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Journal of Paediatric Surgeons of Bangladesh

Editorial

Measles Prevention Currently Requires a Coordinated Effort: The Measles Outbreak in Bangladesh and What We Can Do

Measles was once believed to be almost eradicated and to be limited to the pages of ancient journals or medical history. The prevalence of this fatal illness has dramatically declined in many nations, including Bangladesh, as a result of extensive immunization campaigns and increased public awareness. However, the current state of public health presents a different story. Measles outbreaks have been increasing alarmingly in various countries in recent years. Bangladesh is no different. Measles cases are increasing once more in Bangladesh, according to the Directorate General of Health Services and the World Health Organization. Bangladesh's recent measles outbreak has turned into a worrisome public health emergency. Our public health system is seriously threatened by the sickness, which has spread to many of the 64 districts in the country. But this disease, which is more contagious than HIV, is completely preventable. Why has such a catastrophe emerged in a country that is regarded as a global leader in immunization? The resurgence of measles in this populous country poses a major threat not only to the health sector, but also to national development and the future of children. It's important to consider the reasons for the resurgence of a disease that can be prevented and take immediate action.

The severity and current situation of the measles crisis in Bangladesh

The outbreak, which began in mid-March 2026 in Bangladesh, quickly spread throughout the country. As of May 5, 41,793 suspected cases have been identified.[1] As of May 10, 2026, 49,159 children across the country have been hospitalized with measles symptoms. Of these, 6,819 have been laboratory-confirmed cases. Since the outbreak began, there have been 344 suspected measles fatalities, and 65 laboratory-confirmed measles deaths.[2] Most concerning, approximately 80% of that sick are children under the age of five. Public health specialists are extremely concerned about the infection of infants as young as nine months old, who are not yet eligible for immunization.[3] Additionally, children who were not vaccinated accounted for the majority of the deaths. The situation is centered in Dhaka, the capital. Densely inhabited places like Demra, Jatrabari, Kamrangirchar, Karail, and Mirpur have the greatest infection rates.[4] Nearly a million Rohingya migrants live in Cox's Bazar, where overcrowding and a lack of healthcare have made it more likely that the disease will spread quickly.[5, 6]

What could be the reason for this outbreak?

Bangladesh's vaccination rate has decreased, with the first dose rate dropping from 88.6% in 2019 to 86% in 2023.[7] Furthermore, the measles-rubella (MR) vaccination was severely lacking in 2024 and 2025. Consequently, many youngsters continued to receive "zero-dose" or incomplete vaccinations. Reluctance and gaps in vaccination, such as the disruption of general healthcare and routine vaccination programs during the COVID-19 pandemic, have led to some stagnation. As a result, a large proportion of children have remained outside the scope of vaccination. Its long-term effects are now becoming apparent. Many parents are apprehensive due to rumors, myths, and superstitions regarding vaccine adverse effects that have been circulated on social media and other media

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platforms. Lack of vitamin A supplementation and malnutrition have weakened children's immunity, which increases the risk of death. The refugee crisis and population density, especially in crowded areas like Rohingya camps, have increased the risk of infection, raising concerns about cross-border spread.

Why is it wrong to take measles lightly?

The virus that causes measles is extremely contagious. By sneezing or coughing, an infected individual can readily infect others. One infected person can infect twelve to eighteen others, making it extremely contagious. Common symptoms include high fever, cough, runny nose, red eyes, a red rash on the body, small white spots on the inside of the cheeks (Koplik spots), etc. Many people think that measles is just a fever and a red rash on the body. But if timely measures are not taken, the reality can be much more dangerous. Children who are malnourished or have not received a vaccination are particularly vulnerable. Although it may seem like a simple fever and rash, measles can lead to pneumonia, diarrhea, encephalitis (a brain infection that can cause inflammation, swelling, and permanent brain damage), blindness, and even death. In developing nations, its complications are more serious.

Integrated prevention is essential and what can we do?

To alleviate this situation, a number of coordinated actions are desperately needed as follows:

1. **Strengthening the National Immunization Program:** The mass immunization campaign is the most effective means of preventing measles. Thus, creating mobile immunization teams, executing mass immunization campaigns, finding dropout children, and guaranteeing 100% MR/MMR vaccine coverage. Door-to-door vaccination, the establishment of camps in isolated locations, and public participation are necessary for this campaign to be 100% successful.
2. **Family and parental responsibility:** Measles prevention is a communal battle, not just the governments. Here, the importance of each level cannot be disputed. Make sure the child receives the first dose of the "MR" (measles-rubella) vaccination at nine months and the second dose at fifteen months. Keep an eye out for symptoms, and see a doctor right away if you have a high fever, cough, red eyes, or rash. Make sure you eat a healthy diet, take a vitamin "A" supplement, and drink enough water.
3. **Strengthening surveillance systems through government and private initiatives:** Not only government but also private healthcare centers should be brought under the ambit of patient data collection. Controlling the disease's spread requires prompt patient identification, isolation, and treatment. Through outreach initiatives, mobile immunization facilities should be set up in isolated locations and impoverished neighborhoods.
4. **Public awareness and rumor prevention:** In cooperation with medical professionals, the media, and local leaders, awareness campaigns should be carried out through all media, including TV, radio, and social media, in order to debunk baseless concerns and rumors regarding vaccinations. Parents should be informed about the value and safety of vaccinations. In order to guarantee children's safety, educational institutions should increase awareness through schoolbased programs.
5. **Strengthening health infrastructure:** Children's hospitals should be equipped to treat critically ill patients with sufficient isolation beds and intensive care units. It is important to make sure that health personnel are trained, that there is a sufficient supply of equipment for preventing infections, that the health system's capacity is increased, and that treatment methods are made clear.
6. **Updating security systems:** Upazila-level fast reaction teams, digital reporting systems, and lab capacity building are necessary for quick illness identification, epidemic mapping, and realtime data monitoring or observation.
7. **The role of medical professionals:** Physicians and other health professionals should promptly identify illnesses, report suspicious patients, advise parents, stress the value of immunization, and send complicated patients.
8. **Strengthening the Vitamin A program:** Since vitamin A boosts immunity and lowers mortality and disease consequences, the Vitamin A Plus campaign should be extended by keeping a close eye on undernourished youngsters.
9. **Research and Policymaking:** The government should start an AI-based outbreak prediction system and conduct more study on measles epidemiology and vaccination ambiguity. Additionally, it is necessary to involve public health research institutions and medical colleges and

universities in Bangladesh in the research.

10. **Cross-border collaboration:** Bangladesh is a nation that depends on foreign travel. across order to stop the spread of illness through international travel and refugee movement, cooperative surveillance, and information sharing across India and Myanmar's border regions, regional collaboration is crucial.
11. **The media's role:** By spreading correct information, dispelling falsehoods, encouraging immunization, and airing awareness campaigns, the media can be the most effective ally in public health.
12. **Political commitment and sustainable funding:** Increased national health budgets, funding for vaccines, donor collaborations, and public-private partnerships all require sustained political commitment. National security must take health into account. Long-term success requires consistent funding.

Conclusion:

Bangladesh's current measles outbreak is a national public health emergency. According to experts, this is a warning indicator of Bangladesh's immunization system's inadequacy rather than merely a transient outbreak. Larger outbreaks, more avoidable infant deaths, and a future comeback of other vaccine-preventable diseases are all possible if prompt and coordinated action is not done. Vaccines against measles are safe, effective, and can save lives. If one child is not vaccinated, the entire society is at risk. Thousands of children in a nation that was once a global success story in immunization programs are now afflicted with measles. Urgent immunization, vigilant surveillance, restoring public confidence, and the adoption of long-term health policies are urgently needed to address the problem. The government should take steps to raise public awareness through Facebook campaigns, TV, radio, school-based health education, and the involvement of social and religious leaders. It is crucial that we, as parents, understand this. The secret is awareness.

Conflict of Interest: I have no Disclosure.

Author Contribution: In this manuscript, it was prepared and written by the author. All outputs were critically revised, and edited by the author, who hold full accountability, novelty, transparency, and data secrecy.

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Original Article

Laparoscopy-Assisted Swenson Pull-Through in Hirschsprung Disease: Experiences in Dhaka Medical College and Hospital

Reza S, Mohanta P, Abir A, Leema EA, Minar MA

Abstract

Background: Hirschsprung disease (HD) is a congenital disorder characterized by absence of ganglion cells in the distal bowel. Minimally invasive approaches such as laparoscopy-assisted pull-through (LAPT) have gained popularity due to better visualization and reduced morbidity.

Objective: To evaluate the outcomes of laparoscopy-assisted Swenson pull-through in children with HD.

Methods: This prospective study included 16 patients aged 1–7 years who underwent laparoscopy-assisted Swenson pull-through. All patients had a prior transverse colostomy. Operative time, postoperative outcomes and complications were analyzed.

Results: The median age was 3.5 years, with 6 females and 10 males. Operative time ranged from 90 to 130 minutes. Oral feeding was initiated on postoperative day (POD) 1–2. Complications included constipation (n=1), enterocolitis (n=1), abdominal distension (n=1), urinary retention (n=1), wound infection occurred in(n=1) after laparoscopy and (n=2) after gut closure. All complications were managed conservatively. One patient required re-catheterization due to urinary retention after laparoscopy. Hospital stays ranged from 5 to 7 days. No mortality was observed.

Conclusion: Laparoscopy-assisted Swenson pull-through is a safe and effective procedure for HD with low complication rates and good continence outcomes.

Keywords: Hirschsprung disease, Swenson pull-through, laparoscopy, pediatric surgery, Dhaka medical college and hospital.

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Introduction

Hirschsprung disease (HD) is a developmental disorder caused by failure of neural crest cell migration, resulting in aganglionosis of the distal bowel [1]. Surgical management aims to resect the aganglionic segment and restore bowel continuity [2].

The Swenson procedure remains one of the standard techniques for definitive management [3]. With advances in minimally invasive surgery, laparoscopy-assisted pull-through (LAPT) procedures have shown improved outcomes in terms of visualization, minimal trauma, and faster recovery [4–6].

This study presents our experience with laparoscopy-assisted Swenson pull-through in pediatric patients with HD.

Materials and Methods

This prospective observational study was conducted in pediatric surgery department of Dhaka medical college and hospital, Bangladesh from January 2023 to December 2024.

Patient Selection

- Total patients: 16 with histologically confirmed Hirschsprung disease
- Age range: 1–7 years
- Sex: 10 males, 6 females
- All patients had a prior transverse colostomy
- Patient with total colonic aganglinosis and other associated congenital anomalies excluded from study

Surgical Technique

Laparoscopy-assisted Swenson pull-through was performed in all patients under general anesthesia. The aganglionic segment was identified under intra operative frozen section facilities and mobilization of colon was done laparoscopically, and resected. A transanal Swenson

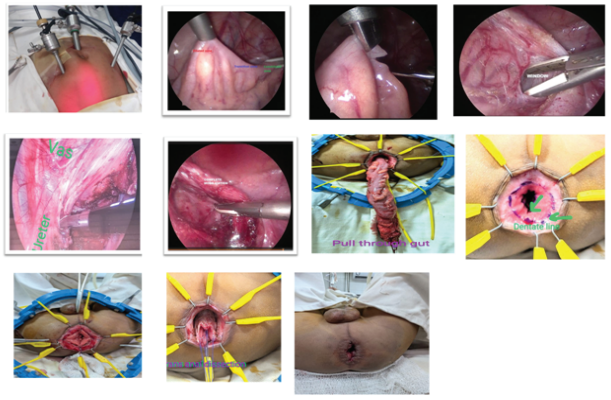


Fig: pictures of operative state of laparoscopy assisted Pull through

Postoperative Care

- Urinary catheter removal: postoperative day (POD) 2–3
- Hospital discharge: POD 5–7
- Colostomy closure: 2–4 months later

Outcome Measures

- Complications
- Functional outcomes (continence, constipation)

Statistical Analysis

Data were analyzed descriptively using mean, median, and percentages.

Results

Patient Characteristics

Table 1: Demographic Profile

Variable	Value
Total patients	16
Age range	1–7 years
Median age	3.5 years
Male	10 (62.5%)
Female	6 (37.5%)

Operative and Postoperative Details

Table 2: Operative Parameters

Parameter	Findings
Procedure	LAPT (Swenson)
Operative time	90–130 minutes
Mean operative time	110 minutes
Frozen section	Performed in all cases
Feeding initiation	POD 1–2
Catheter removal	POD 3
Stoma closure	2–6 months

Table 3: Postoperative Complications

Complication	Frequency	Management
Constipation	1	Conservative
Enterocolitis	1	Conservative
Abdominal distension	1	Conservative
Urinary retention	1	Re-catheterization
Wound infection	1after LAPT,2after gut closure	Conservative
Fecal incontinence	0	-
Mortality	0	—

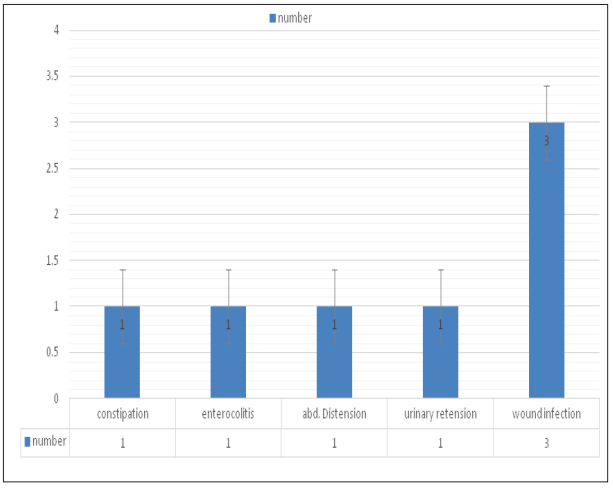


Figure 2:Diagram showing postoperative complications

Clinical Course

One patient developed postoperative constipation, which responded to conservative management like rectal wash and oral laxative. One patient developed intestinal obstruction, also managed conservatively with NPO, I V fluid and injectable antibiotics. Urinary retention occurred in one patient requiring re-catheterization.

Wound infection occurred in one patient following laparoscopy and in three patients after colostomy closure. All infections were treated conservatively.

No patients developed fecal incontinence during follow-up.

Discussion

The laparoscopic-assisted Swenson pull-through combines the advantages of minimally invasive surgery with the effectiveness of the traditional Swenson technique [9–11]. Routine use of frozen section biopsy ensured accurate identification of the transition zone, reducing the risk of residual aganglionosis.

The operative time in this study (90–130 minutes) is comparable to previously reported series [12,13]. Early initiation of feeding (POD 1–2) reflects the benefits of minimally invasive surgery.

Postoperative complications such as constipation and intestinal obstruction were minimal and managed without reoperation, consistent with other studies [14,15].

The absence of fecal incontinence in this series is particularly encouraging, as continence remains a major concern following pull-through procedures [16–18].

Wound infection rates were low and comparable to published data [19]. The staged approach with prior colostomy may have contributed to reduced postoperative morbidity [20].

LIMITATIONS

- Small sample size
- Short follow-up period
- Single-center study

Conclusion

Laparoscopic-assisted Swenson pull-through is a safe, feasible, and effective surgical option for Hirschsprung disease. It offers good functional outcomes with minimal complications and good continence results.

DECLARATIONS

Ethical Approval:

Approved by Institutional Review Board

Consent:

Informed consent was obtained from guardians

Conflict of Interest:

None declared

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Journal of Paediatric Surgeons of Bangladesh

Original Article

Accuracy of Ultrasonography for the Diagnosis of Intussusception in Children

Yeasmin L*[1], Hai AHMA[2], Hossain S[3], Prianka IT[4], Ferdous J[5], Suchi SR[6], Haldar B[7]

Abstract

Background: Intussusception is an important cause of intestinal obstruction in children. The diagnosis is primarily based on clinical findings; however, no universal diagnostic signs or symptoms are present in every patient. Preventing complications and fatalities caused by delayed diagnosis and surgery requires prompt medical attention. In this study, the accuracy of ultrasonography was investigated using per-operative findings as a gold standard.

Objective: To assess the accuracy of ultrasonography in detecting intussusception in children using per-operative findings as the gold standard.

Materials and Methods: This cross-sectional study was conducted from January 2022 to December 2023 at Sir Salimullah Medical College & Mitford Hospital in Dhaka, Bangladesh. A total of 42 patients were included in the study according to predefined inclusion and exclusion criteria. Statistical analysis was done by SPSS version 27.

Results: Among the study participants, 66.66% children were under 1 year of age with male predominance (69%). Ultrasonography accurately diagnosed intussusception in 37 cases (88.09%). The sensitivity, specificity, PPV, NPV, and accuracy of ultrasonography for the diagnosis of intussusception were 97.29%, 80 %, 97.29%, 80% and 95.23% respectively.

Conclusion: According to the study, ultrasonography has a satisfactory level of sensitivity, specificity, and accuracy to diagnose intussusception. Most crucially, ultrasonography can identify this condition with assessment of vascularity. Therefore, ultrasonography can be considered a reliable first-line imaging modality for diagnosing intussusception in children, as it avoids exposure to ionizing radiation from CT scans and X-rays.

Keywords: Intussusception, Ultrasonography, Child, Sensitivity and Specificity, Diagnosis

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Introduction

Intussusception is a surgical emergency in infants and an important cause of intestinal obstruction in children. It refers to the telescoping of one segment of intestine into

an adjacent distal segment. The invaginating part is called the intussusceptum, while the receiving segment is known as the intussuscipiens (1). The incidence of intussusception varies across regions, with a reported annual incidence of 34 per 100,000 live births in Africa and 90 per 100,000 live births in the Western Pacific region (2).

Intussusception most commonly affects infants between 5 and 9 months of age, although it may occur in other age groups as well (3). In most infants, the cause remains idiopathic. However, pathological lead points such as Meckel's diverticulum, lymphoma, and intestinal duplication cyst may be identified, particularly in older children (4).

The clinical presentation of intussusception is often variable and confusing. The classical triad of acute abdominal pain, red currant-jelly stool or hematochezia, and a palpable abdominal mass is present in fewer than half of the cases. Because of nonspecific symptoms, absence of rectal bleeding, and difficulty in obtaining a reliable history from nonverbal children, diagnosis is often delayed or missed (5,6). Untreated intussusception can lead to intestinal edema, gangrene, perforation, and generalized peritonitis, which may be life-threatening. Therefore, early diagnosis is essential (7).

Different imaging modalities are used in the diagnosis of intussusception. The diagnostic performance of abdominal x-ray varies considerably in previous studies, with reported sensitivity ranging from 74% to 90% and specificity from 42% to 90%. Enema x-ray can also be used both for diagnosis and therapeutic reduction, either by pneumatic or hydrostatic method. However, recurrence after enema reduction occurs in about 10% of cases, and the procedure carries a risk of perforation while also exposing infants to ionizing radiation (3,8). Computed tomography is used less frequently in children because it contributes little to management and raises concerns regarding unnecessary radiation exposure (9).

Ultrasonography is a safe, non-invasive, and readily available imaging modality for the diagnosis of intussusception. It can identify the lesion, assess vascular compromise, and detect associated findings such as free or trapped peritoneal fluid (4). It may also help in detecting pathological lead points in a small proportion of cases. Enlarged lymph nodes, which can be demonstrated by ultrasound, may hinder hydrostatic reduction and increase the likelihood of surgical intervention (6). Although ultrasonography is operator dependent, previous studies have reported sensitivity ranging from 87% to 92.5%, specificity from 50% to 96.2%, and overall accuracy from 84% to 94.4% (4,10).

Although surgery remains the mainstay of treatment, imaging plays a vital role in early diagnosis and timely management. Delayed diagnosis may adversely affect postoperative outcome and increase the complexity of surgical intervention. No study has yet been carried out in Bangladesh to determine the diagnostic accuracy of ultrasonography in children with suspected intussusception. Therefore, the aim of this study was to assess the accuracy of ultrasonography in diagnosing intussusception in children.

Materials and methods:

This cross-sectional study was conducted in the Department of Radiology and Imaging, Sir Salimullah Medical College & Mitford Hospital, Dhaka, from January 2022 to December 2023. A total of 42 pediatric patients who presented to the Pediatric Surgery Department with suspected intussusception and were referred to the Radiology and Imaging Department of the same centre for ultrasonography were included in the study. Purposive sampling was used, with inclusion criteria limited to children under 12 years of age presenting with intestinal obstruction due to suspected intussusception. Exclusion criteria included patients with previous abdominal surgery, prolapsed intussusception, and cases of spontaneous resolution of intussusception.

The study protocol received ethical approval from the Ethical Review Committee of Sir Salimullah Medical College & Mitford Hospital. Abdominal ultrasonography was performed by a radiologist, and the findings were documented accordingly. A Canon Xario-100 ultrasound machine was used, with both linear and convex transducers. The entire abdomen was scanned, with particular attention given to the ileocolic region in the right lower quadrant. Intussusception was diagnosed based on the characteristic sonographic features, including the target sign, doughnut sign, and pseudo-kidney sign. The presence of these specific signs was considered indicative of a positive result. Relevant data were collected and recorded in a master spreadsheet. Statistical analysis was performed using the Statistical Package for Social Sciences (SPSS) version 27.0 for Windows. Quantitative data were expressed as mean ± standard deviation, while qualitative data were presented as frequencies and percentages. Results were displayed in tables and graphs as appropriate. The diagnostic performance of ultrasonography for intussusception was evaluated by calculating sensitivity, specificity, positive predictive value (PPV), negative predictive value (NPV), and overall accuracy, using preoperative findings as the gold standard. These measures were then compared with findings from similar studies reported in the literature.

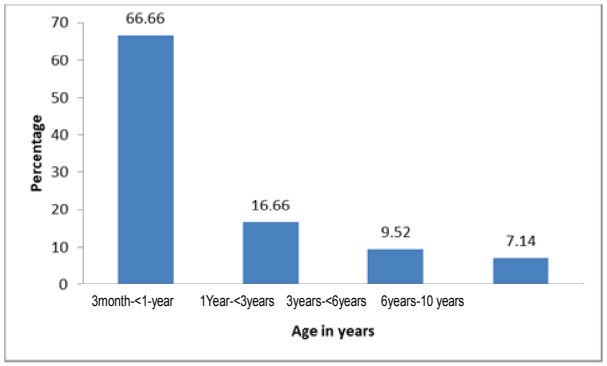


Figure 1: Bar diagram showing age distribution of the study population (n=42)

Among the 42 children included in the study, the majority, 28 (66.66%), were aged from 3 months to less than 1 year. The remaining patients were distributed as follows: 7 (16.66%) were aged 1 to less than 3 years, 4 (9.52%) were aged 3 to less than 6 years, and 3 (7.14%) were aged 6 to 10 years.

The figure indicates that intussusception was predominantly observed in infants under 1 year of age. This suggests that younger children, particularly infants, formed the most vulnerable age group in the present study population.

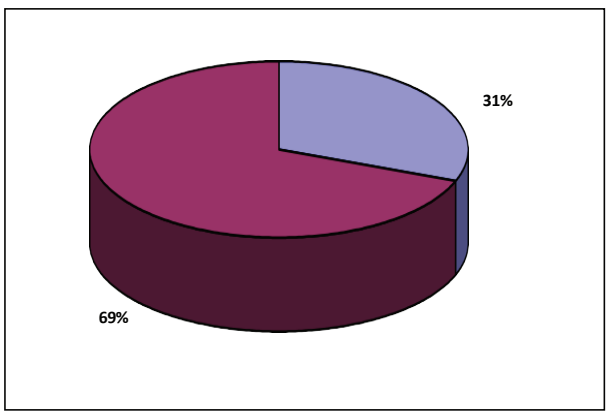


Figure 2: Pie chart showing sex distribution of the study population (n=42)

Out of the total 42 patients, 29 (69%) were male and 13 (31%) were female.

The figure demonstrates a clear male predominance among the study population. This finding suggests that intussusception was more frequently encountered in male children than in female children in this series.

Table 1: Clinical presentation of the study population (n=42)

Variable	Category	Number	Percentage (%)
Presenting complaints	Pain in the abdomen	34	80.95
	Vomiting	36	85.71
	Bloody stool	13	30.95
	Abdominal distension	15	35.71
	Palpable abdominal mass	11	26.19
Pattern of presentation	Classical symptoms (abdominal pain, vomiting, red-currant jelly stool)	8	19.04
	Non-classical symptoms	34	80.96

Table-1 shows that vomiting (85.71%) and abdominal pain (80.95%) were the most common presenting complaints. Bloody stool, abdominal distension, and palpable abdominal mass were less frequent. Only 8 (19.04%) patients presented with the classical triad of intussusception, whereas the majority, 34 (80.96%), had non-classical presentations. This indicates that most children did not present with the complete classical symptom complex, highlighting the importance of careful clinical suspicion even in atypical cases.

Table 2: Sonographic characteristics of the lesion in the study population (n=42)

Variable	Category	Number	Percentage (%)	Mean±SD / Range
Site of lesion	Right lower abdomen	16	38.09	—
	Right upper abdomen	11	26.19	—
	Left lower abdomen	4	9.52	—
	Left upper abdomen	6	14.28	—
	No identifiable mass	5	11.90	—
Type of intussusception	Ileocolic	28	66.66	—
	Ileoileal	9	21.42	—
	No identifiable mass	5	11.90	—
Size of lesion (cm)	1.0–3.0	11	26.19	—
	3.1–5.0	20	47.61	—
	5.1–8.0	6	14.28	—
	No identifiable mass	5	11.90	—
Wall thickness (cm)	Ileocolic	—	—	0.60±0.13 (0.3–1.0)
	Ileoileal	—	—	0.42±0.12 (0.3–0.8)

Table-2 shows that the lesion was most commonly located in the right lower abdomen (38.09%), followed by the right upper abdomen (26.19%). The most

frequent sonographic type was ileocolic intussusception, found in 28 (66.66%) cases, while ileoileal intussusception was observed in 9 (21.42%) cases. In most children, the lesion size ranged from 3.1 to 5.0 cm (47.61%). The mean wall thickness was greater in ileocolic lesions (0.60 ± 0.13 cm) than in ileoileal lesions (0.42 ± 0.12 cm). These findings indicate that ileocolic intussusception was the dominant pattern and that sonography was able to characterize lesion location, size, and wall thickness effectively in most patients.

Table 3: Associated ultrasonographic findings in the study population (n=42)

Variable	Category	Number	Percentage (%)
Sonographic signs	Target sign	37	88.09
	Pseudo-kidney sign	37	88.09
	No sign detected	5	11.90
Abdominal lymphadenopathy	Present	28	66.67
	Not present	14	33.33
Ascites	Present	23	54.76
	Absent	19	45.24
Vascularity of lesion	Normal	30	71.40
	Reduced	4	9.52
	Absent	3	7.14
	Not applicable	5	11.90

Table-3 demonstrates that the target sign and pseudo-kidney sign were the most common sonographic findings, each being present in 37 (88.09%) patients. Abdominal lymphadenopathy was noted in 28 (66.67%) cases, and ascites was present in 23 (54.76%) cases. Normal vascularity was preserved in most lesions (71.40%), whereas reduced or absent vascularity was found in 7 (16.66%) cases. These findings suggest that typical ultrasound signs were highly prevalent in confirmed cases, while associated features such as lymphadenopathy, ascites, and altered vascularity provided additional support in evaluation and may also reflect severity or progression of disease in some patients.

Table 4: Per-operative findings of the study population (n=42)

Variable	Category	Number	Percentage (%)
Type of lesion	Ileocolic	25	59.52
	Ileoileal	5	11.90
	Ileoileocolic	5	11.90
	Colocolic	1	2.38
	Jejuno-jejunal	1	2.38
	Other causes	5	11.90
Lymph node status	Enlarged	25	59.52
	Not enlarged	17	40.48
Peritoneal collection	Present	20	47.62
	Absent	22	52.38

Interpretation:

Table-4 shows that ileocolic intussusception was also the most common lesion type at surgery, found in 25 (59.52%) patients. Other varieties such as ileoileal and ileoileocolic intussusception were less frequent. Enlarged lymph nodes were present in 25 (59.52%) cases, and peritoneal collection was found in 20 (47.62%) cases. These operative findings support the sonographic pattern observed earlier and indicate that ileocolic intussusception was the predominant surgical diagnosis in the present study. The presence of lymph node enlargement and peritoneal collection may reflect inflammatory changes associated with the disease process.

Table5: Per-operative complications and final operative diagnosis of the study population (n=42)

Variable	Category	Number	Percentage (%)
Complications	Gangrene	7	16.67
	Perforation	3	7.14
	No complication	32	76.19
Final operative diagnosis	Intussusception	37	88.09
	Not intussusception	5	11.90

Table-5 shows that most patients, 32 (76.19%), had no per-operative complication. Gangrene was identified in 7 (16.67%) cases, while perforation was present in 3 (7.14%) cases. Final operative diagnosis confirmed

intussusception in 37 (88.09%) patients, whereas 5 (11.90%) patients were found to have other conditions. This indicates that although the majority of children did not develop complications, a clinically important proportion had serious operative complications such as gangrene and perforation, emphasizing the need for timely diagnosis and intervention.

Table 6: Diagnostic validity of ultrasonography compared with per-operative findings for intussusception (n=42)

A. Comparison of ultrasonographic and per-operative diagnosis

Variable	Category	Number	Percentage (%)
Complications	Gangrene	7	16.67
	Perforation	3	7.14
	No complication	32	76.19
Final operative diagnosis	Intussusception	37	88.09
	Not intussusception	5	11.90

Table-6 shows that ultrasonography correctly identified 36 true positive and 4 true negative cases. There was 1 false positive and 1 false negative result. The sensitivity of ultrasonography was 97.29%, specificity was 80.00%, and overall accuracy was 95.23%. The positive predictive value was 97.29%, while the negative predictive value was 80.00%. These findings indicate that ultrasonography was highly sensitive and accurate for diagnosing intussusception when compared with per-operative findings, making it a reliable diagnostic tool in the evaluation of suspected cases.

The present study showed that intussusception occurred predominantly in male infants under 1 year of age. Vomiting and abdominal pain were the commonest presenting complaints, while classical presentation was relatively uncommon. Sonographically, ileocolic intussusception was the most frequent type, usually located in the right side of the abdomen, with target sign and pseudo-kidney sign being the commonest imaging features. Operative findings closely matched sonographic findings, and ultrasonography demonstrated high sensitivity, good specificity, and high overall diagnostic accuracy in detecting intussusception.

Discussion:

The present study found that intussusception affected children from 3 months to 10 years of age, with the highest frequency occurring in infants aged 3 months to less than 1 year. In this study, 66.66% of the patients belonged to this age group. This finding agrees with the usual epidemiological pattern of childhood intussusception, which occurs predominantly in infants and young children. Chalya et al. reported a median age of 6 months and found that most of the patients were less than 1 year old (11). Standard clinical guidance also states that intussusception occurs most commonly between 2 months and 2 years of age (12). Therefore, the age distribution observed in the present study is consistent with the recognized peak incidence of this disease in infancy.

A male predominance was observed in the present study. Out of 42 patients, 29 (69%) were male and 13 (31%) were female, giving a male-to-female ratio of about 2.23:1. This result agrees with previous studies that also documented a higher frequency of intussusception among boys. Chalya et al. reported a male-to-female ratio of 3.3:1 (11), while Chukwubuike et al. also noted male predominance in their series (13). Thus, the sex distribution in the present study follows the general trend already described in earlier studies.

With regard to clinical presentation, vomiting and abdominal pain were the most common symptoms in the present study, being present in 85.71% and 80.95% of patients respectively. Bloody stool, abdominal distension, and palpable abdominal mass were less common. Only 19.04% of the patients presented with the classical symptom complex, whereas 80.96% had non-classical presentation. These findings are important because intussusception often presents with variable and non-specific manifestations. Mandeville et al. reported that clinical presentation is often diverse (14), and clinical guidelines state that the classical triad occurs in only one-third of children (12). Therefore, the low frequency of the classical symptom complex in the present study supports the need for careful clinical suspicion even when the full triad is absent.

In the sonographic evaluation, the lesion was most commonly located in the right lower abdomen, and the most frequent type was ileocolic intussusception. Similar findings were reported by Lioubashevsky et al., who demonstrated that ultrasonography can differentiate ileocolic from small-bowel intussusception based on lesion diameter, wall thickness, and associated sonographic features (15). These findings indicate that ileocolic intussusception was the dominant pattern in the present study.

The associated ultrasonographic findings were also noteworthy. Target sign and pseudo-kidney sign were present in the majority of patients. Abdominal lymphadenopathy and ascites were also observed in a considerable proportion of cases. Previous studies have reported that ileocolic intussusceptions are more frequently associated

with lymph nodes within the lesion and free peritoneal fluid (15). Since ileocolic intussusception was the predominant type in the present study, the frequent presence of lymphadenopathy and ascites is understandable.

Color Doppler assessment showed preserved vascularity in most lesions, whereas reduced or absent vascularity was observed in a smaller proportion of cases. However, operative findings revealed gangrene and perforation in a number of patients, indicating that some children had already developed bowel complications by the time of surgery. Similar complications related to delayed diagnosis have been reported in previous studies (7,11).

Per-operative findings in the present study corresponded closely with ultrasonographic findings. Ileocolic intussusception remained the most common operative diagnosis. Enlarged lymph nodes and peritoneal collection were also observed in a significant number of patients. These findings support the sonographic pattern observed earlier and indicate that ileocolic intussusception was the predominant type in the present series both on ultrasound and at surgery. Similar findings have been reported by Chalya et al. (11).

The present study also evaluated the diagnostic validity of ultrasonography by comparing ultrasound findings with per-operative diagnosis. The sensitivity, specificity, positive predictive value, negative predictive value, and overall accuracy were 97.29%, 80.00%, 97.29%, 80.00%, and 95.23% respectively. These findings indicate that ultrasonography is a highly effective diagnostic tool for intussusception. Riera et al. demonstrated that physician-performed ultrasound can achieve good sensitivity and specificity in the diagnosis of pediatric intussusception (16). Lin-Martore et al., in a systematic review and meta-analysis, also reported high pooled sensitivity and specificity for ultrasound in children with suspected intussusception (17).

Overall, the present study showed that intussusception occurred predominantly in male infants and usually presented with vomiting and abdominal pain rather than with the complete classical triad. Sonographically, ileocolic intussusception was the most frequent type and was commonly associated with target sign, pseudo-kidney sign, lymphadenopathy, and ascites. Operative findings closely matched the sonographic findings. The high sensitivity and good overall accuracy of ultrasonography observed in this study confirm that it is a dependable diagnostic tool for early evaluation of suspected intussusception in children.

Conclusion:

Ultrasonography is a highly accurate and useful imaging modality for diagnosing intussusception in children. Although occasional misdiagnosis may occur, the present study demonstrated an overall accuracy of 95.23%. Ultrasonography is a simple, safe, and non-invasive technique that avoids exposure to ionizing radiation, making it an effective first-line diagnostic tool for pediatric intussusception.

Limitations:

It was conducted in a single hospital, which may limit generalizability. The sample size was relatively small. In addition, ultrasonography was performed by more than one radiologist, which may have introduced operator variability.

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Original Article

Ultrasound evaluation of hydronephrosis in children: A study in a tertiary care hospital in Bangladesh

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Abstract

Background: Hydronephrosis is one of the most commonly detected anomalies on pediatric abdominal ultrasound, yet data on its structural severity and laterality patterns in Bangladeshi children remain limited. Early and accurate sonographic characterization is essential for guiding referral, preventing complications, and avoiding unnecessary surgery.Objective: To evaluate the sonographic patterns of hydronephrosis in children presenting to a tertiary care hospital in Bangladesh, including grade of severity, laterality, and associated urinary tract findings.

Methods: A prospective cohort study was conducted at Bangladesh Medical University (BMU), Dhaka, Bangladesh, from January 2024 to December 2025. A total of 143 children with suspected hydronephrosis underwent standardized renal ultrasound by a single trained pediatric radiologist. Hydronephrosis was graded using the Society for Fetal Urology (SFU) classification system (grades 0–4). Data were analyzed using SPSS version 23.0. Descriptive statistics were reported as frequencies and percentages.

Results: Among 143 children (median age 4.8 years), hydronephrosis was unilateral in 57.3% (left-sided 58.5%) and bilateral in 42.7%. SFU grade 2 was most frequent (36.4%), followed by grade 3 (28.0%). High-grade hydronephrosis (grades 3–4) occurred in 37.8% of children. Mean anteroposterior pelvic diameter was 12.4±5.6 mm, increasing significantly with higher grade. Cortical thinning (21.7%) and ureteric dilatation (18.9%) were more common in high-grade disease ($p<0.001$).

Conclusion: Moderate hydronephrosis (SFU grade 2) predominates in this cohort. High-grade hydronephrosis affects over one-third of children, supporting routine ultrasound screening and timely urology referral to prevent long-term renal morbidity.

Keywords: Children, Hydronephrosis, Renal ultrasound, SFU grade, Ultrasonography, Urinary tract

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Introduction

Hydronephrosis, defined as dilation of the renal collecting system, represents one of the most commonly detected abnormalities on pediatric renal ultrasound. It is identified on prenatal sonography in approximately 1–5% of all pregnancies, making it a frequent reason for pediatric nephrology and urology consultation.[1,2] The condition may result from transient physiologic changes, congenital anomalies of the kidney and urinary tract (CAKUT), or obstructive uropathies such as ureteropelvic junction obstruction (UPJO), vesicoureteral reflux (VUR), or posterior urethral valves.[3,4] The clinical significance of hydronephrosis lies in its potential to cause progressive renal parenchymal damage, impaired renal function, and increased susceptibility to urinary tract infections (UTIs).[5,6] Conversely, many cases of antenatally or postnatally detected hydronephrosis resolve spontaneously without intervention. One study reported that among 44 newborns with antenatal hydronephrosis followed postnatally, 43.2% demonstrated gradual regression of hydronephrotic changes.[3] Similarly, another inves

tigation found that hydronephrosis resolved or improved in 63.5% of 302 renal units during long-term follow-up, although severe hydronephrosis was associated with higher UTI frequency (30.6% versus 12.2% in mild cases).[5] The Society for Fetal Urology (SFU) grading system remains the most widely used sonographic classification for hydronephrosis in children, categorizing severity from grade 1 (mild pelvic dilation without calyceal involvement) to grade 4 (severe pelvic and calyceal dilation with parenchymal thinning). [However, the SFU system's reliance on subjective assessment of parenchymal thinning has raised concerns regarding interrater reliability, particularly for grade 2 hydronephrosis, where kappa statistics range from only 0.26 to 0.4.[8,9] Recent studies have explored more objective sonographic parameters to improve risk stratification. One evaluation of SFU grading, the urinary tract dilation (UTD) classification, and anteroposterior renal pelvic diameter (APRPD) for predicting long-term outcomes in children with UPJO found that an APRPD ≥19 mm demonstrated only moderate predictive value for surgery (AUC 0.822).[10] Another study reported that among 150 antenatal hydronephrosis cases, the mean APRPD in the spontaneously resolved group was 5.2 mm compared to 10.6 mm in the intervention group.[4] A separate investigation proposed an APRPD cutoff of 8.5 mm at birth as a predictor of spontaneous resolution within 24 months.[11] In Bangladesh, data on pediatric hydronephrosis patterns remain limited. Antenatal hydronephrosis was identified in 28.3% of newborns with birth defects in a tertiary care hospital in Dhaka.[3] Obstructive uropathy and hydronephrosis constitute major causes of chronic kidney disease among Bangladeshi children.[12,13] Given the high prevalence and potential for renal morbidity, characterizing the sonographic profile of hydronephrosis in the local pediatric population is essential for developing appropriate diagnostic and referral protocols. This study aimed to evaluate the ultrasound patterns of hydronephrosis in children presenting to Bangladesh Medical University (BMU), Dhaka, including grade distribution, laterality, and associated sonographic findings.

Methodology

A prospective cohort study was conducted at Bangladesh Medical University (BMU), Dhaka, Bangladesh, from January 2024 to December 2025. Children aged 0–18 years with suspected hydronephrosis on initial clinical or sonographic assessment were recruited using purposive sampling. A total sample size of 143 children was calculated based on a prevalence estimate of 30% for moderate-to-severe hydronephrosis from previous regional data, with a 95% confidence interval and 7% absolute precision.

Inclusion criteria: Children of either sex aged 0–18 years who underwent renal ultrasound at BMU during the study period and had sonographic evidence of unilateral or bilateral hydronephrosis (defined as anteroposterior renal pelvic diameter ≥7 mm in children <12 months or ≥ 10 mm in children ≥12 months) were included.

Exclusion criteria: Children with previously diagnosed genitourinary malformations (e.g., posterior urethral valves, prune belly syndrome), prior renal surgery, acute renal failure at presentation, or incomplete sonographic data were excluded.

Study procedure: All participants underwent standardized renal and bladder ultrasound using a 5–7 MHz convex transducer (Mindray DC-70, Shenzhen, China). A single trained pediatric radiologist performed examinations. Hydronephrosis severity was graded according to the Society for Fetal Urology (SFU) classification system (grades 0–4).14Anteroposterior pelvic diameter, cortical thickness, and presence of ureteric dilatation were recorded.

Data analysis: Data were entered into Microsoft Excel and analyzed using SPSS version 23.0 (IBM Corp., Armonk, NY, USA). Descriptive statistics (frequencies, percentages, means with standard deviations) were calculated for demographic and sonographic variables. No comparative or inferential tests were applied per the study objective.

Result

A total of 143 children with sonographically confirmed hydronephrosis were included in the analysis. The mean age of the study population was 5.2 ± 3.8 years (range 0.1–18 years), with a male-to-female ratio of 1.7:1. The majority of children (60.8%) were aged 1–5 years, followed by those aged 6–10 years (25.9%) and infants below 1 year (13.3%). Age distribution showed a significant male predominance in the 6–10 years age group (p = 0.021).Hydronephrosis was unilateral in 82 children (57.3%) and bilateral in 61 children (42.7%). Among unilateral cases, left-sided hydronephrosis (n = 48, 58.5%) was more common than right-sided (n = 34, 41.5%). The overall left-to-right ratio among unilateral cases was 1.4:1.Regarding hydronephrosis severity per the Society for Fetal Urology (SFU) grading system, grade 2 was the most frequently observed (36.4%), followed by grade 3 (28.0%), grade 1 (20.3%), and grade 4 (15.4%). No child with grade 0 hydronephrosis was included per the inclusion criteria. High-grade hydronephrosis (SFU grades 3 and 4 combined) was present in 54 children (37.8%). The association between sex and SFU grade was not statistically significant (p = 0.213). Among bilateral cases, the highest SFU grade on either side was used for classification. Grade 3 bilateral hydronephrosis was most common (41.0% of bilateral cases), whereas unilateral cases most frequently showed grade 2 (44.0% of unilateral cases). The difference in grade distribution between unilateral and

bilateral groups was statistically significant (p = 0.008). The mean anteroposterior renal pelvic diameter (APRPD) among all affected renal units was 12.4 ± 5.6 mm. APRPD was significantly larger in high-grade hydronephrosis (SFU grades 3–4: 18.2 ± 4.7 mm) compared to low-grade (SFU grades 1–2: 8.9 ± 3.1 mm, p < 0.001). Cortical thinning (defined as parenchymal thickness <5 mm in the affected kidney) was observed in 31 children (21.7%). Ureteric dilatation was present in 27 children (18.9%), and increased cortical echogenicity was noted in 19 children (13.3%). Urinary tract calculi were found incidentally in 8 children (5.6%).

Table 1: Age and sex distribution of children with hydronephrosis (n=143)

Age group	Male	Female	Total	p-value*
	(n=90)	(n=53)	n (%)	
<1 year	10	9	19 (13.3)	0.184
1–5 years	52	35	87 (60.8)	0.376
6–10 years	24	7	31 (21.7)	0.021
11–18 years	4	2	06 (4.2)	0.682
Total	90 (62.9)	53 (37.1)	143 (100)	–

Chi-square test. p-values are for sex distribution within each age group.

Table 2: Laterality of hydronephrosis by sex

Laterality	Male	Female	Total	p-value*
	(n=90)	(n=53)	(n=143)	
	n (%)	n (%)	n (%)	
Unilateral	51 (56.7)	31 (58.5)	82 (57.3)	0.854
Left	30 (58.8)	18 (58.1)	48 (58.5)	–
Right	21 (41.2)	13 (41.9)	34 (41.5)	–
Bilateral	39 (43.3)	22 (41.5)	61 (42.7)	0.854

Chi-square test for unilateral vs. bilateral comparison between sexes.

Table 3: Distribution of SFU hydronephrosis grade by sex

SFU grade	Male	Female	Total	p-value*
	(n=90)	(n=53)	(n=143)	
	n (%)	n (%)	n (%)	
Grade 1	17 (18.9)	12 (22.6)	29 (20.3)	0.621
Grade 2	32 (35.6)	20 (37.7)	52 (36.4)	0.821
Grade 3	27 (30.0)	13 (24.5)	40 (28.0)	0.488
Grade 4	14 (15.6)	08 (15.1)	22 (15.4)	0.953
High-grade (3–4)	41 (45.6)	21 (39.6)	62 (43.4)	0.503

Chi-square test for trend. No significant sex difference across grades.

Table 4: SFU grade distribution comparing unilateral vs. bilateral hydronephrosis

SFU grade	Unilateral	Bilateral	Total	p-value*
	(n=82)	(n=61)	(n=143)	
	n (%)	n (%)	n (%)	
Grade 1	21 (25.6)	08 (13.1)	29 (20.3)	0.065
Grade 2	36 (43.9)	16 (26.2)	52 (36.4)	0.033
Grade 3	17 (20.7)	23 (37.7)	40 (28.0)	0.028
Grade 4	08 (09.8)	14 (23.0)	22 (15.4)	0.041
High-grade (3–4)	25 (30.5)	37 (60.7)	62 (43.4)	0.001

Chi-square test. Statistically significant difference in grade distribution between unilateral and bilateral cases (overall p=0.008).

Table 5: Mean anteroposterior renal pelvic diameter (APRPD) by SFU grade

SFU grade	Renal units*	Mean APRPD	Range
	n	(mm) ± SD	(mm)
Grade 1	29	6.8 ± 1.9	4.5–9.2
Grade 2	52	9.5 ± 2.4	7.1–13.8
Grade 3	40	14.6 ± 3.2	11.0–19.5
Grade 4	22	21.3 ± 4.1	16.2–28.7

*Each renal unit is counted separately for bilateral cases. APRPD increased significantly across grades (p < 0.001, one-way ANOVA).

Table 6: Associated sonographic findings by hydronephrosis grade

Finding	Grade 1	Grade 2	Grade 3	Grade 4	Total	p-value*
	(n=29)	(n=52)	(n=40)	(n=22)	(n=143)	
	n (%)	n (%)	n (%)	n (%)	n (%)	
Cortical thinning	0 (0.0)	3 (5.8)	12 (30.0)	16 (72.7)	31 (21.7)	<0.001
Ureteric dilatation	1 (3.4)	6 (11.5)	10 (25.0)	10 (45.5)	27 (18.9)	<0.001
Increased cortical echogenicity	2 (6.9)	5 (9.6)	6 (15.0)	6 (27.3)	19 (13.3)	0.042
Urinary calculi	1 (3.4)	3 (5.8)	2 (5.0)	2 (9.1)	08 (5.6)	0.672

*Chi-square test for trend across grades. Statistically significant for cortical thinning, ureteric dilatation, and increased echogenicity.

Discussion

In this prospective cohort study of 143 children with hydronephrosis at a tertiary care hospital in Dhaka, Bangladesh, we observed that unilateral hydronephrosis (57.3%) was more common than bilateral involvement (42.7%), with a left-sided predominance among unilateral cases (58.5%). Grade 2 hydronephrosis according to the SFU classification was the most frequent finding overall (36.4%), whereas high-grade hydronephrosis (SFU grades 3–4) affected more than one-third of the cohort (37.8%). Bilateral cases were significantly more likely to present with high-grade hydronephrosis compared to unilateral cases (60.7% versus 30.5%, p = 0.001). These findings have important implications for referral patterns and follow-up intensity in resource-limited settings.The left-sided predominance observed in our study is consistent with findings from previous reports.[1,15] The left kidney's longer ureter and more angulated ureteropelvic junction may predispose to delayed drainage and progressive dilation. One multicenter study reported that left-sided hydronephrosis accounts for 56–68% of unilateral cases, closely matching our 58.5% figure.[15] The underlying embryological or hemodynamic mechanisms remain incompletely understood, but the consistency across populations suggests a true biological asymmetry. Grade 2 hydronephrosis was the most common severity level in our cohort (36.4%), comparable to findings from a large European registry where grade 2 constituted 34% of postnatal hydronephrosis cases.[1,2] This predominance of moderate hydronephrosis is clinically reassuring, as grade 2 carries a lower risk of progressive parenchymal damage compared to grades 3–4. However, one prospective study demonstrated that even grade 2 hydronephrosis with a pelvic diameter >12 mm at 6 months of age was associated with a 2.4-fold increased risk of pyeloplasty during follow-up.17 Longitudinal data from our cohort would help determine which children with grade 2 hydronephrosis require surgical referral.High-grade hydronephrosis (SFU grades 3–4) was present in 37.8% of our children, which is higher than the 18–25% reported in most Western cohort studies.18,19 This discrepancy may reflect delayed presentation due to limited access to prenatal ultrasound and routine pediatric screening in Bangladesh. A study from a neighboring South Asian country reported high-grade hydronephrosis in 41% of hospital-diagnosed children.20, similar to our finding, suggesting that delayed diagnosis remains a regional challenge.Bilateral hydronephrosis in our cohort was strongly associated with high-grade disease (60.7% versus 30.5% in unilateral cases, p = 0.001). This finding carries prognostic significance because bilateral high-grade hydronephrosis poses a risk for chronic kidney disease from early life.21 One long-term follow-up study reported that children with bilateral SFU grade 3–4 hydronephrosis had a 3.8-fold higher risk of developing estimated glomerular filtration rate <60 mL/min/1.73m² by adolescence compared to those with unilateral disease.22The mean APRPD increased stepwise across SFU grades (6.8 mm for grade 1 to 21.3 mm for grade 4, p < 0.001), supporting the internal validity of our grading. An APRPD threshold of ≥15 mm has been proposed as a predictor of surgical intervention, with a reported sensitivity of 72% and specificity of 68%.23 In our cohort, 42 children (29.4%) had an APRPD >15 mm, representing potential surgical candidates requiring further functional imaging such as diuretic renography.Cortical thinning (21.7%) and ureteric dilatation (18.9%) were significantly more common in higher SFU grades (p < 0.001 for both), confirming these as reliable markers of obstructive severity. Increased cortical echogenicity, present in 13.3% overall, also increased with grade (p = 0.042), potentially reflecting early parenchymal damage. One recent study reported that increased echogenicity in hydronephrotic kidneys correlated with reduced differential renal function on mercaptoacetyltriglycine (MAG-3) scan, with a negative predictive value of 84% for obstructive uropathy.24

Limitations

The single-center design, purposive sampling, absence of functional renal outcome data (diuretic renography, glomerular filtration rate), and lack of longitudinal follow-up limit generalizability and causal inference regarding disease progression.

Conclusion

Unilateral left-sided hydronephrosis of SFU grade 2 predominates in this Bangladeshi pediatric cohort, while bilateral involvement is strongly associated with high-grade disease. High-grade hydronephrosis affects over one-third of children, underscoring the need for routine postnatal renal ultrasound screening and timely urology referral. Longitudinal studies incorporating functional imaging are required to refine surgical decision-making and prevent long-term renal morbidity.

Recommendation

We recommend routine renal ultrasound screening for all newborns and young children with unexplained fever or poor weight gain. High-grade hydronephrosis should prompt early pediatric urology referral and functional imaging to prevent irreversible renal damage.

Ai Declaration

Artificial intelligence tools contributed marginally to manuscript preparation and development. All core scientific content was human-verified.

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Original Article

Assessment of Pharmacological Management of Acute Watery Diarrhea in Pediatric Patients: A Collaborative Study Between the Departments of Pharmacology and Pediatrics at a Tertiary Care Hospital

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Abstract

Background: Acute watery diarrhea(AWD) is aleading-cause of morbidity and mortality among children under five, especiallyinlow-and middle-income countries like Bangladesh. Effective management with oralrehydration solution (ORS) and zinc supplementation is critical to reduce complications and improve recovery. This study aimed to assess pharmacological management practices for pediatric AWD, including adherence to guideline-based therapy, use of ORS, zinc, adjunct therapies, and antibiotics.

Methods: Adescriptive, observational study was conducted at Community Based Medical College, Bangladesh, from January to December 2025. A total of 167 children aged 6 months to 12 years with AWD were enrolled. Data on demographics, clinical features, pharmacological management, and outcomes were collected using a structured questionnaire and review of medical records. Data were analyzed with SPSS version 25 using descriptive statistics and chi-square tests.

Results: Of the 167 patients, 95 (56.9%) were male and 72 (43.1%) female, with the majority aged 1–5 years (53.9%). Mild to moderate dehydration was observed in 74.8% of cases. ORS was administered to 160 patients (95.8%)and zinc to 145(86.8%). Antibioticswere prescribe-din 110 cases (65.9%), predominantly ciprofloxacin (45.5%) and azithromycin (31.8%). Adjunct therapies such as antiemetics and recontrol were used less frequently. Clinical outcomes were favorable: 150 patients (89.8%) recovered fully, 12 (7.2%) recovered with minor complications, and 5 (3%) were referred or did not recover.

Conclusion: Guideline-based management with ORS and zinc resulted in high recovery ratesamong pediatricAWDpatients. Challengesremain regarding unnecessary antibiotic use and underutilization of adjunct therapies. Reinforcing rational pharmacological practices is essential to optimize outcomes and reduce the burden of pediatric diarrhea in Bangladesh.

Keywords: Acute watery diarrhea, Pediatrics, Oral rehydration solution, Zinc supplementation, Antibiotic use, Bangladesh

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Introduction

Acute watery diarrhea (AWD) remains one of the leading causes of morbidity and mortality in children under five years of age globally, with the greatest burden in low- and middle-income countries such as Bangladesh.1,2 According to the World Health Organization (WHO), diarrheal diseases account for an estimated 1.7 billion cases annually, contributing significantly to pediatric hospitalizations and being the second leading cause of death among children under five.3,4 Despite the widespread promotion of oral rehydration therapy (ORT) and improvements in sanitation,AWD continues to exert a substantial public health impact, particularly in settings with limited access to healthcare, clean water, and nutritional support 5,6 The

cornerstone of AWD management is prompt correction of fluidandelectrolytelossesusingoralrehy drationsolutions (ORS).5,6 ORS hasdramatically reduced mortality from diarrhea over the past few decades by preventing dehydration and maintaining hydration status.5,6 In addition to fluid therapy, zinc supplementation has been recognized as anessential adjunctin pediatric diarrhea management. Zinc is critical for immune function, mucosal integrity, and cellular metabolism, and supplementation has been shown to reduce the duration, severity, and recurrence of diarrheal episodes.7,8 Randomized controlled trials in pediatric populations have demonstrated that zinc supplementation significantly accelerates recovery and decreases the likelihood of subsequent diarrheal episodes, particularly in children who are malnourished or at risk of micronutrient deficiencies.2,3,4 Adjunct pharmacological therapies, such as racecadotril, have also been studied to optimize management ofAWD. Racecadotril, an enkephalinase inhibitor, reduces intestinal hypersecretion and effectively decreases stool output without affecting intestinal motility.8,9 Clinical trials have demonstrated its efficacy in improving clinical outcomes in children when added to standard ORS and zinc therapy.8,9However, the routine use of antibiotics is not recommended in uncomplicated AWD, exceptin specific cases suchascholeraorinvasivebacterialinfections, asindiscriminateantibioticusecontributes toantimicrobialresistanceandincreaseshealthcarecostswithoutimproving clinical outcomes.10,11 In Bangladesh, studies have shown that antibiotics are frequently prescribed for children with AWD despite clear international guidelines recommending their use only in specific situations.5,6,12 Socioeconomic factors, including poverty, malnutrition, and limitedparentaleducation, further exacerbatetheburden of AWD in Bangladesh. Childrenfrom resource-poor households are more likely to experience prolonged illness, inadequate fluid intake, and delayed access to healthcare services.4,6 Additionally, hospital-based studies highlight inconsistencies in the prescription patterns of pharmacological therapies, with underutilization of zinc and overprescription of antibiotics being common problems.5,6,12 These observations underscore the need for locally-relevant research to assess current pharmacological management strate giesandensurethatchildrenreceiveevidence-basedcare. Given the ongoing morbidity associated with pediatric AWD and the potential for optimization of treatment protocols, a comprehensive evaluation of current practices is crucial. This collaborative study between the Departments of PharmacologyandPediatricsatCommunityBasedMedicalCollege, Bangladesh, aimstoassesspharmacological management approaches in pediatric AWD, focusing on the patterns of ORS, zinc supplementation, adjunct therapies, and antibiotic use. By analyzing prescribing patterns, treatment adherence, and clinical outcomes, the study seekstoidentifyareasforimprovementandcontributetotherationaluseofpharmacologicalinterventions in children.1–15 Through this investigation, the study will provide valuable insight into the integration of global guidelinesintolocalclinicalpractice,highlightpotentialgapsinthemanagementofAWD,andpromoteevidence-based strategies to enhance recovery, reduce unnecessary antibiotic use, and ultimately improve pediatric health outcomes in Bangladesh.1–15

Methods

This study was a descriptive, observational, hospital-based study conducted to assess the pharmacological management of acute watery diarrhea (AWD) in pediatric patients. It was a collaborative effort between the Departments of Pharmacology and Pediatrics at Community Based Medical College, Bangladesh. The study aimedtoevaluatecurrentprescribingpatterns,adherencetostandardtreatmentguidelines,andclinicaloutcomes in childrenpresenting with AWD. The study wascarried outover a 12-month period, from January to December 2025, and included a total of 167 pediatric patients aged 6 months to 12 years who presented with acute watery diarrheaatthepediatricoutpatientdepartmentandpediatricwardofCommunityBasedMedicalCollegeHospital. Children eligible for the study were those aged 6 months to 12 years who had acute watery diarrhea, defined as the passage of threeormoreloose orwaterystoolsper daywith a durationoflessthan14days.Caregiverswere required to provide written informed consent for their children's participation. Children with bloody diarrhea, chronic diarrheal disorders, severe comorbid conditions requiring intensive care, or immunodeficiency were excluded. Patients whose caregivers refused consent or were lost to follow-up were also excluded. Data were collected using a structured pre-tested questionnaire, along with a review of medical records and prescriptions. Informationrecordedincludeddemographicdetailssuchasage,sex,residence,andsocioeconomicstatus,clinical data including duration and frequency of diarrhea, presence of dehydration, nutritional status, and associated symptoms,aswellasdetailsofpharmacologicalmanagementsuchastheuseoforalrehydrationsolution(ORS), zinc supplementation, adjunctive therapies like racecadotril, and antibiotics. Treatment outcomes, including duration of diarrhea, recovery status, and any adverse events, were also documented. Informed consent was obtainedfromallcaregivers,andpatientconfidentialitywasstrictlymaintained. Collecteddatawereenteredinto SPSSversion25foranalysis.Descriptivestatisticswereusedtosummarizedemographiccharacteristics,clinical features,andprescribingpatternsintermsoffrequenciesandpercentages. Comparative analyses were conducted where relevant, for instance, to evaluate outcomes among children receiv

ing ORS with or without zinc supplementation. The study also assessed adherence to WHO and national treatment guidelines for AWD management. Associations between-categorical variables were analyzedusing Chi-square-tests,withap-valueof less than 0.05 considered statistically significant.

The primary outcomes of the study included patterns of pharmacological management of AWD, adherence of prescribers to established guidelines, and clinical outcomes, such as duration of diarrhea, recovery rates, and adverse effects. This methodology was designed to provide a comprehensive evaluation of current pharmacological practices in pediatric AWD management, identify gaps in adherence to guidelines, and suggest strategies for optimizing therapy and improving clinical outcomes in Bangladesh.

Results

A total of 167 pediatricpatientswithacutewaterydiarrheawereincludedinthestudy. Ofthese, 95 (56.9%) were maleand 72(43.1%) were female, reflectingaslight-malepredominance. Regarding age distribution, the majority of patients were in the 1–5 years age group (53.9%), followed by childrenless than 1year-old(35.9%),whileonly 10.2% were older than 5 years. Assessment of dehydration status revealed that 30 patients (18%) had no dehydration, 70 patients (41.9%) had mild dehydration, 55 patients (32.9%) had moderate dehydration, and 12 patients (7.2%) had severe dehydration. Analysis of pharmacological management showed that ORS was administered to 160 patients (95.8%), indicating near-universal adherence to rehydration guidelines. Zinc supplementation was given to 145 patients (86.8%), reflecting strong implementation of WHO-recommended adjunct therapy.Antibiotics were prescribed to 110 patients (65.9%), while antiemetic therapy was used in 40 patients (23.9%), highlighting variability in supportive pharmacological practices. Among the antibiotics used, ciprofloxacin was the most commonly prescribed (45.5%), followed by azithromycin (31.8%), metronidazole (18.2%), and other antibioticsin a smallproportion of patients (4.5%). Clinical outcomeswere favorablefor the majorityofchildren.150patients(89.8%)recoveredfully,while12patients(7.2%)recoveredwithcomplications, and 5 patients (3%) were referred or did not recover during the study period. Overall, the results indicate high adherence to guideline-based rehydration and zinc therapy, with moderate antibiotic use and generally positive clinical outcomes among pediatric patients with acute watery diarrhea.

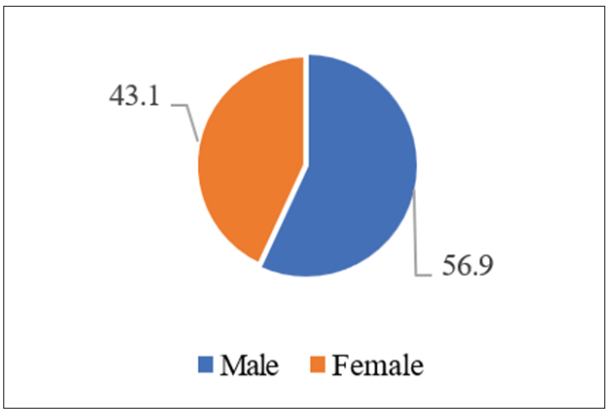


Figure1. Pie Chart Distribution of Gender

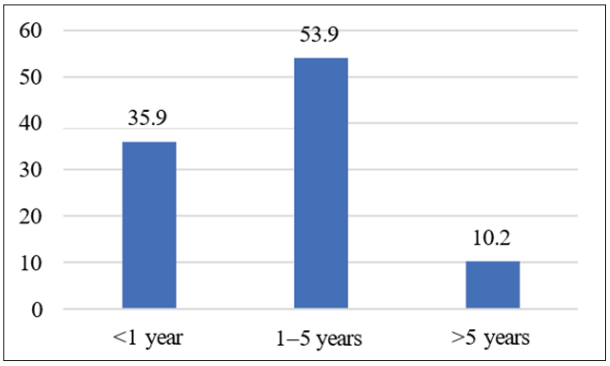


Figure 2. Clunn Chart Showed Distribution of Age

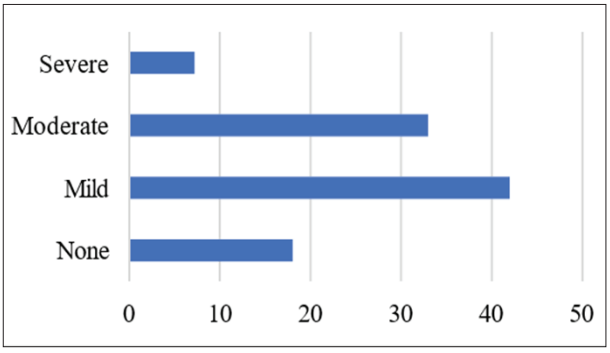


Figure 3. Ber Chart Showed Distribution of Dehydration Status

TableI: Pharmacological Management of AWD

Medication	Given	Not Given	Percentage Given
ORS	160	7	95.8
Antibiotic	110	57	65.9
Zinc	145	22	86.8
Antiemetic	40	127	23.9

TableII: Antibiotic Types Used

Antibiotic Type	Frequency	Percentage
Ciprofloxacin	50	45.5
Azithromycin	35	31.8
Metronidazole	20	18.2
Others	5	4.5

TableI II: Clinical Outcomes

Outcome	Frequency	Percentage
Recovered	150	89.8
Recovered with Complication	12	7.2
Referred/Not Recovered	5	3

Discussions

Acute watery diarrhea (AWD) remains a significant cause of morbidity among children under five years, particularly in low- and middle-income countries like Bangladesh. The current study involving 167 pediatric patients demonstrates high adherence to guideline-based management with oral rehydration solution (ORS) and zincsupplementation,reflectingimprovedimplementationofWHO-recommendations.ORSwasadministeredto 95.8% of patients, consistent with the global emphasis on rehydration as the cornerstone of therapy.10,11,13Zinc supplementation was given to 86.8% of patients, aligning with evidence that zinc accelerates recovery, reduces stool frequency, and prevents subsequent episodes of diarrhea in children.1–4,7,14 These findings corroborate systematic reviews and randomized trials showing that zinc supplementation significantly shortens diarrheal duration and enhances immune response in pediatric populations.1,2,3,4,15Despite the high utilization of ORS and zinc, antibiotics were prescribed to 65.9% of patients. This reflects a persistent trend of antibiotic overuse in pediatricdiarrheamanagementinBangladesh,similartopreviousstudiesreportingfrequentnon-guideline-based antibiotic prescriptions.5,6,9 While antibiotics are indicated in specific cases such as cholera, invasive bacterial diarrhea, or severe malnutrition, their routine use in uncomplicated AWD is discouraged due to the risk of antimicrobial resistance and unnecessary healthcare costs.9,10 The predominance of ciprofloxacin (45.5%) and azithromycin(31.8%)amongprescribedantibioticsfurtherunderscorestheneedforrationalprescriptionpractices and adherence to standard guidelines.6,9Adjunct therapies such as antiemetics and racecadotril were used less frequently, with antiemetics administered to 23.9% of patients and racecadotril being a rarely utilized adjunct. Racecadotril has been demonstrated to effectively reduce stool volume without altering intestinal motility, providinganevidence-basedoptionforsymptomaticmanagement.8Limiteduseofracecadotrilinthiscohortmay reflect accessibility issues, cost, or lack of awareness among prescribers. Optimizing the use of adjunct pharmacologicalagentsinappropriatecasesmayfurtherenhanceclinicaloutcomeswhileminimizingunnecessary medicationuse.Clinicaloutcomesinthisstudywerelargelypositive,-with89.8%ofpatientsrecoveringfullyand 7.2% recovering with minor complications. Only 3% were referred or did not recover during the study period. Theseoutcomeshighlighttheeffectivenessof guideline-based therapy combining ORSand zinc,consistentwith previous reports demonstrating high recovery rates when rehydration and micronutrient supplementation are appropriately applied.1,2,4,14The study also highlights important socio-demographic trends. Children aged 1–5 years constituted the majority of the study population (53.9%), and mild to moderate dehydration was common (74.8%),reflectingthetypicalclinicalpresentationofAWDinthisagegroup.12Malechildrenwereslightlymore affected than females, a trend consistent with other epidemiological studies in Bangladesh [5]. These findings emphasize the need for targeted education for caregivers regarding early recognition of dehydration and timely healthcare-seeking,particularlyinhigh-riskagegroups.Overall,theresultsunderscorethatadherenceto WHO and national guidelines—particularly the combined use of ORS and zinc—remains central to effective managementofpediatricAWD.7,10,11However,thestudyalsoidentifiespersistentchallenges,includingantibiotic overuse and suboptimal utilization of adjunct therapies. Addressing these gaps through prescriber education, policy reinforcement, and caregiver awareness campaigns is critical to improving clinical outcomes and minimizing unnecessary pharmacological interventions.5,6,9 This study confirms that evidence-based pharmacological management, emphasizing ORS and zinc supplementation, achieves high recovery rates in pediatric AWD, while highlighting the need for rational antibiotic use and judicious application of adjunct therapies. Strengthening adherence to guideline-directed care in Bangladesh will continue to reduce morbidity, prevent complications, and contribute to sustainable improvements in child health.1–15

Conclusion

The study demonstrates that the management of acute watery diarrhea in pediatric patients at Community Based Medical College, Bangladesh, is largely aligned with

recommended treatment protocols. The high use of oral rehydration solution and zincsupplementation contributed to favorable clinical outcomes,with the vast majority of children recovering fully and only a small proportion experiencing complications or requiring referral. These findingshighlightthatappropriaterehydrationtherapycombinedwithmicronutrientsupplementationremainsthe cornerstone of effective management of pediatric diarrhea. Despite these positive outcomes, certain challenges were observed. Antibiotics were prescribed in a considerable number of cases, often without clear clinical indications, suggesting a pattern of overuse that could contribute to unnecessary medication exposure and antimicrobial resistance.Additionally, adjunct therapies such as antiemetics and racecadotril were underutilized, indicatingpotentialopportunitiestoenhancesupportive-careforselectedpatients.Overall,thestudyconfirmsthat while guideline-directed management is being implemented effectively, there is still room for improvement in rational pharmacological use and optimizing therapeutic strategies.

Recommendation

Efforts should be made to ensure that antibiotics are used only when clinically indicated, while continuing to promotethenear-universaluseoforalrehydrationsolutionandzinc-supplementation.Healthcareprovidersshould receive regular training and updates to reinforce adherence to treatment guidelines.The use of adjunct therapies canbeconsideredinappropriatecasestoimprovepatientcomfortandreducethedurationofsymptoms.Educating caregivers about early recognition of dehydration, proper administration of ORS and zinc, and avoiding unnecessary antibiotics is essential for improving outcomes. Periodic audits of prescriptions and treatment practicescanhelpmonitoradherencetoprotocolsandreduceirrationalmedicationuse. Insummary,maintaining guideline-based care with a focus on rehydration and zinc supplementation, rationalizing antibiotic use, and optimizingsupportivetherapiescanenhancerecoveryandreducetheburdenofpediatricdiarrhea,ensuringsafer and more effective management for children.

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Original Article

Clinical profile of pediatric patients with vesicoureteral reflux

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Abstract

Background: Vesicoureteral reflux (VUR), a common pediatric urologic anomaly, predisposes children to recurrent urinary tract infections and renal scarring. Clinical presentation data from resource-limited South Asian settings remain sparse.

Objective: To describe the clinical profile of pediatric patients with vesicoureteral reflux at a tertiary care hospital in Bangladesh.

Methods: This prospective cohort study was conducted at Bangladesh Medical University, Dhaka, Bangladesh, from January 2024 to December 2025. Eighty-seven children aged <12 years with confirmed VUR on voiding cystourethrography were enrolled using purposive sampling. Data on age, sex, presenting symptoms, history of febrile UTI, and associated anomalies were collected. Data were analyzed using SPSS version 23.0.

Results: Of 87 patients, 70.1% were female (median age 18 months). Febrile UTI was the most common presentation (74.7%), followed by antenatal hydronephrosis (20.7%). Bilateral reflux occurred in 56.3%. Among 136 refluxing ureters, grade III VUR was most frequent (36.0%), and moderate-to-high-grade reflux (III–V) accounted for 74.2%. Renal scarring was present in 47.1%, significantly associated with high-grade reflux ($p<0.001$).

Conclusion: Febrile UTI in young females is the dominant presentation of pediatric VUR in Bangladesh. High-grade reflux and renal scarring are alarmingly common, underscoring the urgent need for early diagnosis after febrile UTI in infants and young children.

Keywords: Antenatal hydronephrosis, Children, Clinical profile, Febrile UTI, Renal scarring, Vesicoureteral reflux.

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1. Introduction

Vesicoureteral reflux (VUR) is defined as the retrograde flow of urine from the bladder into the ureter and occasionally the renal collecting system.1 This abnormal flow results from a functional or anatomic incompetence of the ureterovesical junction, which normally acts as a one-way valve preventing urinary backflow.2 VUR is one of the most commonly diagnosed urologic abnormalities in the pediatric population, with an estimated prevalence of 0.4–1.8% among asymptomatic children and 30–50% among those presenting with febrile urinary tract infections (UTIs).3,4The clinical significance of VUR lies in its strong association with acute pyelonephritis and subsequent renal scarring, also termed reflux nephropathy.5 Renal scarring can lead to long-term complications including hypertension, proteinuria, chronic kidney disease, and in severe cases, end-stage renal failure.6 Despite advances in prenatal ultrasonography, a substantial proportion of children with VUR remain undiagnosed

until they present with their first febrile UTI, which may already be complicated by early renal parenchymal damage.7The natural history of VUR is characterized by a tendency toward spontaneous resolution, particularly for low-grade reflux (grades I–II). However, higher-grade reflux (grades III–V) is less likely to resolve spontaneously and carries a greater risk of breakthrough UTIs and progressive renal injury.8 Current management strategies range from continuous antibiotic prophylaxis to endoscopic injection of bulking agents and open ureteral reimplantation, with treatment decisions guided by reflux grade, laterality, patient age, bladder bowel dysfunction, and parental preferences.9Geographic and demographic variations in the clinical presentation of VUR have been reported in the literature. Studies from high-income countries have consistently identified younger age at diagnosis, female predominance, and febrile UTI as the most common mode of presentation.10 However, data from low- and middle-income countries, particularly South Asian nations, remain limited. Bangladesh, with a population exceeding 170 million, has a high burden of childhood infectious diseases, yet no prospective cohort study has systematically characterized the clinical profile of pediatric VUR patients in this setting.11Several factors may influence VUR presentation in resource-limited settings, including delayed access to pediatric nephrology and urology services, limited availability of voiding cystourethrography (VCUG) and di-mercapto-succinic acid (DMSA) scintigraphy, and competing health priorities that divert attention from non-emergent congenital anomalies.12Additionally, cultural practices, antibiotic stewardship patterns, and referral pathways may differ substantially from those described in Western cohorts.Understanding the local clinical profile of VUR is essential for developing evidence-based screening protocols, optimizing diagnostic algorithms, and guiding targeted interventions in Bangladesh and similar settings. Therefore, this prospective cohort study was designed to describe the clinical presentation, demographic characteristics, and reflux grading patterns among children diagnosed with VUR at a tertiary care hospital in Dhaka, Bangladesh.

Methodology

This prospective cohort study was conducted at Bangladesh Medical University, Dhaka, Bangladesh, from January 2024 to December 2025. All children aged <12 years referred to the Department of Pediatric Nephrology with suspected vesicoureteral reflux (VUR) were screened for enrollment. A total of 87 patients who met the eligibility criteria were included using purposive sampling.

Inclusion criteria: Children of either sex aged 0 months to 12 years with a newly confirmed diagnosis of VUR on voiding cystourethrography (VCUG) were included. Diagnosis was established following the International Reflux Study Committee criteria.

Exclusion criteria: Patients with secondary VUR due to neurogenic bladder, posterior urethral valves, bladder exstrophy, or prior surgical or endoscopic treatment for VUR were excluded. Children with incomplete medical records or those lost to follow-up before VCUG confirmation were also excluded.

Study procedure: All participants underwent detailed clinical history taking and physical examination. VCUG was performed using standard protocols to grade VUR (I–V) [13]. Renal parenchymal scarring was assessed using technetium-99m di-mercapto-succinic acid (DMSA) scintigraphy. Demographic data, presenting symptoms, age at diagnosis, sex, laterality, reflux grade, and associated congenital anomalies were recorded using a structured case report form.

Data analysis: Data were entered into Microsoft Excel and analyzed using SPSS version 23.0 (IBM Corp., Armonk, NY, USA). Categorical variables were presented as frequencies and percentages. Continuous variables were expressed as median with interquartile range due to non-normal distribution. No reference citations were required for this section.

Result

A total of 87 pediatric patients with confirmed vesicoureteral reflux (VUR) were enrolled. The median age at diagnosis was 18 months (interquartile range 8–36 months, range 1 month to 11 years). Female patients predominated (70.1%) compared to males (29.9%), yielding a female-to-male ratio of 2.3:1. Infants aged under 12 months constituted 48.3% of the cohort, while children aged 1–5 years accounted for 37.9%, and those aged over 5–12 years comprised 13.8%.Febrile urinary tract infection was the most common mode of presentation, observed in 74.7% of patients. Antenatal hydronephrosis detected on prenatal ultrasound was the second most frequent presentation (20.7%). Failure to thrive without documented fever was the presenting feature in 4.6%. Among children presenting with febrile UTI, the median age was 14 months (IQR 6–28 months), whereas those with antenatal hydronephrosis had a significantly younger median age at diagnosis of 2 months (IQR 1–4 months). Recurrent febrile UTIs before diagnosis were documented in 28.7% of patients.Bilateral reflux was observed in 56.3% of patients, while unilateral reflux occurred in 43.7%. Among unilateral cases, left-sided reflux was more common (60.5%) than right-sided reflux (39.5%). A total of 136 refluxing ureters were analyzed. Grade III VUR was the most frequently encountered grade (36.0%), followed by grade IV (27.2%), grade II

(19.9%), grade V (11.0%), and grade I (5.9%). Moderate-to-high-grade reflux (grades III–V) accounted for 74.2% of all refluxing ureters.Renal scarring on DMSA scan was present in 47.1% of patients. Scarring was significantly more common in patients with high-grade reflux (grades IV–V) compared to those with low-grade reflux (grades I–II) ($p<0.001$). Congenital anomalies of the kidney and urinary tract (CAKUT) were identified in 13.8%, including duplex collecting system (8.0% of the total cohort), renal dysplasia (3.4%), and hypoplastic kidney (2.3%).

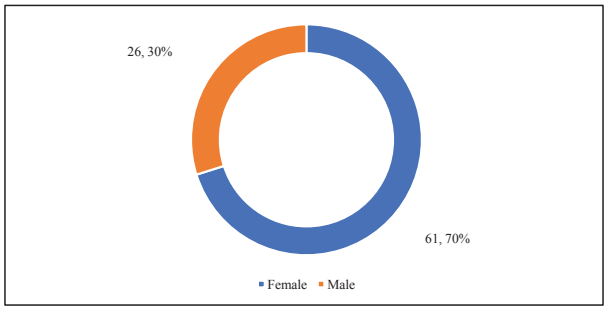


Figure 1: Sex distribution of pediatric VUR patients (N=87)

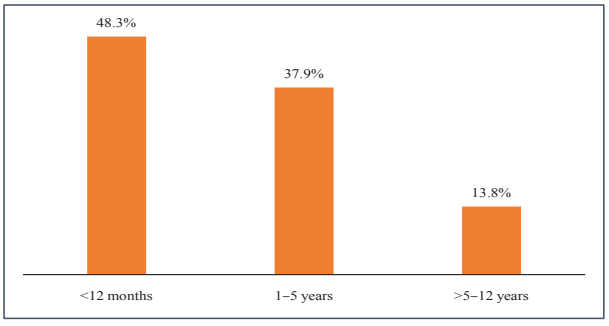


Figure 2: Age distribution of participants

Table 1: Presenting clinical features by age group

Presenting feature	<12 months (n=42)	1–5 years (n=33)	>5–12 years (n=12)	Total (N=87)
Febrile UTI	26 (61.9%)	28 (84.8%)	11 (91.7%)	65 (74.7%)
Antenatal hydronephrosis	16 (38.1%)	2 (6.1%)	0 (0.0%)	18 (20.7%)
Failure to thrive	0 (0.0%)	3 (9.1%)	1 (8.3%)	4 (4.6%)

Table 2: Laterality and distribution of refluxing ureters

Parameter	Category	n	%
Laterality (patients, N=87)	Bilateral	49	56.3
	Unilateral	38	43.7
Side of unilateral reflux (n=38)	Left	23	60.5
	Right	15	39.5

Table 3: Distribution of VUR grades among refluxing ureters (n=136)

VUR grade	Number of ureters	%
I	8	5.9
II	27	19.9
III	49	36.0
IV	37	27.2
V	15	11.0

Table 4:Association between VUR grade and renal scarring on DMSA scan

VUR grade category	Renal scarring cases (n/N)	%
Low-grade (I–II)	5/26	19.2
Moderate-grade (III)	16/36	44.4
High-grade (IV–V)	20/25	80

Table 5: Congenital anomalies of the kidney and urinary tract (CAKUT) in VUR patients

Type of anomaly	n	% among CAKUT (n=12)	% of total cohort (N=87)
Duplex collecting system	7	58.3	8
Renal dysplasia	3	25	3.4
Hypoplastic kidney	2	16.7	2.3

Discussion

The present prospective cohort study provides, to our knowledge, the first systematic description of the clinical profile of pediatric vesicoureteral reflux (VUR) in Bangladesh. Among 87 children, we observed a female predominance (70.1%), a median age at diagnosis of 18 months, febrile urinary tract infection as the dominant presenting feature (74.7%), and a high proportion of moderate-to-high-grade reflux (grades III–V, 74.2% of refluxing ureters), with renal scarring present in nearly half of the patients at diagnosis.The female predominance observed in this cohort aligns closely with findings from multiple international studies.3,14 This sex disparity is well-recognized in VUR epidemiology and is attributed to the shorter urethral length in females and higher susceptibility to urinary tract infections.15 However, the female-to-male ratio of 2.3:1 in our study is lower than the 4:1–5:1 ratio reported from some European and North American cohorts.2,9 This discrepancy may reflect referral bias in our setting, where male infants with antenatal hydrone

phrosis are investigated more aggressively early in life, whereas females are often diagnosed only after recurrent febrile UTIs.16Febrile UTI was the presenting symptom in three-quarters of our patients, a frequency comparable to that reported in a large Indian cohort (72%) but higher than in a Korean study (58%).17,18 The relatively high prevalence of antenatal hydronephrosis (20.7%) as a presenting feature reflects increasing access to prenatal ultrasonography in Dhaka, although this remains lower than in high-income countries, where 30–40% of VUR cases are identified prenatally.7,19 The median age at diagnosis for antenatal hydronephrosis (2 months) in our study was substantially younger than for febrile UTI (14 months), confirming that prenatal screening enables earlier detection before infection-related renal injury occurs.20A notable finding was the predominance of bilateral reflux (56.3%) and moderate-to-high-grade disease (74.2% of ureters). Both figures exceed those reported in the Swedish reflux trial (bilateral 41%, grades III–IV 52%) and the RIVUR trial (bilateral 39%, grades III–IV 48%).5,6 Several explanations merit consideration. First, our tertiary referral center receives complex cases from across the country, introducing selection bias toward more severe phenotypes. Second, children with low-grade unilateral reflux and no UTIs may remain undiagnosed in resource-limited settings where VCUG is less readily available.12 Third, genetic and ethnic factors may influence VUR severity, though population-based comparative data are lacking.21Renal scarring at diagnosis was present in 47.1% of patients, strikingly higher than the 24–31% reported in contemporary European and North American cohorts.8,22 This finding is clinically concerning as scarring is a precursor to long-term complications, including hypertension and chronic kidney disease.6 The strong association between high-grade reflux and scarring (80% in grades IV–V versus 19.2% in grades I–II, $p<0.001$) confirms previously established relationships,11,23 However, the overall high scarring rate likely reflects delayed diagnosis, as 28.7% of our patients experienced recurrent febrile UTIs before VUR confirmation, suggesting missed opportunities for earlier intervention.24The prevalence of CAKUT (13.8%) in our cohort is consistent with the 12–18% range reported in VUR populations.2,17 The duplex collecting system was the most common anomaly, which is known to coexist with VUR due to shared embryologic origins affecting ureterovesical junction development.25

Limitations

This single-center prospective study used purposive sampling, which may limit generalizability. Selection bias toward severe cases is likely due to tertiary referral practices. The absence of long-term follow-up precludes assessment of hypertension and chronic kidney disease outcomes.

Conclusion

Febrile urinary tract infection in young females is the predominant clinical presentation of vesicoureteral reflux in this Bangladeshi cohort. Moderate-to-high-grade reflux accounts for three-quarters of affected ureters, with renal scarring present in nearly half of patients at diagnosis. These findings emphasize the need for early diagnosis strategies, including timely voiding cystourethrography after febrile urinary tract infection in infants and young children.

Recommendation

We recommend targeted voiding cystourethrography for infants and young children presenting with febrile urinary tract infection, particularly females. Strengthening prenatal ultrasound screening and establishing regional pediatric nephrology referral pathways in Bangladesh may facilitate earlier vesicoureteral reflux diagnosis and reduce renal scarring.

Ai Declaration

Artificial intelligence tools contributed marginally to manuscript preparation and development. All core scientific content was human-verified.

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Original Article

Impact of comorbid Chronic Rhinosinusitis with Nasal Polyp (CRS wNP) on Asthma Severity in a Specialized Clinical Setting

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Abstract

Background: Chronic rhinosinusitiswith nasal polyps (CRSwNP) and asthma are common comorbid conditions affecting upper and lower airways. Their coexistence is associated with increased morbidity rates and a synergistic risk of exacerbation, leadingto a substantial clinical burden. Aunified airway approach is often recommended, emphasize coordinatedmanagement rather treating each condition separately. This study aimed to evaluate the clinical, biochemical and radiological correlations, between CRSwNPseverity andthe level of asthma control, as well as treatment outcomes.

Methods: This retrospective observational study was conducted in the department of otolaryngology at Bangladesh Medical University (BMU) over a period of three years. A total 130 participants were included. All participants underwentdetailed clinicalevaluation andlaboratory investigation including Completeblood count (CBC), eosinophil countand serum IgE level. Radiological severity was assessed using computed tomography (CT) of the paranasal sinusesapplying Lund- Mackay Scoring System. Patients received either medical therapy alone or a combination of medical and surgical intervention. Outcomes wereevaluated after 6- month follow- up period.

Results: The study population (n=130) ranged in age from 25 years to 70 years with a median age of 47.5 years. The male to female ratio was 1.8:1. The mostcommon symptoms were nasal obstruction (84%). Rhinorrhea(78%) and hyposmia(68%). Biochemical markers were significantly elevated($p<0.001$) with a mean eosinophil count of 9.3+4.2 and a mean IgE level of 485+130IU/ml. The mean Lund-Mackay score was 15.7+ 2.2. The Asthma Control Test (ACT) scores showed astatisticallysignificant improvement after treatment ($p<0.001$) Combined medical and surgical management resulted in a greater improvement (72%) improvement compared to medical therapy alone(58%). Symptom recurrence was observed in 11(8.5%) patients during the 6- month follow-up.

Conclusion: Comprehensive and integrated management of CRSwNP patients and coexisting asthma is crucial for achieving optimal clinical outcomes. A combined therapeuticapproachsignificantly improves symptom control enhances quality of life and reduces overalldisease burden.

Key Words: CRSwNP, Asthma, Unified Airway, Lund-Mackay Score.

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Introduction

Scientific research across epidemiological, clinical and pathophysiological domains indicatesa robust connection between chronic rhinosinusitis with nasal polyps (CRSwNP) and asthma[1,2]. Data shows that inflammation within nasal mucosa is in extricablylinked to lower airway

health. Specifically, a significant correlation(p<.01) exists between the inflammatory profiles found in bronchial and nasal biopsies of CRSwNP patients[3]. This evidence reinforces the"united airways" theory, ehichposits that the respiratory tract functions as a single integrated system[4-7]. The relationship between sinonasal issues and lower airway dysfunction is particularly evidentin cases of severe asthma. Studies utilizing CT scans have demonstrated that degree of mucosal thickening in the sinuses correlates positively with markers of systemic airway inflammation, such as elevated eosinophillevels in peripheral blood or bronchial sputum and increased nitric oxide concentrations in exhaled breath[8]. Clinical observations suggest that when nasal polyposis is present asthma becomes significantly harder to regulate, leading to more extensive eosinophilic inflammation and persistent airway obstruction[2]. So, the aim of this study was to investigate the clinical, biochemical and radiological correlation between the severity of CRSwNP and the level of asthma control, in order to evaluating treatment outcomes.

Methods and Materials:

This retrospective observational study was conducted inthe department of otolaryngology at Bangladesh Medical University(BMU). The study was carried out over a three-year period, from January 2020 to December 2022.

A total of 130 patients diagnosed with chronic rhinosinusitis with nasal polyps (CRSwNP) and coexisting asthma were included in the study. Patients were selected based on clinical, endoscopic and computed tomography (CT) imaging of the paranasal sinuses. Asthma diagnosis and control status were assessed using standard clinical guidelines and asthma control test (ACT). Patients with previous sinonasalmalignancy, immunedeficiency disorders, cystic fibrosis or incomplete medical record were excluded.

Relevant demographic, clinical, biochemical and radiological data were retrieved from hospital records.

Clinical features such as nasal obstruction. rhinorrhea, hyposmia, facial pain, postnasal drip and headache were documented. Laboratory investigation included eosinophil count and serum immunoglobulin E(IgE) levels.

All patients underwent computed tomography (CT) scanning of the paranasal sinuses. Disease severity was evaluated using the Lund- Mackay Scoring System.

Patients received either medical management alone or a combination medical and surgical intervention depending on disease severity and response to initial therapy. Medical treatment included intranasal corticosteroid, antihistamine and systemic therapy when indicated. Surgical management consisted of functional endoscopic sinus surgery (FESS) in selected cases. Treatment outcomes were assessed after a 6- month follow-up period. Clinical improvement was evaluated based on symptom relief and changes in ACT scores. Recurrence was defined as the reappearance of symptoms and/ or polyps during the follow-up. Recurrence was evaluated by CT scan and endoscopic examination if needed.

Data analysis was conducted using suitable statistical software. Continuous variables were summarized as mean ± standard deviation (SD), whereas categorical variables were reported as frequencies and percentages. Appropriate statistical tests were applied, and a p-value of <0.05 was considered statistically significant.

Results:

This study enrolled 130patients diagnosedwith chronic rhinosinusitiswith nasal polyps (CRSwNP) and asthma.

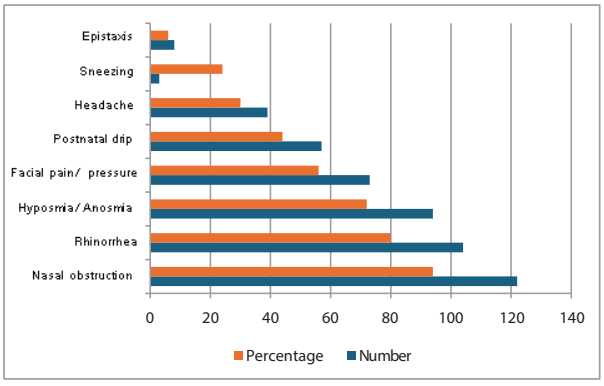
The ranged in age were 25 to 70 years with as lightly malepredominance accounting for 63.8% of the total participants.

Participants Demography (n=130)

Category	Metric	Value
Age	Range	25 -70 years
	Median	47.5
Gender	Male	83(63.8%)
	Female	47(3 6.2%)

M:F Ratio – 1.8:1.

The most prevalent presenting symptoms were nasal obstruction (84%) followed by rhinorhea(78%) and hyposmia(68%).

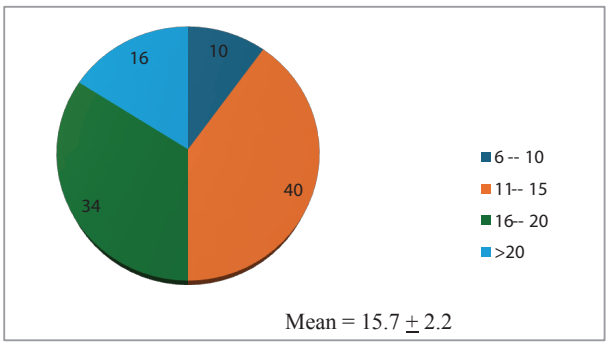


Biochemical analysisrevealed mean serum IgEleveland blood eosinophil count were significantly elevatedcompared to standard reference ranges(p<0.001).

Biochemical Profile:

Parameter	Mean± SD	Normal Reference	p- value
Serum IgE (IU/ml)	485±130IU /ml	<150	<0.001
Blood eosinophil (%)	9.3 ±4.2	<5	<0.001

Radiological evaluation via the Lund-Mackay Scoring System yielded a mean score of 15.7+ 2.2 indicating that the average patients presented with moderate to severe chronic rhinosinusitis. The largest sub group of patients (40%) fell within(11-15) score range.



Following intervention Asthma Control Test(ACT)scored demonstrated statistically significant improvement($p<0.001$).

Asthma Control Test (ACT) Score

ACT Score	Pre -treatment (mean+/ -SD)	Post -treatment (mean+/ - SD)	p-value
Overall	19.8+/ -1.2	25.3+/ -3.1	<0.001

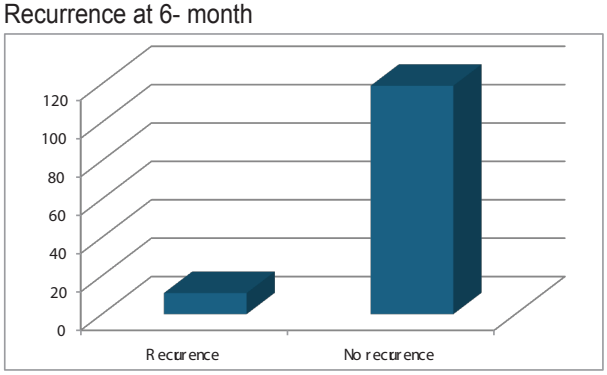
Regarding treatment modalities patients who received a combination of medical and functional endoscopic sinus surgery(FESS) experienced a high rate of symptom reduction (72%) compared to those treated with medical therapy alone(58%).

Treatment and Symptom Reduction

Treatment Modality	Number (n -130)	Percentage %	Mean Symptom Reduction
Medical therapy alone	91	70	58%
Medical+ FESS	39	30	72%

At the 6-month follow-up assessment symptomatic recurrence was observed in 11(8.5%) patients.

Recurrence at 6- month



Discussion:

Chronic rhinosinusitis (CRS) involves persistent inflammation of the nasal and paranasal sinus mucosa[9].

Two main phenotypes are widely recognized: CRS with nasal polyps (CRSwNP) and CRS without nasal polyps (CRSsNP). This phenotype differs markedly in clinical presentation, inflammatory patterns and associated comorbidities[10]. CRS is typically driven by type-2 inflammation, often presents with greater severity and recurrence, and frequently coexists with conditions such as NSAID- exacerbated respiratory disease(N-ERD) and asthma[11].

In the present study, patients showed a slight male predominance (63.8%) with a median age at diagnosis of 47.5 years. These demographic features align closely with findings reported by Salmi ST and colleagues[12].

Nasal obstruction, rhinorrhea and hyposmia were the most common presenting symptoms in our study. This pattern was consistent with observation by Banerji A and colleagues[13], who described similar clinical features. In contrast, Fokkens WJ and colleagues[14] noted anterior and posterior rhinorrhea, nasal congestion, hypodmiaand/ or facial pressure or pain asfrequent manifestation.

Alkergic mechanism commonly trigger IgE- mediated activation of mast cells and basophil, resulting in cytokine release that promotes eosinophil recruitmentandactivation[15]. Our study demonstrated statistically significant elevations in blood eosinophil count and serum IgE levels($p<0.001$)reflecting these shared inflammatory pathways. However, TorabizadehM and colleagues[16] found no direct correlation between serum IgE levels and eosinophil count, highlighting variability across population.

The Lund – Mackay(L-M) score was employed to quantify radiologicdisease severity[17]. In our patients, the mean L-M score was 15.7+ 2.2 which corresponds well with results reported by WuPU and colleagues[18].

When CRSwNP coexists with asthma the condition is termed global airway disease(GAD). Asthma control was assessed using Asthma Control Test (ACT) where score 20-25 indicates good control, 16-19 partial control and ≤ 15 poor control, often necessitation treatment adjustment[19]. Following treatment in our study, the mean ACT score reached 25+ 3.1, signifying well- controlled asthma. Most cases of chronic rhinosinusitis with nasal polyps (CRSwNP) were initially managed medically using intranasal corticosteroid, saline irrigation and antibiotics when indicated. However, polyp removal, correction of anatomical abnormalities and enhancement of sinus drainage often require sinus surgery(ESS) as a key component of surgical intervention. The selection of an

appropriate treatment approach –medical, surgical or combined should be individualized based on symptom severity, disease extent, patient preference and surgical expertise[20]. In the present study combination therapy consisting of both medical and surgical intervention yielded superior outcomes(72%) compared to medical treatment alone (58%). These findings were consistent with the results reported by Kumar P and colleagues[21].

Recurrence in CRS is broadly defined by subjective symptoms, objective findings or both. Our study recorded a recurrence rate 8. 5% (11 out of 130 patients) over a 6-month follow- up period. This rate was lower than the 18.2% reported by Cavaliere C and colleagues[22] over a longer follow-up(6-69months).

The present study had several limitations, primarily its retrospective design and relatively short follow-up duration. Additionally, we did not evaluate Keu biomarkers such as IL-5, IL-4 or IL-13, which represent important targetsfor current monoclonal antibodies therapy in type-2 inflammatory disease.

Conclusion:

Chronic rhinosinusitis with nasal polyps (CRSwNP) represents an increasingly significant health concern worldwide. The coexistence of asthma in these patients requires special clinical attention and often necessitate-sintensive management. Surgical intervention plays a crucial role in reducing the overall disease burden and improving clinical outcomes in individuals affected by CRSwNP.

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Original Article

Association of personal habits in Hypopharyngeal carcinoma

Ali M I, Rahman S H, Monir M I, Begum R, AlamM M, Reza M M, Islam M N

Abstract

Background: Hypopharyngeal carcinoma is a major ENT problem day by day. No treatment is available yet with satisfactory outcome. Advanced stage of presentation makes the condition worse. But still some cases presenting at early stage have successful outcomes. So, it is essential to improve knowledge regarding socio-demographic variables, different risk factors, mode of presentation and burden of disease in the community of Hypopharyngeal carcinoma.

Objectives: To determine the association of personal habits is in Hypopharyngeal carcinoma, observe the different socio- demographic variables of hypopharyngeal carcinoma, to see different risk factors of hypopharyngeal carcinoma and to observe different clinical symptoms associated with hypopharyngeal carcinoma.

Study design: This was a cross sectional, descriptive type of observational study.

Study place: study was conducted at department of Otolaryngology and Head& Neck surgery. Bangladesh Medical University (BMU)

Period of study: Study duration was 1 year from 1st March 2023 to 28 February 2024.

Sample size: Study was carried out with a sample size of 40.

Methods: This cross sectional, observational study was conducted from 1st March 2023 to 28 February 2024 for duration of 1 year among the patients who admitted at depart ment of Otolaryngology and Head& Neck surgery. Bangladesh Medical University. Purposive sampling method was used to collect data. Pre-tested structured data sheet was used to record information. After collection, data was edited by meticulous checking and re- checking. Data was analyzed using SPSS for windows version 22.

Results: The results of this study showed that Hypopharyngeal carcinoma affects more if fifth (37.5%) and sixth (25%) decades of life. Males are highly predominant to develop Hypopharyngeal carcinoma. Male female ratio 5:1. People with low socio-economic status were found more affected by Hypopharyngeal carcinoma. In this observation smoking was found significantly associated with development Hypopharyngeal carcinoma. In this series 82% of patients had history of smoking with mean duration of smoking was 13.5 years. About 75% of patients presented palpable lymph nodes and most of them were at level 11(72%). Pyrifromfossa is the commonest site (84%). In this study all the malignancy was histologically squamous cell carcinoma. Maximum patient presented at advanced stage (stage I and stage III).

Conclusions: Carcinoma of hypopharynx affects more at advanced age. Due to indolent nature of the disease, it is usually present at advanced stage. So, care should be taken early diagnosis of Hypopharyngeal carcinoma.

Keywords: Hypopharyngeal carcinoma, smoking, socio-demographic variable

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Introduction

IHypopharynx is the upper part of aerodigestive tract. It is the common conduit for both swallowing and respiration. It is located posterior to the cartilaginous structure of larynx. It is wide superiorly and progressively narrow towards the level of cricopharyngeal muscle. Hypopharynx is a continuous area. The oropharynx is above it and the cervical esophagus is below it. The Hypopharynx is extended from the hyoid bone to the cricoid cartilage and further subdivided into the region of the pyrifrom sinus, pharyngeal wall and post-cricoid area.

Carcinoma of Hypo pharynx is relative rare indolent and silent in nature and usually present at advanced stage. It commonly affects the male in their fifth or sixth decades[1]. The male to female ratio is overwhelmingly unfavorable for males2. Indian subcontinent has almost highest rate of hypopharyngeal carcinoma3. Among three subsites of Hypopharynx carcinoma of pyriform fossa is the most common (85%) than carcinoma of posterior pharyngeal wall (10-15%), and carcinoma of post cricoid contributes only 5%. Pos-cricoid carcinoma commonly affects the female[4]. Hypopharyngel carcinoma is commonly spread through submucosal invasion and local lymph node. Distant metastasis is rare. Most organoid growth patterns do not present any nodal metastasis. They can be regarded as manifestation of low-grade malignancy. The least organoid or nonorganoid growth pattern shows higher level of nodal metastasis. So structural grading can be a guideline for better management if terms of choice of surgical treatment[5]. Different risk factors are encountered to develop Hypopharyngeal carcinoma. HPC is strongly associated with smoking and alcohol consumption[6]. Other risk factors include low consumption of fruits and vegetables, poor oral hygiene, deficient dental status and exposure to wide variety of occupational agent[7]. Other study indicates link of plummer- Vinson syndrome and other deficiency condition (e.g. iron deficiency anemia, vit-A deficiency) to HPC in woman[8]. Smoking with drinking was multiplicatively greater than those for smoking or drinking in combined cases of Hypopharyngeal carcinoma and esophageal carcinoma[9]. Smoking tobacco and chewing betel nuts and tobacco leaves have got relation in causation of pharyngeal malignancy. Lower standard of living, low income and overcrowding, poor dental hygiene are the risk factors in development pharyngeal malignancy possibly by lowering the level of body immunity or due to chronic irritation. Spicy and hot food contributes to the development of pharyngeal malignancy10. Genetic predisposition is also risk factors for Hypopharyngeal carcinoma11. Premalignant conditions including acanthosis, basal cell hyperplasia, intra epithelial neoplasia, chronic esophagitis, koilocytosis papillimatosis are also risk factors for Hypopharyngeal carcinoma12. Chance survival decreases with increasing tumor size, much more however it will be affected by neck node metastasis. Main cause of death is lymph node relapse13. Performance status is the only significant predictor of survival, other host factor (age, sex) and all tumor factors (TNM staging distant metastasis, stage group histological grade of tumor are not significant14.

Materials and Methods

This was a Cross sectional, descriptive type of observational study conducted at department of Otolaryngology and Head & Neck surgery. Bangladesh Medical University, With the duration of 1 year from 1st March 2023 to 28 February 2024. Patients with hypopharyngeal carcinoma, admitted in the department of Otolaryngology Head& Neck surgery. Bangladesh Medical University. Study was carried out with a sample size of 40.

Selection Criteria:

Inclusion criteria: All patients with clinical presentation of hypopharyngeal carcinoma and histologically proved thereafter.

Exclusion criteria: Patients with hypopharyngeal carcinoma who were diagnosed previously and were treated with chemotherapy, radiotherapy or surgical intervention, severely ill patients not fit for clinical evaluation.

Results and Observation

A descriptive, cross sectional study was carried out with a sample size of 40 to find out the pattern of clinical presentation of hypophayngeal carcinoma. The findings of the study were as follows:

Tablel. 1 Age distribution of the patients

Age in years	Frequency	Percentage
30-40	7	17.5
41-50	8	20
51-60	15	37.5
61-70	10	25
Total	40	100

Table 2.0 Sex distribution of the patients

Sex	Frequency	Percent
Male	33	82.5
Female	7	17.5
Total	40	100.0

Table 3.0 Socioeconomic conditions of the patient.

Socioeconomicstatus	Frequency	Percentage
LowerClass	27	67.5
MiddleClass	10	25
UpperClass	3	7.5
Total	40	100.0

Table 4.0 Distribution of the patient by educational qualification:

Educational qualification	Frequency	Percentage
Illiterate	15	37.5
Primarylevel	12	30
Secondarylevel	6	15
HighersecondaryLevel	4	10
Graduateandabove	3	7.5

Table 5.0 Personal habit of the patients

Personalhabit	Frequency	Percentage
Smoking	33	82.5
Chewingofbetelnut	29	72.5
Alcoholconsumption	3	7.5

Regarding personal habit 82.5% respondents had history of smoking 72.5% respondents had history of betel nutchewing and 7.5%respondents had history of alcohol consumption.

Table 6.0: Distribution of the patient by duration of smoking Duration of cigarette Frequency smoking (years)

Duration of cigarette Frequency smoking	(years)	Percentage
Nosmoking	7	17.5
Upto10	3	7.5
11-20	7	17.5
21-30	11	27.5
31–above	12	30.5

Table 7.0 Residential status of the patients.

Residence	Frequency	percentage
Rural	29	72.5
Urban	11	27.5.0
Total	40	100.0

Table 8.0 Occupation of the patients:

Occupations	Frequency	Percentage
Farmer	17	42.5
DayLaborer	5	12.5
HouseholdWorker	4	10.0
Rikswapuller	2	5.0
Businessman'	6	15.0
Teacher	4	10.0
others	2	5.0
Total	40	100.0

Table 9.0 Distribution of the patient by clinical presentation

Clinical presentation	Frequency	Percentage	Mean Duration (weeks)
Dysphagia	37	92.5	17.32
Pain	35	87.5	11.05
Hoarsenessof	8	20	11.45
voice	5	12.5	13.4
Haemoptysis	30	75	7.67
Neckmass	29	72.5	8.56
Weightloss	35	87.5	
Anaemia			

Table 10.0 Distribution, of the patient by subsites of hypopharyngearcarcinoma

Subsite	Frequency	Percentage
Performfosse	33	82.5
Posteriorpharyngeal	5	12.5
Wall		
Postcricoidregion	2	5
Total	40100	

Table 11.0 Distribution of the patient by involved neck node level.

Lymphnode level	Frequency	Percentage
Nonode	7	17.5
Level1	29	72.5
Level3	4	10
Total	40	

Table 12.0. Histopathological grading: Histopathological-grading of tumor

Histopathological grading of tumor	Frequency	Percentage
Welldifferentiated	7	17.5
Moderatedifferent	29	72.5
Undifferentiated	4	10
Total	40	100.0

Table 13.0. stage of disease atthetime of presentation:

Stageofdisease	Frequency	Percentage
StageI	5	12.5
StageII	7	17.5
StageIII	21	52.5
Stage IV	7	17.5
Total	40	100

Discussion

This descriptive cross sectional study comprises of 40

patients over a period of 1 Year ranging from March 2019 to February 2020 to observe pattern of clinical presentation of hypo pharyngeal carcinoma. Sample size was 40. In this study the hypopharyngeal carcinoma was mostly seen in the age group of fifth and sixth decade of life. This isconsistentwiththefindingofAEUzcudnetalwhofoundthat'popharyngealcarcinomamostoftenaffectintheir fifth and sixth decade of life with a consistently reported pick incidence at the age of 50-60 years.

Inthisstudythesexdistributionrevealedthatmalewashighlypredominanttodevelophypopharyngealcarcinoma and the male to female ratio was about 5:1. AE uzcudn et al also found similar ratio and opined that in hypopharyngear carcinoma the male to female ratio is overwhelmingly unfavorable for men.

In this study we also found people 'with lower education were affected by hypopharyngeal carcinoma out of 40 respondents37.5%wereilliterateand30%hadprimary levereducation. Only7.5%were graduateorhavinghighereducation.

Lowerincomewasalsoassociatedwithhypopharyngealcarcinoma.Halfofthesubjects inthisstudyearnlessthan taka five thousand monthly. Rahman MZ in a Bangladeshi series explained that rower standard of living, Lower income, overcrowding? Poor dental hygiene are risk factors in developing of hypo pharyngeal carcinoma.

Inthisstudy82.5%0fthesubjecthadhistoryofsmoking.Meandurationofsmokingwas13years.Andmeannumber of smoking was 14 per day. So smoking was significantly associatedhyopopharyngear carcinoma.

($p<0.05$) Rahman MZ et at found smoking tobacco leaves and betel nuts have got relation in the causation of hypo pharyngealcarcinoma.Takezakishowedthathypopharyngealcarcinomawasmultiplicativelyinpersonhadahistory of smoking with drinking than those for smoking or drinking. In this series only 7.5% subjects were alcoholic.

In this study pyriformfossa was the commonestsite (82.5%). of hypopharyngealcarcinoma, postcricoidsregion (5%) and posterior pharyngeal wail (12.5%) were comparatively less in number.

About 75% patient presented with palpable lymph node. Most of them (82.5%) were at level II and level III. In this study retropharyngeal lymph node and mediastinal lymph nodes were not evaluated. There was no distant metastasis. Murakamietalfoundhypopharyngealcarcinomaspreadsthroughsubmucosalinvasionandlocallymph node. Distant metastasis was rare.

In present study histological type of hypopharyngeal carcinoma was squamous cell carcinoma in all cases. Of them 17.5% well differentiated carcinoma, 72.5% moderately differentiated carcinoma 10% poorly differentiatedcarcinoma.

Mostofthecasepresentedinadvancedstage. Only30%casepresentedinstageIand stageIIinthisstudy. Onthe otherhand70%casepresentedinstageIIIandstageIV.Steineretalinastudyfoundalmostsimilarpercent(71.4%) of patient presented in advanced stage.

Conclusions

Hypopharyngealcarcinomaisbeinga major ENT problemdaybyday. Notreatmentisavailableyetwithsatisfactory outcome. Smoking was significantly associated hyopopharyngearcarcinoma.Person with lower socioeconomic statusaremostcommonlysusceptibletodevelophypopharyngealcarcinoma. pyriformfossaisthecommonestsiteofaffectioninhypopharyngealcarcinoma. Itcanalsoconcludethatmostofcasespresentedatadvancedstagewith regional lymph node metastasis. Distant metastasis is rare in hypopharyngeal carcinoma. So earlier diagnosis is imperative in case of hypopharyngeal carcinoma and hypopharyngeal carcinoma should be suspected if a male patient present aged between 40-60 years present with dysphagia, neck node and history of smoking.

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Journal of Paediatric Surgeons of Bangladesh

Original Article

Demography and Clinical Profiles of Allergic Rhinitis at a Tertiary Care Center

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Jewel A M, Islam M N, Alam S, Jannat F T

Abstract

Background: Allergic rhinitis, commonly referred to as hay fever, is an IgE-mediated inflammatory condition of the nasal mucosa. It is characterized by symptoms such as sneezing, nasal blockage, nasal itching, and watery eyes. Common allergens include pollen, pet dander, mold, insects, and house dust. This study aimed to assess the demographic characteristics, clinical manifestations, and triggering factors among patients with allergic rhinitis attending a tertiary care center.

Methods: A retrospective review was conducted on patients presenting to the outpatient ENT Clinic at Bangladesh Medical University (BMU), Bangladesh, from 1 January, 2020 to 31 December, 2021.

Results: A total of 320 patients were included, whom59.7% were male and 40.3% were female. The age group18-30years was the most frequently affected. Perennial rhinitis was observed in 65% of cases. House dust was the predominant triggering factor, identified in 37.5% of patients. Symptoms were predominantly severe, sneezing(31.3%) and nasal blockage(20.3%) were the most common complaints in their severe form.

Conclusion: This study found a slight male predominance (59.7%) among patients with allergic rhinitis. Sneezing and nasal blockage emerged as the most frequent and severe symptoms. House dust was the leading trigger, highlighting the need for targeted environmental control measures in this population.

Key Words: Allergic Rhinitis, Demography, Clinical Profiles, Triggering factor.

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Introduction

Allergic rhinitis (AR) is a symptomatic nasal disorder triggered by exposure to allergens, characterized by immunoglobin E(IgE) – mediated inflammation of the nasal mucosa[1]. The clinical manifestations of AR vary in severity and commonly include rhinorrhea, watery eyes and itching of the nose, throat and eyes. These symptoms can significantly interfere with daily activities and adversely affect the quality of life[2].

Allergic rhinitis is generally categorized into two forms: seasonal and perennial. Seasonal allergic rhinitis occurs during particular periods of the year when

airborne allergens, such as pollen, are more common. In contrast, perennial allergic rhinitis persists year-round and is commonly linked to indoor allergens, including dust mites, mold, and pet dander[3].

Previous studies conducted in Western countries have primarily examined the influence of environmental exposures, such as medication, pollen pet ownership and genetic predisposition on the clinical presentation of AR4,5. In comparison, studies from Asian regions have placed greater emphasis on familial predisposition, petexposure and life style factors such as smoking and different types of drinking consumption aresignificant risk determinants6-8. These findings highlight the importance of the interaction between environmental factors and individual susceptibility in the development of allergic rhinitis9. Therefore, the present study aims to evaluate the demographic characteristics, clinical presentations and triggering factors among patients diagnosed with allergic rhinitis.

Methods and Materials:

This was a retrospective observational study designed to evaluate the demographic profiles, clinical features and triggering factors of allergic rhinitis among patients attending a tertiary – care ENT facility.

The study followed a hospital- based record- review approach, allowing comprehensive analysis of routinely collected clinical data without prospective patient recruitment.

The investigation was conducted in the outpatient clinic of the Department of Ear, Nose and Throat (ENT) at Bangladesh Medical University(BMU), Dhaka, Bangladesh. This is a major tertiary- care teaching hospitalserving patients from both urban and rural regions of country. Data collection covered a 24- month extending from1 January, 2020 to 31 December, 2021.

A total of 320 patients were recruited for the study using a purposive sampling method. Patients presenting with classic symptoms of AR(sneezing, nasal blockage, itching, watering of eye) for at least one year and those providing infirmed consent were included in the study. Patients with structured nasal abnormalities (deviated nasal septum, nasal polyps)patients who had undergone nasal surgery were excluded to avoid confounding clinical data.

Diagnosis was made through a detailed clinical history and physical examination. Symptom severity was categorized according to the Allergic Rhinitis and its Impact on Asthma (ARIA) guidelines.

Patients symptoms were assessed for the presence and severity of sneezing, nasal obstruction, itching, headache and watering eyes. A structured interview was conducted to identify common environmental triggers, such as house dust, pollen, animal dander, perfume and make-up, cigarette smoking and chemical substances and detergents.

Patient information was retrieved from the hospitals paper- based medical records using standardized pretesting data extraction form. The following variables were systematically recorded:

a) Demographic characteristicsage (categorized into groups) and sex.

b) Clinical type of allergic rhinitis (seasonal versus perennial) and triggering factors.

c) Symptom profile and severity with particular emphasis on sneezing, nasal blockage, headache, itching and watering of eyes.

All were anonymized atthe time of extraction to ensure patient confidentially. Incomplete or ambiguous records were excluded from the final analysis.

Data were entered into Microsoft Excel and analyzed using IBM SPSS Statistics for Windows version 26.0(IBM Corp. Armonk, NY, USA). Descriptive statistics were applied throughout. Categorial variables were presented as frequencies and percentage. No inferential statistics were required, as the objective was to describe demographic and clinical patterns. All percentage were calculated to one decimal place for precision, and any minor roundsdiscrepancies were resolved according to standard statistical conventions.

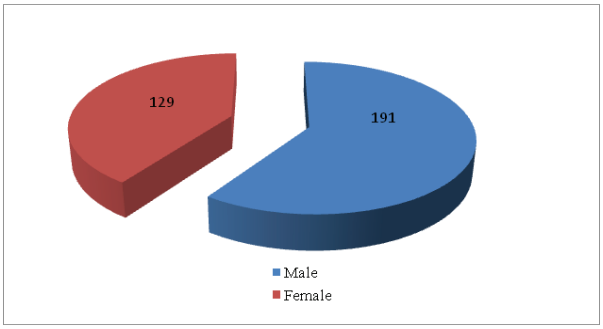
Results:

Male constituted 191(59.7%) cases, yielding a male-to-female ratio of 1.48:1.

Demography of Patients (n-320)

Gender	No of Patients	Percentage (%)
Male	191	59.7
Female	129	40.3

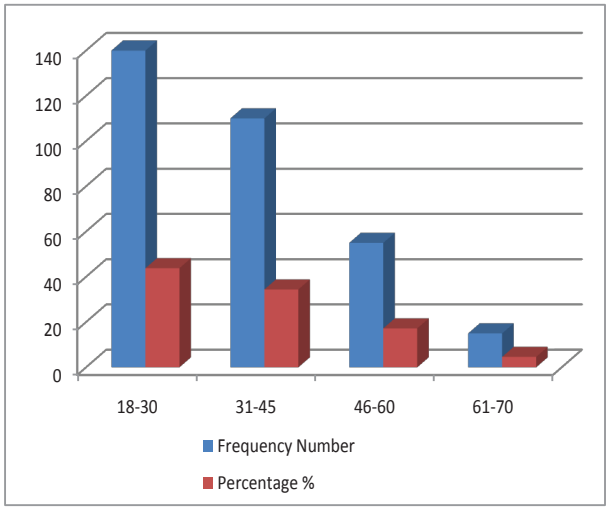
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The majority of patients (43.8%,n=140) belonged to the 18-30 years age group and>60 years were affected only 4.6%(n=15)

Distribution of age (n=320)

Age Group Years	Frequency Number	Percentage %
18-30	140	43.8
31-45	110	34.4
46-60	55	17.2
61-70	15	4.6
	320	100



Perennial allergic rhinitis was observed in 208 patients (65%).

House dust emerged as the predominant (40%) common trigger factor, affects the patients (37.5%)

Seasonal Variation and Allergen Triggers in allergic rhinitis patients (n= 320)

Category	Types	No of Patients	Percentage (%)
Allergic Rhinitis	Seasonal	112	35
	Perennial	208	65
Trigger Factors	House dust	120	37.5
	Pollen	45	14.1
	Perfume and make up	47	14.7
	Chemical substances and detergents	46	14.4
	Cigarette smoking	43	13.4
	Animal dander	19	5.9

Sneezing in severe form was the modified presenting symptom (32.3%, n= 100) followed by nasal blockage (20.3%, n=65).

Distribution of patients on severity of symptoms(n=320)

Symptom	Mild(N &%)	Moderate (N&%)	Severe (N&%)
Sneezing	2(0.6%)	5(1.6%)	100(31.3%)
Nasal Block	2(0.6%)	6(1.9%)	65(20.3%)
Headache	12(3.8%)	26(8.1%)	38(11.8%)
Itching	7(2.2%)	8(2.5%)	15(4.7%)
Watering of Eyes	6(1.9%)	10(3.1)	18(5.6%)

Discussion:

Allergic rhinitis (AR) is associated with various bothersome clinical manifestations that are often overlooked and underreported. Inadequate recognition of these symptoms may delay appropriate treatment and negatively affect patients' health-related quality of life. Management of AR should be tailored to each patient, considering the type, duration, and severity of symptoms, physical examination findings, associated comorbidities, age, and individual preferences.Furthermore, effective management requires not only appropriate medical therapy but also identification and avoidance of environmental factors that may trigger allergic responses11,12.

In the present study, males constituted a slight majority (59.7%) which was consistent with the findings reported by Adegbiji and colleagues13.In contrast, other studies14,15had demonstrated a female predominance. This variation may be explained by age- related differences in prevalence patterns, where AR more common in boys during childhood, shifts toward female predominance during adolescence and becomes nearly equal between sexes in adulthood16.

Research historically indicates that the prevalence of allergic rhinitis (AR) follows a distinct age- related trajectory, typically peaking between 16 and 24 years before, gradually declining through the sixth and seventh decades of life17. This findings of current study align with this established trend, noting a significant reduction in AR frequency within the >61-70 years demographic.

This observed decline in older population may be attributed to physiological changes in the immune system, specifically the progressive reduction of allergen – specific IgElevels often seen in aging atopic patients18. Furthermore, some researchers suggest that the lower incidence in individual over the age of 60 may reflect a cohort effect, as the global rise in allergic conditions often termed "allergic epidemics "is a

relatively recent phenomenon that primarily affected younger generations1.

On the basis of duration and timing of allergen exposure andsubsequent pathogenetic mechanisms, allergic rhinitis (AR) is two types- seasonal and perennial. Approximately 20% are seasonal, 40% are perennial and 40% are mixed (seasonal with perennialexacerbation) 19. These findings were consistent with our study, in which perennial AR accounted for 65% of cases, compared to 35% for seasonal AR.

In the present study, the most common symptoms were sneezing, nasal blockage, headache, itching and watery eyes. These symptoms align with those reported in numerous previous studies14,20,21. The clinical manifestations result from an IgE – mediated allergic response characterized by the release of leukotrines, prostaglandin, histamine and other inflammatory mediators 22,23.

In our study, house dust was the most common inhalant allergen, affecting 35% of patients. This finding was consistent with previous reports in the literatures 24,25. According to the Allergic Rhinitis and its Impact on Asthma (ARIA) guidelines1, AR severity is classified as mild or moderate/ severe based on its impact on four key domains: sleep disturbance, impairment of daily activities, reducedschool or work performance and the presence of troublesome symptoms. Patients without any of thisimpairment are categorized as having mild AR, whereasthose experiencing one or more of these problems are considered to have moderate- severe AR. Our study revealeda high proportion of patients with severe AR, which was consistent with the finding of Thomas I and colleagues26. This pattern was likely attributable to the referral of more severe cases to the specialist clinic.

Conclusion:

This study confirms that allergic rhinitis (AR) at the tertiary center predominantly affects young adults with a slight male majority.

Clinical profiles indicated a high burden of perennial AR, primarily triggered by house dust with most patients presenting with severe symptoms. Future longitudinal-research is warranted to further explore the “allergic epidemics” phenomenon andphysiological declineof IgE levels in aging population.

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Journal of Paediatric Surgeons of Bangladesh

Case Report

Broad webbed penis with hypospadias: A rare combination

Islam M N , Chowdhury P

Abstract

Webbed penis is rare condition and may be congenital or acquired in aetiology. Treatments are indicated for reasons such as cosmetic concerns, erection pain or associated with other anomalies. We report a case of 22 years boy having broad webbed penis with penoscrotal hypospadias with severe chordee and small penis. Deformity was corrected by excision of abnormal dartos tissue attached to penis and skin between two folds for urethroplasty.

Keywords: Webbed penis, hypospadias

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Introduction

Webbed penis is concealed peniswhere scrotal skin extends too high on the ventrum of penis forming a web or fold between the penis and scrotum. It obscure penoscrotal angle.This is typically caused by aberrant dartos bands that bind the penile skin to the scrotum's surface. This causes the obliteration of ventral penoscrotal angle and results in short penisappearance [1].Hypospadias is one of the most common congenital defects of male external genitalia but combination of hypospadias with webbed penis is rare condition.

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Case report

A 22 years old boy presented with micturition from under surface of penis since birth with normal urine flow and small penis. On examination we found urethral opening at penoscrotal region, meatus adequate, severe chordee, small penis, glans conical, dorsal hooding present, urethral plate adequate and both testes are present in scrotum. There was two skin folds extending from both lateral sides of prepuce to scrotum, obscuring penoscrotal angle, urethral meatus was buried in skin fold. His youngest brother also has same problem. Ultrasonography of whole abdomen and serum testosterone level are normal. Orthoplasty was done by excision abnormal scrotal dartos bands attached to the penile shaft. Urethroplasty was done in two layers. Inner layer by skin lying between two folds as flap on 10 Fr. feeding tube and outer layer by preputial skin. Urethral catheter was removed on 10th POD. No post-operative fistula developed.

Discussion

Webbed penis is caused by abnormal dartos bands anchoring to the ventral penile shaft with obliteration of the penoscrotal angle which occurs because of partial failure of the posterior migration of the labioscrotal folds with faulty penoscrotal fusion [2]. Because of obscured penoscrotal angle, a webbed penis mayappear small despite the normal size of penile phallus. So, a webbed penis is one type of concealed penis or inconspicuous

penis. According to the classification system proposed by Maizels et al., inconspicuous penis includes the buried penis, webbed penis, trapped penis, and micropenis.Webbed penis is usually asymptomatic. Due to the obscured penoscrotal angle by the web, the penis appears small and concealed [3,4].

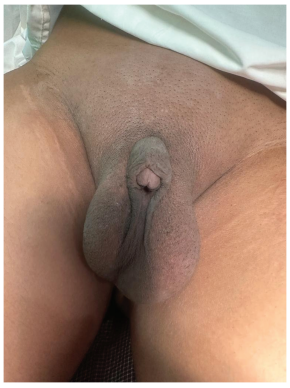
Webbed penis is classified into primary and secondary;primary is further subdivided into simple and compound. Compound webbed penis is divided into Type 1 (Web with prepenile scrotum), Type 2 (web with penile curvature) and Type 3 (Broad web) [5]. A secondary webbed penis is defined as a postcircumcised penis in obese children or a concealed penis [3]. This anomaly infrequentlyexists with other anomalies, such as penile torsion, penile curvature, or hypospadias. Many authors have proposed surgical correction of this anomaly using Heineke-Mikulicz scrotoplasty, V-Y, double V, and Z-plasty. However, of these techniques, there is no available single technique suitable for correction of different grades of congenital webbed penis [6,7]. The ultimate goal of treating a webbed penis is to separate the penis from the scrotum, removing the web entirely and increasing the ventral penile skin length [3]. Our report is unique because broad webbed penis is associatedpenoscrotal hypospadias. Modified Byars' flap techniques were performed where prepuce was used as flap to form neourethra without incising dorsal preputial skin vertically into two halves [8].

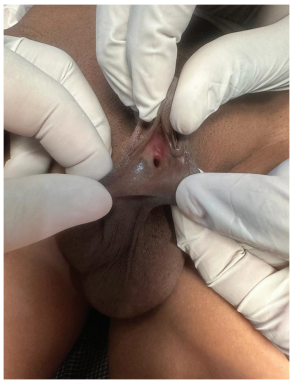
Conclusion

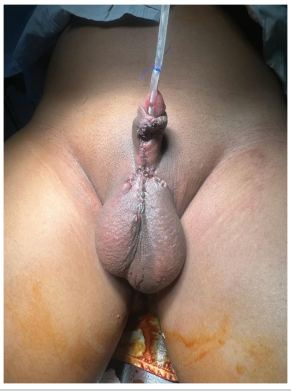
Broad webbed penis associated with hypospadias is very uncommon congenital anomaly. Treatment is functionally and cosmetically acceptable penis.

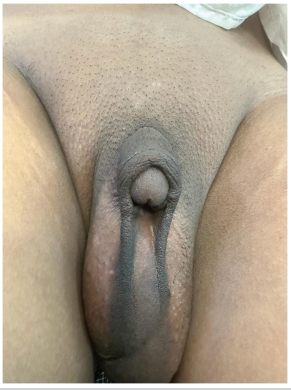
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No

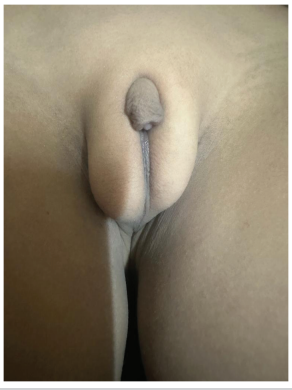
Conflicts of interest
There are no conflicts of interest.

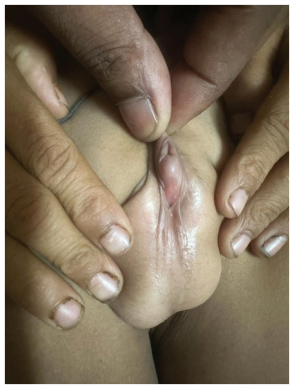












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Journal of Paediatric Surgeons of Bangladesh

INFORMATION FOR AUTHOR'S

Aims and editorial process:

Journal of Paediatric Surgeons of Bangladesh (JPSB) is the official journal of Association of Paediatric Surgeons of Bangladesh (APSB) which is recognized by Bangladesh Medical and Dental Council (BMDC) and has International Standard Serial Number (ISSN) 2077-7469 (print), 2309-1320 (online). The journal publishes articles of authors from any part of the globe, but with special interest in articles from authors from Bangladesh. The content includes, but is not limited to, the field of Paediatric Surgery, Paediatric Urology, Paediatric Onco-surgery, Neonatal Surgery, Minimal Invasive Surgery. It publishes editorial, original articles, special articles, review articles, meta-analyses, systematic reviews, case reports and case series through rigorous peer review. A key goal is to promote postgraduate training and further education in all spectrum of Paediatric Surgery.

Authors are requested to submit their manuscripts following specific guidelines for each type of article. After submission, the manuscript undergoes an initial check for quality, originality, and format at the editorial level. If the manuscript is not compatible with the journal criteria or does not fit the journal scope, it goes back to the author for revision. When compatible, the manuscript goes for double-blind peer review by experts in the relevant field. The authors are then informed about the reviewers' decisions.It is published biannually (January and July) in English with prior approval of Editorial board.

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	Words	References	Tables & Figures
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Review	4000	40	6
Special article	2500	20	4
Case report	2000	15	4

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It is an invited article based on current affairs in the field of all disciplines of paediatric surgery.

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Original articles should follow the basic structure of Abstract, Introduction (includes aims and objective), Methods (divided into study setting, procedures, data analysis and Ethics statement), Results, Discussion, Conclusion, Acknowledgement, Disclosure, and References.

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Abstract, Key words, Introduction, Search strategy, Discussion, Conclusion, Disclosure, References

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The title page should include:

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This section should introduce the subject and answer why the research originated. It provides the knowledge that is already known and states the problem that encouraged the study. The purpose of the study should be stated at the end.

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Results

Should emphasize the most relevant results that are related to the study objectives. It should be presented in logical sequence in the text with appropriate tables and/or figures and should not repeat results in the table/-figure in the text.

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It is good to start the discussion with the interpretation rather than recapitulation of the results. It is important to discuss the new and important findings of the study in the context of recent evidence.

Discuss the influence or association of variables and weakness or pitfalls in the study. It should explore the implications of the findings for future research and clinical practice or policy. Should draw the conclusion according to the objectives of the study. Avoid unnecessary statements.

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All tables are to be numbered using Roman numerals (e.g. Table I, II).Tables should always be cited in text in consecutive numerical order.The caption of the table should be at the top of the table.

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1. Baskin LS & Ebbers MP. Hypospadias: anatomy, etilogy, and technique. J Pediatr Surg 2006;41: 463-472.

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2. Strunk Jr W, White EB. The elements of style. 4th ed. New York: Longman; 2000.

Reference to a chapter in an edited book:

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4. Cancer Research UK. Cancer statistics reports for the UK,[accessed 13 March 2003]; Available from: http://www.cancerresearchuk. org/aboutcancer/statistics/cancerstatsreport/ 2003.

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COVER LETTER FOR SUBMISSION OF MANUSCRIPT

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Subject: Submission of manuscript

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Thank you.

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