$). The age group of 1 year upto 5 years the mean ($\pm$SD) RR was age 40.47 ± 08.36, 48.73 ± 10.35, 27.20 ± 2.85 respectively in the three study groups. In the control (Group B) group rate was higher and ANOVA analysis showed significant difference ($p < 0.01$) (Table 4).

Mean nutritional status of six children with intercostal recession in Group C (wt for age, wt for ht, ht for age; exressed in Z score) were -5.45 ± 1.30, -2.51 ± 1.15, -5.40 ± 1.79 respectively (Table 5).

Fast breathing was absent in 53 (71%) of cases in comparison to 8 (11%) in control group and finding is statistically significant ($p < 0.001$). Fast breathing is twenty times less likely to be present in pneumonia with severe malnutrition (Table 6).

Chest in drawing (lower) was absent in 56 (75%) of severely malnourished children suffering from pneumonia in comparison to 17 (23%) of better-nourished children with pneumonia which is statistically significant ($p < 0.001$). Chest indrawing is ten times less likely to be present in pneumonia with severe malnutrition (Table 7).

Table 1: Baseline characteristics of study population (n=170)

Characteristics	Case (Group - A) (n=75) N (%)	Control (Group-B) (n=75) N (%)	Group - C (n=20) N (%)
Gender			
Male	40 (53)	51 (68)	10 (50)
Female	35 (47)	24 (32)	10 (50)
Age			
2 months upto 12 months	52 (69)	56 (75)	10 (50)
1 year upto 5 years	23 (31)	19 (25)	10 (50)
Socio-economic status			
Poor(≥5000)	68 (90)	16 (21)	19 (95)
Lower middle (≥5001-10000)	5 (7)	45 (60)	1 (5)
Middle (≥10001-15000)	2(3)	12 (16)	-
Affluent (≥15001)	-	2 (3)	-
Residence			
Urban	36 (48)	53 (71)	03 (15)
Slum	18 (24)	06 (08)	09 (45)
Rural	21 (28)	16 (21)	08 (40)
Immunization			
Completely Immunized	26 (35)	22 (29)	7 (35)
Partially Immunized	21 (28)	-	4 (20)
Continue	23 (30)	51 (68)	6 (30)
Not Immunized	5 (7)	2 (3)	3 (15)

Results were expressed as number (percent).

Group A (Case), severe malnourished with pneumonia and Group B (Control), better nourished (well-nourished and mild malnutrition together) with pneumonia; Group-C, severe malnourished having no pneumonia or primary lung disease.

Table 2: Anthropometric indices of the study population (n=170)

Groups	Ht for Age (%)	Ht for Age (Z score)	Wt for Ht (length%)	Wt for Ht (length Z score)
Group - A(Case) (n=75)	86.52±6.40	-3.25±1.68	80.79±14.04	-1.93±1.52
Group-B (Control) (n=75)	95.93±2.42	-0.82±0.72	96.58±8.74	-0.35±0.89
Group -C (n=20)	84.08±6.52	4.065±1.63	78.30±13.334	-2.084±1.29

Results were expressed as mean±SD.

Group A (Case), severe malnourished with pneumonia and Group B (Control), better nourished (well-nourished and mild malnutrition together) with pneumonia; Group-C, severe malnourished having no pneumonia or primary lung disease.

Table-3: Physical signs found in study population (n=170)

Physical signs	Group -A (Case) Present [N (%)]	Group -A (Case) Absent [N (%)]	Group -B (Control) Present [N (%)]	Group -B (Control) Absent [N (%)]	Group -C Present [N (%)]	Group -C Absent [N (%)]
Cough	75 (100)	-	75 (100)	-	5 (25)	15 (75)
Blackened nose	7 (9)	68 (91)	55 (73)	20 (27)	-	20 (100)
Body temperature ≥38°C)	15 (20)	60 (80)	75 (100)	-	-	20 (100)
Wheeze	1 (1.3)	74 (98.7)	-	75 (100)	-	20 (100)
Fast breathing†	22 (29)	52 (71)	67 (89)	8 (11)	-	20 (100)
Lower Chest indrawing	19 (12)	66 (88)	-	75 (100)	6 (30)	14 (70)
Intercostal recession	9 (12)	66 (88)	-	75 (100)	6 (30)	14 (70)
Vesicular breath sound	61 (81)	13 (18)	69 (92)	6 (8)	-	20 (100)
Bronchial breath sound	-	75 (100)	6 (08)	69 (92)	-	20 (100)
Rhonchi	3 (4)	72 (96)	19 (25)	56 (75)		20 (100)
Crepitations	51 (68)	24(32)	70 (93)	5 (7)		20 (100)
Abdominal distension	16 (22)	58(78)		75 (100)		20 (100)
Organomegally	4 (5)	71(95)		75 (100)		20 (100)

†Respiratory rate ≥50 if age is 2 months upto 1 year and ≥40 if 1 year upto 5 years.

Case Group A, severe malnourished and Control Group B, better nourished (well-nourished and

mild malnutrition together); Control Group-C, severe malnourished having no pneumonia or primary lung disease.

Table 4: Respiration rate in three groups of subjects (n=170)

Groups	2 months to upto 1 year (n=118)		1 to 5 year (n=52)	
	N	mean±SD	N	mean±SD
Group - A (Case)	52	41.07± 10.98	23	40.47± 08.36
Group - B (Control)	56	56.17± 09.36	19	48.73± 10.35
Group - C	10	24.40± 02.45	10	27.20± 02.85
P value		<0.01		<0.01

N, number of study subjects in the group.

Results were expressed as mean±SD. ANOVA test was performed to calculate statistical difference in three groups. P value <0.05 was taken as level of significance.

Group A (Case), severe malnourished with pneumonia and Group B (Control), better nourished (well-nourished and mild malnutrition together) with pneumonia; 1 Group-C, severe malnourished having no pneumonia or primary lung disease.

Table 5: Mean nutritional status of six children with intercostal recession in Group-C

Wt for age (percentile)	Wt for age (Z score)	Wt for ht† (percentile)	Wt for ht (Z score)	Ht for age (percentile)	Ht for age (Zscore)
41.33±12.98	-5.45±1.30	9.00 ±18.86	-2.51±1.15	78.67± 6.83	-5.40±1.79

†Wt-weight, Ht- height

Table 6: Association of fast breathing with pneumonia in study population (n=150)

Fast Breathing	Study groups		OR (95% CI)	P value
	Group A (Case) (n=75) N (%)	Group B (Control) (n=75) N (%)		
Absent (n=61)	53 (71)	8 (11)	20.18	<0.001
Present (n=89)	22 (29)	67 (89)	7.74 -(54.46)	

Results were expressed as number (percent). OR was calculated using SPSS for Windows.

Group A (Case), severe malnourished with pneumonia and Group B (Control), better nourished (well-nourished and mild malnutrition together) with pneumonia;

Table 7: Association of chest indrawing with pneumonia in study population (n=150)

Chest indrawing	Study groups		OR (95% CI)	P value
	Group A (Case) (n=75) N (%)	Group B (Control) (n=75) N (%)		
Absent	56 (75)	17 (23)	10.06	<0.001
Present	19 (25)	58 (77)	(4.47- 22.99)	

Results were expressed as number (percent). OR was calculated using SPSS for Windows.

Group A (Case), severe malnourished with pneumonia and Group B (Control), better nourished (well-nourished and mild malnutrition together) with pneumonia;

Discussion

Malnutrition limits the potential of a country and is strongly associated with mortality, morbidity, reduced cognitive performance and compromised productivity among its population.[9] Both severe and moderate malnutrition substantially increase the risk of death among children with pneumonia. This is important information for the clinicians.[10]

This study was unique in its kind which attempted to evaluate and compare the relative ability and value of WHO defined simple clinical signs of pneumonia among severely malnourished and better nourished children and also to understand the impact of severe malnutrition on these simple signs of pneumonia in under five children.

The anthropometric assessment of the study population (wt for ht/length, ht for age) of Group A (case n=75) was -1.93±1.52, -3.25±1.68 and in Group B (control n=75) -0.35±0.89, -0.82±0.72 and in Group C

(n=20) -2.08±1.29, -4.06±1.63 respectively. In group A, out of 75 cases fifty (67%) children had bipedal symmetrical oedema which has influenced the weight of those children. As a result, children with wt for ht/length though 1.93±1.52 SD in Z score, all were severely malnourished according to WHO classification of protein energy malnutrition.

By conducting parallel studies of malnourished and well nourished children with symptoms of ALRTI we were able to calculate the relative frequency of different symptoms and signs in the three groups and compared to each other as predictors of pneumonia. History of cough, fast breathing and difficult breathing were better indicators of pneumonia in better nourished children than malnourished children. History of fever is not a useful finding in malnourished group. The duration of all symptoms were significantly longer in the malnourished children since the signs of clinical malnutrition represent the end state of a long period of ill-health, usually complicated by intercurrent infections.

The physical signs that predict pneumonia have been examined in a number of studies and fast breathing and lower chest indrawing have emerged as the simple signs which best predict pneumonia. This study reflected that fifty three (71%) of cases did not present with fast breathing compared to eight (11%) in control. Among controls, three patients were diagnosed later on as atypical pneumonia and five patients had only lower chest indrwing without fast breathing. The finding was statistically significant (p<0.001 OR=20.18, 95% CI=0.02-0.12) indicating that fast breathing is twenty times less likely to be present in pneumonia with severe malnutrition.

Malnourished children may not have the strength to increase the respiratory rate adequately if their lungs are affected by pneumonia. The lower body temperature in malnourished children with pneumonia may also contribute to

their lower respiratory rate. For a given sensitivity and specificity they produce about 5 breaths per minute fewer than well-nourished children.[11] In severely malnourished children with pneumonia, fast breathing and chest in drawing may not be as evident as in other children. A severely malnourished child may have an impaired or absent response to hypoxia and a weak or absent cough reflex.[12]

This study also showed that chest in drawing (lower) was not present in fifty six (77%) of Group A (case) in comparison to seventeen (23%) of Group B (control). This was also found to be statistically significant (p<0.001, OR=10.06 95%CI=4.47-22.99) indicating that lower chest indrawing in pneumonia with severe malnutrition is ten times less likely to be present. Indrawing of the chest wall is a manifestation of reduced lung compliance caused by pneumonic consolidation.[13]

It is the reduced muscle mass of diaphragm responsible for impaired coughing reflex and absent/less lower chest in drawing.[14]

Diaphragm mass is reduced to the same extent of total body mass with severe loss of body weight and found 43% reduction of diaphragm muscle mass in children weighing 71% of normal.[15]

In children with severe malnutrition, the sensitivity of fast breathing as a predictor of radiographically proven pneumonia ranged from 14% to 76%, and specificity from 66% to 100%.[10] Wafula et al reported that the sensitivity of fast breathing was only 37% in severely malnourished children below the age of five years, even with a cut-off set as low as 40 breaths per minute[16]. Falade at al demonstrated that the lowering the WHO -recommended cut-offs by five breath per minute increased sensitivity slightly from 61% to 76%, while simultaneously decreasing specificity from 79% to 66%. For chest indrawing alone, the sensitivity was overall

poor and widely variable.[13]

These findings indicated that the definitions of fast breathing and chest in drawing recommended by WHO are not sufficiently reliable as predictors of pneumonia in severely malnourished children and support the recommendation to refer severely malnourished children with an acute illness with cough, to hospital for empiric antibiotic therapy. The available clinical parameters, singly or in combination, are poor diagnostic tools for pneumonia in children with severe malnutrition. It is advisable to treat children with severe malnutrition as if they had pneumonia, even in the absence of suggestive clinical signs.[16]

In this study, 20 severely malnourished children without any clinical and radiological evidences of pneumonia were also enrolled and intercostals recession was found in 6 (six) cases whose mean nutritional status (wt for ht/length, ht for age) was -2.08±1.29, -4.065±1.63 respectively which simulated with the study in young Gambian children done by Falade and his group. Malnourished children with little subcutaneous tissue readily demonstrate indrawing of intercostals tissues, even in the absence of pneumonia and this was not generally thought to be as useful as lower chest indrawing in diagnosing pneumonia clinically.[13]

Respiratory rate in three groups showed interesting findings. In the 2 months 1 year age group respiratory rate was higher in the Control (Group B) than the pneumonia with malnourished case group (group A) and Group C (p<0.01). In the 1-5 year age group also Control (Group B) had of higher respiratory rate than the case group (Group A) and Group C. This higher rate also showed significant difference (p<0.01). These findings, however, simulated with Falade et al study where mentioned that in comparison to well nourished children, malnourished children with or without pneumonia had lower respiratory rates.[13]

Our findings support the present WHO case definition of pneumonia for well nourished children but their value and ability to predict pneumonia in malnourished children are inadequate. Malnourished children are more likely to develop and to die of pneumonia. So in order to achieve appropriate sensitivity and specificity of the two important physical signs for diagnosis of pneumonia in severely malnourished children, steps can be taken to revise WHO case definition of pneumonia or by setting revised respiratory rate cut off point for fast breathing for severely malnourished children. As the cost of failing to treat pneumonia in a malnourished child may be considerable owing to the high mortality in that group, we should like to recommend that it may be wiser that all malnourished children who have cough and /or difficult breathing should be treated as pneumonia with appropriate antibiotics even in the absence of fast breathing and lower chest indrawing.

Conclusions

The study concluded that age specific respiratory rate cut off for fast breathing and lower chest indrawing for diagnosis of pneumonia recommended by WHO are not sufficiently sensitive to predict pneumonia in children suffering from severe malnutrition. Rather severely malnourished child do breathe at a slower rate than anthropometrically better nourished children. It is also assumed that cough may be the only presenting symptom in severely malnourished children which should create high degree of clinical suspicion for the presence of pneumonia and should be confirmed by chest radiology.

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STUDY ON PRESENTATION PATTERN AND MANAGEMENT OF CARCINOMA BREAST IN PATIENTS ATTENDING A CANCER HOSPITAL IN DHAKA CITY, BANGLADESH

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Abstract

Background: Breast cancer in women is a major health problem both in developed and developing countries. National cancer registry is lacking in Bangladesh. Accumulating clinical experiences suggest faster rise of breast cancer cases in Bangladesh. The present study was aimed to characterize the pattern of presentation and management of breast cancer cases in a cancer hospital of Dhaka city. **Materials and Methods**: Total 174 female breast cancer patients consecutively attending the Ahsania Mission Cancer & General Hospital during the period June 2010 to December 2011 entered in the study. Permision from institutional authority was obtained to conduct the study. Results were expressed ans number (percent). Data were managed using statistical package for social science (SPSS) Version 15. **Results**: Of the total cases 80.46% were between 31-60 years of age (43.11% and 37.35% in age group 31-45 and 46-60 respectively). Only 12.64% patients reported at stage I against 78.17% of stage II and III in combination (48.28% in stage II vs 29.89% of stage III). Infiltrating ductal carcinoma was the most frequent (89.08%) type of cancer. Lump was present in all cases. In 80.46% cases duration of lump was less than 9 months. Axillary lymph node was present in 25.71% cases and of which 59.1% were mobile and 40.9% fixed to the underlying structures. Percent non-breast fed mother was 68.97. Of the 174 cases of cancer patients 42.52% used oral contraceptives. Cancer breast was confirmed in 81.6% with its stage by FNAC procedure. Main treatment strategies approached were surgery, chemotherapy, radiotherapy either individually or in combination. **Conclusions**: The data demonstrated that (i) breast cancer mainly occurrs in middle age women; (ii) these patients presented in quite late stage; (iii) infiltrating ductal carcinoma was most prevalent type.

Key Words: Breast cancer, presentation pattern, treatment modalities, ductal infiltration.

Introduction

Cancers constitutes the leading cause of deaths worldwide. There were 14.9 million incident cancer cases worldwide in 2013 and 8.1 million cancer death[1] and of which female breast cancer deaths were 464 per thousand. It has been estimated that each year, 76,000 women die of breast cancer in South Asia which includes Myanmar and Tibet along with Bangladesh, India, and Pakistan[2]. Age-standardized incidence rates found to be 53.8 and 25.1 per hundred thousand respectively in Karachi, Pakistan[3] and Kolkata, India[4]. A systematic cancer registry is lacking in Bangladesh. However, an

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extrapolated number of annual new breast cancer cases estimated to be 30,000. This gloomy picture was substantiated by a report of hospital based study in which 19.3% of women with malignancies found to have breast cancer[5].

Rise in breast cancer in South Asia attributed to combination of number of factors, most notably higher life expectancy, population growth[6] and adoption of "Western" lifestyles which includes higher fat diets, reduced activity, reduced parity, delayed child bearing and decreased breast feeding[7]. It has been projected that global breast cancer cases will grow from 1.4 million in 2008 to over 2.1 million cases in 2030[8]. While high-income countries achieved significant progress toward curbing women with breast cancer, low-income countries including Bangladesh are only beginning to recognize the extent and severity of the disease.

Cancer survival found to be poor in developing countries most likely because of a combination of a late stage at diagnosis and limited access to timely and standard treatment[9]. About 70% of all cancer deaths occurred in low and middle-income countries. Breast cancer is currently viewed as a systemic disorder, right from is outset varies widely in behavior within the same histological type. Hence, need for a multi-disciplinary approach where locoregional treatment (surgery and radiotherapy) accompanied by systemic chemotherapy and hormone therapy has been stressed[10]. Surgery, cytotoxic chemotherapy, radiotherapy and hormone therapy can provide the hope of cure in early cases. The present study was aimed to explore the pattern of presentation of breast cancer patients in a Cancer Hospital in Bangladesh and management of these patients.

Materials and Methods

This observational study included 174 cases of carcinoma breast, aged from 25 to 80 years. They attended at surgical Out-patient department of Ahsania Mission Cancer & General Hospital from June 2010 to December 2011. Institutional ethical approval was obtained to carry out the study. Thorough physical examinations were done. Efforts were made to obtain relevant information like duration of illness, mode of onset, clinical findings and evidence of metastasis. In addition to routine investigations, X-ray chest, USG of the breast and whole abdomen, CT-Scan, histopathology or fine needle aspiration cytology were carried out to confirm diagnosis, staging of the tumor. Stages of the cases were done following the guidelines of clinical staging of breast cancer system[11].

All the patients underwent surgical treatment, from simple to radical mastectomy with or without axillary lymph node clearance. Among 174 cases 9 were given Neoadjuvant chemotherapy, followed by surgery. After surgery they were given chemotherapy, locoregional radiotherapy and hormone therapy, which were used individually or in combination. Results were expressed as number (percent). Data were managed using statistical package for social science (SPSS) for Windows Version 15.

Results

Age range of the breast cancer patients from 16 - 80 years. Of the total 174 patients 80.46% were between 56-60 years. In age group 31-45 yrs there were 43.11% cases and 46-60 (yrs) group 37.35% (Table I). Out of the 174 cases 48.28% were in clinical stage II and 29.80% in stage III which accounted 98.17% of all (Table II). Histopathological types of cancers were shown in table III. Infiltrating ductal type was present in 89.09% of cases.

Presentation of cases and related variables were shown in table IV. All the cases presented with lump. In 80.46% of cases duration of lump was less than 9 months and only 4 (2.3%) duration was more than two years. Axillary lymph node was absent in 74.71% cases. Of those 44 (25.29%) had axxilary lymph node it was mobile in 59.1% (26 out of 44) and fixed 40.9% (18 out of 44) (Table IV).

Of the 174 cases 94.25% were married. Among them 88.5% were multiparous. Out of 174 cases 68.97% women did not breast fed their

offspring(s). Contraceptives were used by 42.53% women (Table IV).

FNAC, mammography and UGS of breast were the investigation tools to confirm diagnosis. In 81.6% cases diagnosis was confirmed by FNAC. UGS of breast were used in 12.65% cases (Table V). Surgery and chemotherapy were advised for 112 (64.37%) cases followed by surgery, chemotherapy and radiotherapy in 22.99% cases (Table VI).

Table I: Distribution of patient by age group (N=174)

Age gro up (yrs)	Number	Percent
16 - 30	14	8.04
31 - 45	75	43.11
46 - 60	65	37.35
61 - 75	12	6.9
76 - 80	8	4.6
Total	174	100

Results were expressed as number and percent.

Table II: Distribution of patient on the basis of clinical stages of breast cancer (N=174)

Clinical Stage	Number	Percent
I	12	12.64
II	84	48.28
III	62	29.89
IV	16	9.10
Total	174	100

Results were expressed as number and percent.

Table III: Distribution of patient on the basis of histopathological characterization (N=174)

Histopathogical types	No of patients	Percentage (%)
Infiltrating ductal carcinoma	155	89.08
Invasive Lobular Carcinoma	9	5.17
Medullary Carcinoma	6	3.45
Not done	2	1.15
In conclusive	2	1.15

Results were expressed as number and percent.

Table IV: Distribution of patients on the basis of presentation and cancer associated risk factors (N=174)

Clinical Pattern Lump	Number 174	Percent 100
Duration of Lump		
Less than 9 months	140	80.46
Between 9 - 12 months	26	14.94
Between 1 - 2 year	4	2.30
More than 2 year	4	2.30
Axillary Lymph Node		
Absent	130	74.71
Present	44	25.29
Mobile	26	59.1
Fixed	18	40.9
Parity		
Multipara	154	88.50
Nullipara	20	11.50
Breast feeding		
Yes	54	31.03
No	120	68.97
Use of Contraceptive		
Yes	74	42.53
No	100	57.47
Marital status		
Married	164	94.25
Unmarried	10	5.75

Results were expressed as number an percent.

Table-V: Tools used to confirm the diagnosis assumed on clinical presentation and xamination of the study subjects (N=174)

Method	Number	Percent
FNAC	142	81.60
Mammography	10	5.75
USG of breast	22	12.65

Results were expressed as number and percent.

Table VI: Treatment Modalities (N=174)

Mode of treatment	Number	Percent
Surgery + Chemotherapy	112	64.37
Surgery + Chemotherapy + Radiotherapy	40	22.99
Surgery + Chemotherapy + Hormone therapy	22	12.64

Results were expressed as number and percent.

Discussion

Bangladesh is facing a high burden of breast cancer disease. It is the 2nd leading cancer in women after cervical carcinoma[12]. Late presentation with advanced stage is the common feature of breast cancer patient in Bangladesh, when it is extremely difficult to manage the deadly disease. It is easily understandable that the incidence and mortality of breast cancer is growing at a fast rate. Since cancer registry along with relevant data are lacking it is difficult to comment on the exact situation in Bangladesh. A survey conducted in 2001 revealed that 22000 women were affected every year by breast cancer and 17000 (77%) of them died[13]. However, this figure is probably much lower than the real figure, simply because very few cases are diagnosed and reported. Many patients die with unnoticed cancer. There may be many reasons behind this, but studies in many other countries show that poor or no knowledge, ignorance, lack of awareness and misbelieve is one of the leading causes of this fastest silent killer.

The value of diagnosis of breast cancer at an early stage is well documented[14]. Early diagnosis not only influence the better prognosis and long term survival, it is also associated with stage of cancer and mode of treatment. In the present study of 80.46% cases lump was present for 6-9 months. Early detection can be successfully achieved through a population based mass screening program. Routine mammography screening program is lacking in Bangladesh. The findings of the study might not reflect the real breast cancer situation but will presumably provide some idea about scenario of different type of mammary gland malignancy amongst the Bangladeshi population.

Breast cancer staging explains the extent of disease based on the tumor size (2, 2-5, >5 cm), location (eg, ducts, lobules), involvement of lymph nodes and metastasis to surrounding tissue (eg, chest wall, skin of breast) or distant organs (eg, lungs, liver, brain, bone). Breast tumors is understood to spread through invasion to surrounding tissue and by blood or lymphatic system and are categorized as stage 0, I, IIA, IIB, IIIA, IIIB, IIIC or IV.[13] The present study revealed that 78% of cases presented in stage II and III which is almost similar to the study carried out by Pervin and others (74%).[14] In neighboring Nepal the most common stage of breast cancer at presentation found to be stage III (26.3%)[15]. Presence of lump in all cases at presentation in the present study was also supported by the study in Nepal where lump was presenbt in 98% cases[15]. In the present study in 82% (approx) of cases diagnosis was confirmed by FNAC. This proportion was shown to be 90% in a study conducted in Gujrat, India[16]. The consistencies in finding highlight the relevance of the study.

There are several treatment options for women diagnosed with breast cancer that include surgery, chemotherapy, radiation therapy, hormonal therapy and targeted therapies.[17] The most appropriate treatment depends on the women's risk profile and stage of disease, which range from I-IV and is based on the tumor size, location, and involvement of lymph nodes and whether or not tumor spread to surrounding tissue or distant organs[18,19].

Surgery includes lumpectomy, (removal of a lump and the surrounding tissue), which is also called breast conserving surgery, mastectomy (removal of all the breast tissue although muscles underneath breast are no longer removed), lymph node removal (or axillary lymph node dissection) which takes place during time of lumpectomy and/ or mastectomy depending on histopathology report. Other options include preventive surgeries such as prophylactic mastectomy for women at high-risk and prophylactic ovary removal to lower estrogen production in the body.

Emerging evidencecs suggest that the removal of axillary lymph nodes is not a determinant of breast cancer recurrence and survival in early-stage patients, which is contrary to prevailing practices[20]. In one trail involving 856 early-stage patients, dissection of lymph nodes with evidence of spread did not influence breast cancer 5-years recurrence or mortality rates[21]. In another trial (the National Surgical Adjuvant Breast and Bowel Project B-32 study) of 3,986 node-negative patients, women were randomized to axillary lymph node dissection or no further surgery, the investigators found that the intervention was not associated with disease control or survival but was associated with significantly greater morbidity, including shoulder abduction deficit, arm volume, arm numbness and tingling[22]. Another study that included 5,539 women who underwent breast-conserving surgery which, however, did not show association with improved survival and surgical outcome[23].

Radiation therapy includes external beam and internal (implantation of radioactive seeds) radiation, and is usually given after surgery to destroy any remaining malignant cells left behind. While the former is a well-tested, long-standing treatment option, the latter has recently being developed and is still being studied for its efficacy and adverse effect profile, although evidence from four trials demonstrated consistent lower recurrence rate when radiation therapy supplemented with surgery.[23]

Chemotherapy is a systemic therapy that can be administered either before surgery (to shrink the tumor) or afterwards (to reduce the risk of recurrence). For early-stage disease, it is usually administered to help remove cancer cells from the body and to reduce the risk of recurrence. For advanced-stage diseases, it is aimed to destroy as many cancer cells as possible. A meta-analysis of 60 trails and 28,764 women of combination chemotherapy versus no chemotherapy showed a 37% reduction in relapse and 30% reduction in death for women under the age of 50 years and 19% reduction in relapse and 12% reduction in death for women aged 50-69 years; the benefit on recurrence was present in all age groups and in the presence and absence of tamoxifen.[24]

Hormonal therapy is a treatment option for hormone receptor-positive cancers. It can be given in early stage disease to either reduce the amount of estrogen or block its action to reduce the risk of recurrence. It can also be given for advanced-stage or metastatic disease to shrink or slow the growth of existing tumor. Hormone therapy includes aromatase inhibitors, selective estrogen receptor modulators and estrogen receptor down regulators as well as surgical treatments such as removal of ovaries and fallopian tubes. Tamoxifen use for 5 years reported associated with a 12% reduction in recurrence and a 9% reduction in mortality over a 15-year follow-up period, in ER-positive and ER-unknown breast tumors[24].

Conclusions

Breast cancer in female is a major health problem in Bangladesh. Most common cause of fatalities is late presentation and eventual advanced stage of the disease. Specialized center(s) can reduce the suffering of the breast cancer patient.

Acknowledgement

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HIGH RATE OF PARASITIC INFESTATION AMONG UNDER 5 SUBURBAN CHILDREN ATTENDING THE OUT PATIENT DEPARTMENT OF A TERTIARYCARE HOSPITAL IN DHAKA CITY

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Abstract

Background: Parasitic infestation is one of the major causes of morbidity in children of developing countries. There have been notable achievements in the heath indicators in Bangladesh over the last decade. However, due to numerous reasons people move to the large cities and often live in impoverished conditions. The study was undertaken to explore the rate of parasitic infestation among the children under 5 years of age from the outskirts of Uttara, Dhaka. **Materials and Methods**: This cross-sectional study consisted of under 5 children (n=120), from Bounia and Dolipara area, attending the pediatric Out-patient department of Medical College for Women & Hospital (MCW&H) during the period August 2012 to October 2012. Permission has been obtained from the hospital authority to conduct the study. Informed consent was obtained from the parents. Socio-demographic data were collected from parents through face to face interviews and stool samples from children were collected in rubber pots. Saline iodine smear preparation of stool was examined under low power microscope. Data were analyzed using program statistical package for social science (SPSS) V 11.5. Data were expressed as mean$\pm$SD, number (percent) as appropriate. A $p<0.05$ was taken as level of significance. **Results**: Among the recruited children 54.2% were between 1-3 years of age. Distribution of boys and girls was 79:41 (65.8% vs 34.2%). They came from low income group: 53% family had income less than five thousand taka per month, 46.7% living in Kacha house. Of the 120 children 59 (49.2%) had parasitic infestation. Hand wash by parent using only water and soap before feeding children after washing them observed in 83.33% and 17.67% respectively. Parent's hand wash practice and children parasitic infestation showed significant association ($p<0.01$). Parent's literacy status and children helminth infestation also showed significant association ($p=0.0001$). Of the 120 famnilies 40 (33.33%) reported that they use satrine latrin. Parasitic infestation was found in 46 (57.5%) children of the 80 families have insanitation practice which was significantly high ($p=0.006$) compared to those use sanitary latrin. **Conclusions**: Data concluded that substantial number of children on the outskirts of Dhaka city suffers from helmithic infestation; this infestation is associated with the parental sanitation practice and hand wash practice before they feed their children. The findings suggest the need in improvement of sanitation and hygiene practice of low income group people.

Key Words: Under 5 children, parasitic infestation, suburban population

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Introduction

Helminthic infestation of children in the imrpovised population is not uncommon. The incidence is found to be high in the countries of tropical and subtropical regional. It is one of the major health problems in developing countries.[1-3] One quarter of the world's population is clinically infested with intestinal parasites. Each year 2 billion people become infested globally and 3 million experience severe morbidity.[4] Preschool children account for 10-20% of the burden among those affected worldwide. Malnutrition, Vit-A deficiency and nutritional anemia found to be associated with helminth infestations.[5-7] In developing countries helminth infestation exceeds that of diseases like malaria and tuberculosis/ and prevalence is higher in rural area.[8] It is influenced by socioeconomic status, poor environmental sanitation, lack of.[9,10] personal hygiene and use of unsafe water.

The long-term consequence of recurrent infestation are physical, intellectual and cognitive impairement[11] and asthma, allergic rhino-conjunctivitis, atopic dermatitis, increase susceptibility to other infections have been reported in children with chronic infestation. The aim of this study was to explore the explore poof parasites infestation among the under 5 rural children in a selected area of Bangladesh.

Materials and Method

This cross-sectional study was conducted among the under 5 children, from in Bounia and Dolipara village on the outskirts of Uttara, Dhaka, attending in the pediatric Out-patient department of Medical College for Women & Hospital (MCW&H) during the period August 2012 to October 2012. Total number of 120 children finally entered in the study. A pre-tested questionnaire was used to collect data on age and sex of children, parent's education, sanitation condition, dwelling house and water supply through face to face inter-view of parents. Stool samples were collected in a rubber pot. A saline-iodine smear was prepared and examined using

Olympus microscope under low (x10) power objective in the Dept of Microbiology in MCW&H. Data were managed using statistical package for social science (SPSS) Version 11.5 for Windows. Results were expressed as number (percent). Chi-square test was performed to calculate statistical association. P value <0.05 was taken as level of significance.

Definitions used for the study were as follows: Literate: an individual who can write and read. Illiterate: An individual who can not write and read. Low income group: monthly family income ranging from Tk1500-5000. High income group: Monthly income more than Tk10,000 per month. Insanitary latrine: open field and pit latrine. Kacha house: mud floor house having fence made of jute sticks-bamboo works and roof is of grass material. Pucca house: houses made of brick, damp-proof floor and roof is concrete material or metal sheet.

Results

Number of boys was relatively higher than the girls (66% vs 34% respectively) (Figure I) than the female. Distribution of children on the basis of age group was shown in table 1. Of the 120 children 54.2% were 12-36 months. The children came from low income group. Of the 53.3% family monthly income was between 1500-5000 taka and 33.1% between 5001-10000 taka (Table 1).

Parental education was shown in figure II. Of the 120 families 58 (48.3%) parents (mother and father) illiterate and rest had up to primary level education. Living condition, source of water supply and sanitation were shown in table 2. Fifty six (46.7%) children were living in kacha house. Of the total 108 (90%) of children family were using shallow tube well water. Insanitary was present in 40 (33.3%) cases (Table 2).

Parasitic ova were present in 59 (49.2%) samples (Table 3). Of the 59 children with parasitic infestation 40 parents were illiterate and in rest of the 19 cases parents had primary education. This distribution showed statistical

significant association (p=0.001). Among them 30.6% had parasite positive slide and 69.3% had parasite negative slide (Figure 2).

Sanitary latrine was used by 40 (33.33%) families. Insanitation practice was reported by 80 families and parasitic infestation was found in 46 (57.5%) children (p=0.006) (Figure III).

Of the 120 families 100 (83.3%) reported about washing hand only with water before feeding following washing their children after defecation. Of the total of 59 positive stool of parasitic ova 55 family member reported washing hand with only water and remaining 4 cases mothers washed hand with soap. This distribution showed significant association (p=0.0001) (Table 4).

Table-1: Age distribution and monthly family income of the study children (n=120).

Variables	Number	Percent
Age group (yrs)		
12 - 24	34	28.3
25 - 36	35	29.2
37 - 48	30	25.0
<48	21	17.5
Total	120	100
Monthly family income (BDT)		
1500 -5000	64	53.3
5001 -10000	40	33.4
>10000	16	13.1
Total	120	100.0

Data were expressed in number (percent).
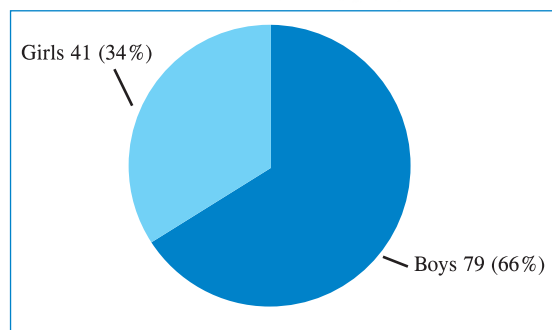
Figure I: Distribution of children by gender (n=120).
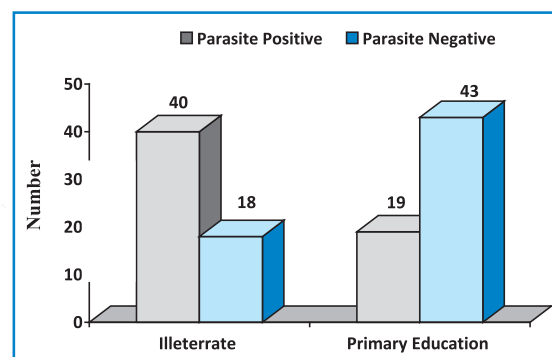
Figure II: Parasitic infestation among the children in relation to parental education status (n=120).

Table 2: Housing, source of water supply and sanitation practice of the families involved in the study (n=120)

Health Hygiene	Number	Percent
Housing tatus		
Kacha	56	46.70
Sami Pucca + pucca	64	53.30
Source of water supply		
Dug well	10	8.3
Shallow tube w ell	108	90.0
Tap water	2	1.7
Sanitation practice		
Insanitation	80	66.67
Sanitary	40	33.3

Data were expressed in number (percent).

Table 3: Distribution of children according to their stool examination for parasite (n=120)

Parasite positive slide	Number	Percent
Positive	59	49.2
Negative	61	50.8
Total	120	100.0

Data were expressed in number (percent).

Table 4: Distribution of cases with parasite infestation on the basis of parent's hand washing practice
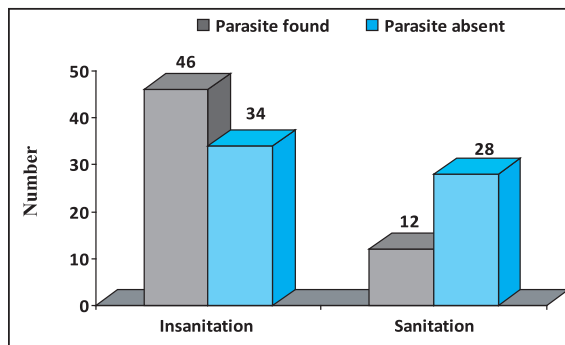
Parent's hand washing before feeding children	Parasite found	Parasite not found	P value
Water wash only (n=100)	55	45	0 .0001
Soap wash (n=20)	4	16	

Results were expressed as number (present). Chi-squared (Fisher Exact) test was performed.

Figure III: Distribution of parasitic infestation cases on the basis of sanitation practice by the family members.

Discussion

This study revealed more than 49% parasitic infestation among the under 5 suburban children, which is comparable with the study

conducted in Cameroon.[8] In our study, 58 (49.2%) parents were found illiterate. This high illiteracy rate in rural area is probably due to low socio-economic condition of parents and 40 (76.80%) parasitic infestation found among their children which is significant ($p < 0.001$) in relation to parent's education. Though parasitic infestation (4.17%) stated in low income group and parasitic infestation (1.67%) in low standard of housing but no association revealed in this study. In the study 8.3% sample population had no access to tube well water perhaps their low income. Insanitary (defecation in pit, open field and jungle) practice was found in 67.3% in this study; assumed to be the habit and low economic status of the rural people. The habit of hand wash without soap was probably due to poor literacy rate and ignorance of rural population. Among the insanitary latrine users' parasitic infestation was found significantly high (57.5%) which is consistent with reports from Nepal and Pakistan[9,10] High rate of helminth infestation was as observed in children of Kashmir valley where poor sanitation is common.[11] A significant association ($p < 0.01$) was revealed in between sanitary and insanitary latrine users. Parent's personal hygiene specially hands washing before feeding their child's and after defecation is an important factor for child's health. A strong association ($p < 0.0001$) found in between parasitic infestation of children and parent's hand washing habit with soap and it is comparable with the study carried out in Turkey.[12]

Conclusions

Prevalence of parasitic infestation was high among the children having poor personal hygiene of parents, poor sanitation, and low standard of housing and among the illiterate population. The findings suggest the need in improvement of sanitation and hygiene practice of low income group people.

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ADVANTAGE AND DISADVANTAGE OF IMPROVED COOK STOVE USE TO PREVENT INDOOR AIR POLLUTION AND HEALTH HAZARDS: EXPERIENCE FROM A RURAL COMMUNITY

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Abstract

Background: Rural people suffer from different health hazards due to indoor air pollution. Improved Cook Stove (ICS) claimed to reduce indoor air pollution and its health hazards. This cross-sectional study was carried out to determine the opinion on Improved Cook Stove use among the 103 users in a rural community of Savar Upazilla under Dhaka district during the period from January to June 2012. **Materials and Methods:** Total 103 respondents included in the study through through face-to-face interview by using a semi- structured questionnaire. Results were exxpressed as number (percent) and meaan$\pm$SD. Data were managed by Satatistical package for social science for Windows Version 15. **Results**: All the ICS users were female and 48.5% were in age group 31-40 years with mean age 34.32 ($\pm$7.04) years. Out of 103 respondents 59.2% had primary level education. Of the respondents (96 out of 103) 93.2% were housewives. The mean ($\pm$SD) monthly income(Tk) of the respondents was 13282$\pm$8168. Wood was used as fuel by 59.2% in Improved Cook Stove and of the total respondents 67.0% bought fuel from market. User's views regarding the use of improved cooking stoves attributed to less fuel consumption (95.1%), less cooking time (89.3%), less smoke emession (91.3%), no impact on health (95.1%), less cost (89.3%), no environmental pollution (91.3%). Constraints of the ICS use included as high initial cost (41.0%) and maintenance (25.6%), parts replacement (12.8%) and associated costs constraints (20.6%). **Conclusions**: The data suggest that besides its few constraints Improved Cook Stove seemed to be useful and accepted by users owing to its environment friendly proposition and cost effectiveness. Considering the present findings attempts might be taken to circumvent technical issue to make it more user friendly and increase awareness of rural people to increase its use and thus improving the people's health and reduce environmental pollution.

Key Words: Improved cook stove, merits and demerits, rural community

Introduction

Indoor air pollution refers to pollutions from open fires for cooking and heating and it is one of the common sources of air pollution caused by human activities mainly affecting the developing countries including Bangladesh. This indoor air pollution mainly effects the rural population but also the

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impoverished urban dwellers. Indoor air pollution found to add the rate of child mortality because of respiratory infection.[1] According to World Health Organization, about one billion people, mainly women and children, are exposed to the polluted indoor air that is exceeded the WHO's ambient air quality standard nearly three fifths of the total global exposure of particulate matter occurs in the rural areas of developing countries.[2]

About 83% of the households in Bangladesh use solid fuels and roughly 15,000 people die and millions of people become ill annually due to indoor air pollution. Limited data are available on indoor air pollution in Bangladesh. The principal pollutants from burning of biomass fuel include particulate matter, carbon monoxide (CO), different volatile organic compounds (VOCs) including benzene and formaldehyde. Although ambient air quality is a great concern in the developing countries including Bangladesh little attention has so far been effective to improve the indoor air quality in rural areas of Bangladesh.[3,4]

To reduce the effect of indoor pollution the general consensus is to reduce the use of biomass fuel, keeping children away from cooking area and building awareness among the people of the indoor air pollution.[5] As corrective measure Village Education Resource Center (VERC) started an Improved Cook Stove (ICS) program in 1987, with technical assistance of Institute of Fuel Research and Development (IFRD), BCSIR. VERC has been involved in creating a National Network on Improved Cook Stove program in Bangladesh to promote ICS use widely.[6] Improved cook stoves (ICS) are widely viewed as a relatively cost effective and effective way to resolve public health problems like acute respiratory infections and some other disease from indoor air pollution.[7] Recognizing the issue BCSIR started to disseminate stove technology. However, the use of ICS has not been taken by people as assumed. The present study was carried out to obtain a feedback from the ICS users and find the bottle neck in reluctance to accept the tool by people in need.

Materials and Methods

This cross sectional study was conducted in a rural community of Savar upazilla under Dhaka District during the period of 6 months started from January to June 2012. Improved cooking stove users of the selected rural community were included in the study on the basis of selection criteria and total 103 users were identified by convenient sampling technique and Data were collected by face-to-face interview with the help of a semi-structured questionnaire. Data analyses were done by computer with the help of latest available version of SPSS software.

Ethical permission was obtained from the Ethical Committee of NIPSOM. Informed written and verbal consent was taken from the individual participant prior to inclusion in the study. They were also informed about their right to withdraw from the study at any stage or to restrict their data from analysis. Confidentiality of data was maintained strictly.

Result

Socio-demographic characteristics of the ICS users were shown in table 1. Of the 103 ICS users 48.5% were between 31-40 years old. The mean (SD) age was 34.32 ± 7.04 (Table 1). Primary and secondary level education accounted for 90% of the respondents [Primary - 59.2% and Secondary - 31.1%]. House wife accounted for 93.2% of respondents. Of the respondents 73.8% were Muslim. Mena (SD) monthly family income was 13282 ± 8168. Of the 103 ICS users 58.3% and 35.0% had monthly income between Tk 5000-1000/- and 11000-20000/- respectively. Out of 103 respondents 102 (99%) were married (Table 1).

Out of 103 the ICS users, 61 (59.2%) used fuel wood, 27 (26.2%) dry leaves, 4 (3.9%) Cow dung, 9 (8.7%) used rice husk and rest 02 (1.9%) agricultural waste (Table 02).

Of the 103 ICS users 64 (62.2%) faced no constrain

in using it. The ICS users stated the benefits which included less fuel consumption (95.1%), less cooking time (89.3%), less smoke emersion (91.3%), not affecting physical health (95.1%), less cost (89.3%), not polluting environment (91.3%) (Table 3). Of the 39 users constraints about use of ICS were operations (41.0%), maintenance (25.6%), not easy replace parts (12.8%) and associated costs (20.6%) (Table 4).

Table 1: Socio-demographic characteristics of the ICS users

Variables	Mean±SD	Number	Percent
Age (yrs)	34.32 ± 7.04		
20-30		42	40.8
31-40		50	48.5
41-50		11	10.7
Education			
Illiterate		1	1
Primary		61	59.2
Secondary		32	31.1
SSC		1	1
Masters		8	7.8
Occupation			
House wife		96	93.2
Service		4	3.9
Business		3	2.9
Monthly family income (Tk)	13282±8168		
5000-10000		60	58.3
11000-20000		36	35.0
21000-30000		4	3.9
41000-50000		3	2.9
Marital status			
Widow		1	1.0
Married		102	99.0
Religion			
Islam		76	73.8
Hindu		16	15.5
Christian		11	10.5

Result was expressed as number (percent).

Table 2: Distribution of the ICS users by fuels used

Fuel Type	Frequency	Percent
Fuel wood	61	59.2
Dry leaves	27	26.2
Rice husk	9	8.7
Cow dung	4	3.9
Agricultural waste	2	1.9
Total	103	100%

Result was expressed as number (percent).

Table 3: Opinion ICS users regarding its benefits (n=64)

Benefits	Frequency	Percent
Less fuel consumption	98	95.1
Less cooking time	92	89.3
Less smoke emission	94	91.3
Does not affect physical health	98	95.1
Less cost	92	89.3
Does not pollute environment	94	91.3

*Respondents had multiple choices. Results were expressed as number (percent).

Table 4: Opinion of the ICS users regarding its constraints (n=39)

Constraints	Frequency	Percent
Operational	16	41.0
Maintenance	10	25.6
Part replacement	5	12.8
Associated costs	8	20.6

Results were expressed as number (percent).

Discussion

A cross-sectional descriptive study was carried out to assess the opinion on Improved Cook Stove (ICS) among the 103 users who were selected purposively in a rural community conducted from January to June 2012.

Present study reveals that out of the ICS users majority 50 (48.5%) belongs to 31-40 years age group and their mean age was 34.32; (±7.04) years. Out of 103 respondents 59.2% had primary level and 73.8% were Muslims by religion. Out of the 103 ICS users 93.2% were house wives and 102 (99%) were married. Previous study demonstrated that the average age of the respondents who used ICS was about 32 years. About 58% ICS users were illiterates and 98 % of the respondents who used ICS were housewives. About 98% of the respondents in both the areas were married.[6] From this comparison it reveals that age, sex and marital status of the ICS users almost same but education level of the ICS users improved.

Among 62.2% the ICS users respondents did not face any constraint in using it but 37.8% did. Of that 37.8% ICS users for 41.0% (16 out of 39) constrains was about operational 25.6% maintenance, 12.8% parts replacement constraint and 20.6% associated costs constraint. Previous study it was reported about 7% of the housewives believed that ICS emitted more smoke than the traditional cook stoves.[7] This has been, however, attributed to lack of proper maintenance of ICS. Age old practice(s) often found to be the major obstacle to accept new ideas. This has been observed in this case as well. Traditional cook stove was opined to be more convenient by about 53% of the respondents compared to the ICS use and about 73% of the respondents expressed their unwillingness to use ICS if their traditional cook stoves were converted to ICS.[7] However, respondents of the present study expressed their satisfaction in using ICS and expressed their understanding regarding the benefits of the endeavour.

Conclusions

Rural people in Bangladesh depend on biomass fuels for daily household cooking. Improved Cook Stove is useful and accepted by users owing to its environment friendly proposition and cost effectiveness. Considering the present findings attempts might be taken to circumvent technical issues of ICS and make it more user friendly. Awareness of the rural people need to about usefullness of ICS use and thus reduce environmental pollution and improve people's health.

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CHIKUNGUNYA FEVER: AN EMERGING INFECTION IN BANGLADESH

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Abstract

Chikungunya fever is an acute illness caused by a virus transmitted by Aedes agypti mosquito. It is characterized by sudden onset of fever, maculo-papular rash and severe arthralgia. Treatment is symptomatic. Prevention includes personal protection and vector control. An awareness and clinical knowledge are necessary to diagnose chikungunya infection properly.

Key Words: Chikungunya, Bangladesh, prevention

Introduction

Chikungunya fever is a mosquito borne illness of humans caused by the chikungunya virus that belongs to the Alphavirus genus of the family Togaviridae. Aedes aegypti and Aedes albopictus mosquitoes are the main vectors of chikungunya in Asia and the Indian ocean island.[1] The disease was first described by Marion Robinson and W.H.R. Lumsden in 1955 following an outbreak in 1953 on the Makonde platue along the border between Mozambique and Tanzania.[2] The name chikungunya derives from a word of Kimakonde language meaning, to become contorted and describes the stooped appearance of sufferers with joint pain.[3] The disease occurs in Africa, Asia and Indian subcontinent. In recent decades chikungunya has also spread to Europe and Americas. In 2007 Chikungunya disease transmission was reported for the first time in localized outbreak in North Eastern Italy. Out breaks have since been recorded in France and Croatia.[4] An outbreak of chikungunya virus occurred in Malaysia between December 1998 and February 1999.[5] Clinically the disease can resemble classical dengue fever and in dengue endemic countries this can gives rise to confusion and misdiagnosis.[5]

Global distribution

Chikungunya was first isolated from human and subsequently Aedes aegypti mosquitoes during an outbreak in Tanzania in 1953 following which epidemics were subsequently noted in the Philippines (1954, 1956 and 1968), Thailand,

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Cambodia, Vietnam, India, Myanmar and Sri Lanka.[6-11] The first recorded chikungunya outbreak was in Kolkata in 1963. The virus re - emerged in India 2006 after a gap of 32 years and caused an explosive outbreak affecting 13 states.[6] In January 2006, there was a very large epidemic in Reunion Island followed quickly by the one in India.[7] Resurgence of chikungunya has been attributed to various factors including globalization, increase in the mosquito population, loss of herd immunity.[7]

Current scenario in Bangladesh

Since 2008, three outbreaks have been reported from Bangladesh. During December 2008, an investigation team from the Institute of Epidemiology, Disease Research, Bangladesh and ICDDR,B investigated the first outbreak of chikungunya fever in Rajshahi and Chapainawabganj districts of Bangladesh where 32 cases were identified. The second outbreak was in Sathia upazilla of Pabna in 2009. Third outbreak was in 2011 in Dhaka city, Dohar and Sibganj. Six cases were diagnosed in a tertiary teaching hospital in Dhaka city.[12-15]

Epidemiology

Chikungunya fever occurs in both sporadic outbreaks and large epidemics. Chikungunya fever affects all age groups, but more than 50% are over the age of 65 years of which a third will die, severe illness also occurs in children. Both sexes are equally affected. The incubation period ranges from 3-12 days usually 3-7 days. In susceptible populations, chikungunya fever can have attack rates as high as 40 to 85%. There is an inter epidemic period of 4-8 years.[16-17]

Transmission

The virus is transmitted from human of human by the bites of infected female mosquitoes. Most commonly, the mosquitoes involved are Aedes aegypti and aedes albopictus, two species which can also transmit other mosquito borne viruses, including dengue. The Aedes mosquito breeds in domestic settings such as flower vases, water storage containers, air coolers, etc. and peri domestic areas such as construction sites, coconut shells, discarded household junk items (tyres, plastic and metal cans, etc.) and bites during day time. These mosquitoes can be found biting throughout daylight hours, though there may be peaks of activity in the early morning and late afternoon. Both species are found biting outdoors, but Aedes aegypti will also readily feed indoors. Risk is highest in the rainy season when numbers of mosquitoes are at their greatest.[18]

Signs and symptoms

Chikungunya is characterized by an abrupt onset of fever frequently accompanied by joint pain. Other common signs and symptoms include muscle pain, headache, nausea, fatigue maculo-papular rash. The joint pain is often very debilitating, but usually lasts for a few days or may be prolonged to week. Most patients recover fully, but in some cases joint pain may persist for several months, or even years. Occasional cases of eye, neurological and heart complications have been reported, as well as gastrointestinal complaints. Serious complications are not common, but in older people, the disease can contribute to the cause of death. Often symptoms in infected individuals are mild and the infection may go unrecognized, or be misdiagnosed in areas where dengue occurs.[1,5,6,19]

Diagnosis

Common laboratory tests for chikungunya include virus isolation, RT-PCR, and serological tests. Serological diagnosis requires a larger amount of blood than the other methods, and uses an ELISA assay to measure chikungunya specific IgM levels. IgM antibodies demonstrable by ELISA may appear within two weeks. In may

not be advisable to do the antibody test in the first week.[1,12,19,20]

Treatment

There is no specific antiviral drug treatment for chikungunya. Treatment is directed primarily at relieving the symptoms, including the joint pain using anti pyretics, optimal analgesics and fluids. There is no commercial chikungunya vaccine.[1,19,21,22]

Prevention & Control

The proximity of mosquito vector breeding sites to human habitation is a significant risk factor for chikungunya. Prevention and control relies heavily on avoiding storing water in outdoor containers (flower pots, bottles, containers that can accumulate water) in order to prevent them mosquito breeding sites. This requires a comprehensive response that involves action from community, form health care to use a standard case management guide line. During outbreaks, insecticides may be sprayed to kill flying mosquitoes, applied to surfaces in and around containers where the mosquitoes land, and used to treat water in containers to kill the immature larvae. Insecticide treated mosquito nets afford good protection.[21, 22]

Conclusions

Due to urbanization and lack of hygiene, facilitates mosquito breeding the disease should be prevented and it would require a planned approach as well as awareness regarding personal protection. Integrated vector control management will contribute to prevent an outbreak.

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HENOCH-SCHONLEIN PURPURA-A CASE REPORT AND REVIEW OF THE LITERATURE

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Abstract

We describe a case of a female child with Henoch-Schonlein purpura (HSP), presenting with cutaneous and gastrointestinal manifestations. Endoscopy of upper GIT revealed diffuse ulcerations and vasculitis in the stomach and duodenum. Steroid therapy led to complete resolution of the symptoms. HSP is the most common childhood vasculitis, and is characterized by the classic tetrad of nonthrombocytopenic palpable purpura, arthritis or arthralgias, gastrointestinal and renal involvement. It is a systemic disease where antigen-antibody (IgA) complexes activate the alternate complement pathway, resulting in inflammation and small vessel vasculitis. Mild form of disease resolves spontaneously, and symptomatic treatment alone is sufficient. Systemic steroids are recommended for moderate to severe HSP. The prognosis depends upon the extent of renal involvement, which requires close follow up. Early recognition of multi-organ involvement, especially outside of the typical age group, as in our adolescent patient, and appropriate intervention can mitigate the disease and limit organ damage.

Introduction

1.1. Case

A 9-year-old girl from Gazipur attended the Out-patient Dept, TMMC&H on 17th September 2016. She presented with erythematous, nonpruritic rash which progressed proximally from both feet to thighs and upper extremities including palms and soles. Later rash became erupted and itchy. She also complained of abdominal pain associated with nausea and vomiting. Pain involving the right and left upper quadrant was constant, colicky in nature, which aggravated with meals and decreased by vomiting and, associated with constipation. Pain did not respond to any anti-spasmotic medication. She did not have any complain about micturition. Review of other systems was unremarkable. She had a history of

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similar illness 4 months back and diagnosed as a case of HSP and treated accordingly. Physical examinations revealed pharyngeal erythema, cervical lymphadenopathy- anodular, and nontender, nonblanching purpuric rash involving extensor surface of the both upper and lower extremities (Figures 1 and 2), but no rash on the trunk. Laboratory findings were as follows: Blood - mild leukocytosis (WBC: 12800/cmm^3); Hb - 11.8 g/dL; ESR; - 40 mm in 1st hour, BUN - 16 mg/dL; Serum creatinine - 0.6 mg/dL; Urinalysis; no hematuria or proteinuria, pus cell 8-10/HPF, Culture and sensitivity revealed growth of Klebsella which was sensitive to Amikacine, Ceftriaxone, Azithromycin; Stool for occult blood- positive. Endoscopy of upper GIT (Figure 3) findings: Stomach- multiple area of erythrema with several tiny size superficial ulcer in the antrum and prepyloric area; Duodenum- multiple erosions in the floor bulb, post bulbar area was normal. The patient was diagnosed with Henoch-Schonlein purpura as per American College of Rheumatology and European League Against Rheumatism (EuLAR) and Pediatric Rheumatology Society (PReS) criteria. She was treated with intravenous fluids and parateral glucose and kept nothing by mouth for 3 days. Inj Dexamethasone started which she responded, as evidenced by resolution of her symptoms (Figure 4) and decrease ESR. She was switched to oral prednisone, 20 mg twice daily when she was put on to regular diet on the fourth day. Inj Amikacine added due to urinary growth and continued for 10 days.
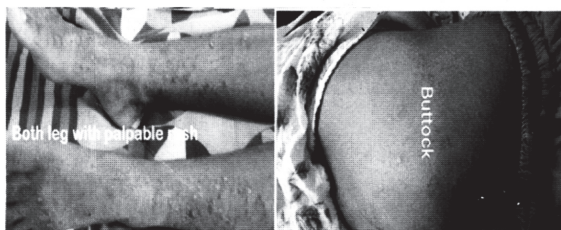

Figure 1: Photographs show purpuric rash present in both lower extremities and buttock.

Figure 2: Photos show palpable purpuric rash in upper extremity and superficial edema on forehead.
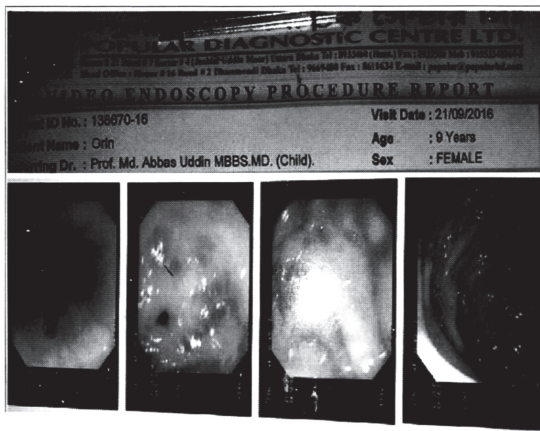

Figure 3: Images show inflammatory change, submucosal hemorrhage and small ulceration the antrum and duodenum on upper GIT endoscopy.

Figure 4: Phots show rash resolved after initiation of treatment.

2. Review of Literature

2.1. Introduction

Henoch-Schonlein purpura (HSP) is a self-limited, systemic, nongranulomatous, autoimmune mediated, small vessel vasculitis, with multi-organ involvement. Its etiology is unclear but is associated with some etiology.

Table 1: Etiological associations with HSP[1-3]

Bacterial:	Viral:	Drugs:	Tumors:	Genetic:
Group A beta hemolytic	Hepatitis A	Quinolones	Non - small cell lung cancers	Alpha - 1 antitrypsin deficiency
Streptococci	Hepatitis B		Prostate cancer	Familial Mediteranean Fever
Staphylococcus aureus	Hepatitis E	Clarithromycin	Lymphoma	HLA - DRB1*01
Helicobacter pylori	Herpes simplex	Acetaminophen	Multiple myeloma	HLA - B35
Mycoplasma	Human parvovirus B19	Codeine		
	Varicella	Etanercept		Parasites
	Adenovirus CMV HIV			Toxocara canis

*This list is not a comprehensive.

2.2. Epidemiology

The annual incidence varies geographically from 6.2 to 70.3 per 100,000 in children less than 17 years of age with slight male predominance (M:F = 1.2:1.0). Peak age incidence is 4-6 years and 90% of HSP cases occur before the age of 10 years.[1-3] Worldwide, Afro-Caribbean's have the least incidence while Asians have the highest incidence. HSP is most commonly seen in winter and spring seasons.[4]

2.3. Pathophysiology

Antigen and antibody complexes form as a result of bacterial and viral infections, vaccinations, drugs, and autoimmune mechanisms.[3] These antigen antibody complexes deposit in the small vessel walls and activate the alternate complement pathway which lead to neutrophil accumulation resulting in inflammation and vasculitis without a granulomatous reaction. This can involve multiple systems including skin, gastrointestinal tract, kidney, and joints but it can involve any organ system. Vasculitis causes extravasations of blood and its components into the interstitial spaces resulting in edema and hemorrhage.

In our case with high ASO titers, streptococcal infection might possibly have played a role in initiating the HSP cascade.

2.4. Clinical Features

HSP is characterized by a classic tetrad of nonthrombocytopenic palpable purpura, arthritis or arthralgias, gastrointestinal and renal involvement, and rarely, other systems.[2,4,5] Cutaneous involvement is the most common presentation, although patients may present with involvement of other organ systems.

2.4.1. Skin

Cutaneous manifestations include nonthrombo-cytopenic rash which evolves from erythematous to urticarial and macular wheels to nonblanching palpable purpura with petechiae and ecchymoses. Palpable purpura is seen in 50% of the cases as the presenting sign. Purpuric lesions occur in groups and may persist up to 3-10 days. Classical HSP is symmetrical in distribution involving dependent areas such as the lower extremities and buttocks but it can also be seen in the upper extremities (Figures 1 and 2). Truncal and facial involvement can also be seen. Initially the lesions are single and less than 1 cm size, but later coalesce to form ecchymotic areas. Angioedema (nonpitting edema) can be seen in the scalp and back and in extremities.

2.4.2. Gastrointestinal (GI)

Colicky abdominal pain, worsening with food is the most common symptom. Other symptoms include nausea, vomiting, hematemesis, melena, and hematochezia. These symptoms are secondary to vasculitis involving the splanchnic circulation (mesenteric vasculitis). Rarely, intussusception (ileoleal), ischemic necrosis of the bowel wall, intestinal perforation, massive gastrointestinal bleeding, acute acalculous cholecystitis, hemorrhagic ascites with serositis, pancreatitis, and biliary cirrhosis may occur. Usually, skin manifestations precede gastrointestinal manifestations, but in one fourth of the cases skin lesions occur after gastrointestinal manifestations. HSP should be considered in the differential diagnosis of an acute abdomen (especially in children). Endoscopic findings include erythema, edema, petechiae, ulcers, nodular changes, hematoma-like protrusions, skip hyperemic ecchymotic lesions, and strictures. These are seen in the gastric antrum, cecum, ileum, and colon. The ulcers are small, less than 1 cm^2, superficial, multiple, irregular, and clean-based.

2.4.3. Joints

Joint involvement is seen in up to two-thirds of HSP patients. In one fourth of HSP patients, this can be the presenting sign. Typically, non-migratory, nondestructive polyarthralgias occur which are symmetrical in distribution and mostly involve the knees and ankles. Joint involvement is more commonly seen in adults than in children.

2.4.4. Renal

Hematuria (microscopic or gross) is the most common renal manifestation. Proteinuria is either seen along with hematuria (commonly) or isolated (rarely). Most of the cases of HSP nephritis resolve spontaneously, only 5% progress to chronic end-stage renal disease (ESRD) at 5 years.

5. Diagnosis

HSP is a clinical diagnosis but when the presentation is atypical, tissue biopsy may be helpful.[8,9] Although new criteria are proposed by the European League Against Rheumatism (EuLAR) and Pediatric Rheumatology Society (PReS), most of the studies used old criteria proposed by American College of Rheumatology. For these criteria, please refer to Table 2.

Table 2: Diagnostic criteria of HSP (ACR and EuLAR &PReS)[6,7]

Mandatory criterion:	
(i) Palpable purpura Plus at least one of the following criteria:	Three or more of the following criteria are needed:
(1) Diffuse abdominal pain	(1) Age 20 years or less at disease onset
(2) IgA deposition in any biopsy	(2) Palpable purpura
(3) Arthritis/arthralgias	(3) Acute abdominal pain with gastrointestinal bleeding
(4) Renal involvement (hematuria and/or proteinuria)	(4) Biopsy showing granulocytes in the walls of small arterioles or venules in superficial layers of skin

2.6. Differential Diagnosis

Children (less than 17 years of age) presenting with palpable purpura and multisystem involvement (GI, kidney and joints) without thrombocytopenia may be diagnosed as HSP. The differential diagnosis of HSP includes conditions such as Crohn's disease, Wegener's granulomatosis, infective endocarditis, IgA nephropathy, and hemolytic uremic syndrome. Hypersensitivity vasculitis can present as leukocytoclastic vasculitis involving the skin (palpable purpura) and rarely, the gastrointestinal tract, but unlike HSP, IgA deposition is not seen. In Crohn's disease and IgA nephropathy, there is no palpable purpura.

2.7. Treatment of HSP, indications for different medications[1,8-10]

Medications	Indication	Comments
Acetaminophen, NSAIDs	Mild rash, arthritis	
Oral steroids (1-2 mg/Kg)	Severe rash, cutaneous edema, severe colicky abdominal pain, scrotal and testicular involvement	These cannot prevent development of systemic involvement but can be helpful for symptomatic treatment. These decrease the duration of symptoms when compared to placebo group
IV steroids (1-2 mg/Kg)	Same as oral steroids, should be given if patient is not able to tolerate oral medications	Same as oral steroids
High-dose IV pulse steroids	Nephrotic range proteinuria	Decreases ESRD progression (in some case series and reports)
High-dose IV pulse steroids plus immunosuppression	Rapidly progressive glomerulonephritis (RPGN), hemorrhagic involvement of lungs, brain	Grade D recommendation
Plasmapheresis and/or IV immunoglobulin therapy	Refractory HSP to combination therapy (steroids and immunosuppression), massive hemorrhage in gastrointestinal or other organs	Grade D recommendation, but evidence is growing with multiple case series and reports. This is used as the last resort to treat refractory HSP.

2.8. Prognostic Factors

In general, most of the HSP cases are self-limited, with good prognosis and five-year survival rates of 95%.[1,2,10-11] One third of the patients have relapses, which are milder and shorter in duration, usually within 4 months, and involving the same organs.1 The prognosis depends on the age of onset, extent of renal involvement and its course, extent of skin involvement, particularly above the waist line, immunoglobulin imbalance, and neurological involvement.

2.9. Conclusions

HSP is common in the below 10 years children age group, non-thrombocytopenic palpable purpura with multiorgan involvement (gastrointestinal, kidney and joints) should make one consider the diagnosis. Prompt diagnosis and multidisciplinary intervention can lead to appropriate management and mitigate potential complications, as illustrated in this case.

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