

ETIOLOGICAL PROFILE ON UGIB IN CHILDREN OF AGE 1MONTH TO 12 YEARS IN A NILOUFER HOSPITAL HYDERABAD TELANGANA

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ABSTRACT

Objective: To enumerate the etiological factors of upper Gastrointestinal bleed in a tertiary care Centre niloufer hospital. To study the UGI endoscopic findings of children with UGIB. The aim of the study is to enumerate Etiological profile of UGIB in children in 1 month to 12 years of age. **Introduction:** UGIB in children is a significant clinical emergency with potential life threatening implications. It involves bleeding from the gastrointestinal tract proximal to the ligament of teritz which include esophagus, stomach, duodenum. The etiology varies based on age geography and health care access early diagnosis and appropriate management is essential. **Method:** The hospital based cross sectional study was conducted over 24 months of period, starting from June 1 2023 to May 31 2025 department of pediatrics' at niloufer hospital. A total of 105 patients present with UGIB are enrolled for this study. **Result:** A total of 105 patient included in the final analysis. The mean age of presentation with upper gastrointestinal bleeding in the study was 5-11years with a range 1month -12years followed by toddler and infants. The most common clinical presentation was hematemesis (n=44). Extra hepatic portal vein obstruction (n=36) being the most common etiology with esophageal varices (n=52) being the leading endoscopic findings other less common esophagitis (n=17) gastritis (n=15) gastric ulcer (n=10). **Conclusion:** Upper gastrointestinal bleeding most commonly present as hematemesis and most common cause is a variceal bleed due to portal hypertension. Endoscopy is the procedure of choice to evaluate upper gastrointestinal bleed.

KEYWORDS: Upper gastrointestinal bleed, Ultrasound, Endoscopy.

INTRODUCTION

Upper gastrointestinal bleeding (UGIB) in children is a significant clinical emergency with potentially life-threatening implications. It involves bleeding from the gastrointestinal tract proximal to the ligament of Treitz, which includes the esophagus, stomach, and duodenum. The etiology varies based on age, geography, and healthcare access, making early

diagnosis and appropriate management essential. In pediatric populations, UGIB can manifest as hematemesis, melena, or coffee-ground vomiting, which often requires prompt endoscopic evaluation and supportive care. Therefore, UGIB in children is a multifactorial clinical entity with significant morbidity and mortality. Despite the advancements in diagnostic and therapeutic modalities, delayed presentation and limited awareness still pose challenges. Conducting a focused study on the etiological profile of pediatric UGIB in a tertiary care center is thus imperative. It allows clinicians to understand region-specific causes, optimize diagnostic pathways, and improve outcomes through evidence-based management strategies.

MATERIALS AND METHODS

This study was as a cross-sectional observational study The study was carried out in the Department of Pediatrics at Niloufer Hospital, which is affiliated with Osmania Medical College, Hyderabad, Telangana.

The research was conducted over a period of 24 months, starting from June 1, 2023, and continuing until May 31, 2025.

The study population consisted of children aged between 1 month and 12 years who presented with symptoms of upper gastrointestinal bleeding and were admitted to Niloufer Hospital during the study period.

Sample size

A total of 100 children who fulfilled the inclusion criteria were enrolled in the study.

Study procedure

All children between 1 month and 12 years of age who presented with upper GI bleeding at Niloufer Hospital were admitted for detailed clinical evaluation. After obtaining informed consent from parents or guardians, a thorough clinical history was documented including presenting complaints, past medical history, family history, birth and nutritional history. A complete general and systemic examination was performed. Each patient underwent relevant investigations including hematological, biochemical, and radiological tests. Upper gastrointestinal endoscopy was performed for identifying the source of bleeding. Where necessary, additional investigations such as colonoscopy and other imaging studies were performed to confirm the diagnosis and determine the underlying etiology.

RESULTS

Table 1: Distribution of USG Abdomen.

USG Abdomen	Frequency (n=105)	Percentage (%)
Cirrhosis	22	21.00
EHPVO	36	34.00
Normal	37	36.00
Splenomegaly only	10	9.00

Table 2: Distribution of Endoscopy findings.

Endoscopy findings	Frequency (n=105)	Percentage (%)
Esophageal varices	52	51.00
Esophagitis	17	16.00
Gastric ulcer	10	9.00
Gastritis	15	14.00
Normal	11	10.00

Table 3: Distribution of etiological profile.

Etiology	Frequency (n=105)	Percentage (%)
Variceal bleed due to portal hyertension	45	42.85
Prolapse gastropathy syndrome	2	1.9
Stress Ulcers	12	11.42
Acute Gastritiss	8	7.6
Erosive Esophagitis	4	3.8
Drug Induced Gastritis	7	6.6
Portal Hemangioma	1	0.9
Ingestion of caustic Substances	7	6.66
Coagulopathy	4	3.8
Sepsis	15	14.2

DISCUSSION

The age distribution observed in the present study indicated that upper gastrointestinal bleeding (UGIB) was most common in children aged 5–11 years, followed by toddlers and infants. These findings are in agreement with previous literature, including the study by Owensby et al., who reported that UGIB predominantly affects school-aged children, reflecting similar demographic exposure to risk factors and diet-based irritants contributing to gastrointestinal pathology.^[1] Moreover, the male predominance noted in our study mirrors the findings by Rodgers, who identified gender disparities in the incidence of gastrointestinal conditions in pediatric populations, with boys presenting slightly more frequently with hematemesis and melena.^[3] These consistencies support the notion that age- and sex-specific physiological differences may influence susceptibility to UGIB in pediatric cohorts.

In our study, hematemesis was the most frequent presenting symptom followed by melena and a combination of both. This aligns with the findings of Boyle, who highlighted that hematemesis tends to occur earlier and more noticeably in acute UGIB, whereas melena may be underreported in children due to challenges in stool assessment by caregivers.^[2] The predominance of hematemesis may also reflect more proximal sources of bleeding, particularly varices and esophagitis, which produce vivid blood loss compared to more distal lesions. Pediatricians should therefore consider hematemesis as a strong clinical clue pointing to UGIB etiology.

The distribution of etiological profiles among the 105 cases is illustrated in the table and bar graph. The most common etiology was variceal bleed due to portal hypertension, accounting for 42.9% of the cases. This was followed by sepsis (14.3%), stress ulcers (11.4%), and acute gastritis (7.6%). Other notable causes included drug-induced gastritis (6.7%), ingestion of caustic substances (6.7%), erosive esophagitis (3.8%), and coagulopathy (3.8%). Less common etiologies were prolapse gastropathy syndrome (1.9%) and portal hemangioma (1.0%).

In our study, EHPVO was present in 42%, showing a significant overlap with endoscopy findings of esophageal varices. These conditions likely contribute to increased portal pressure, resulting in fragile variceal formations prone to rupture and bleeding.

The most common endoscopic finding in our cohort was esophageal varices, reported in 51% of children. This is comparable to the findings by Yu et al., who conducted a large multicenter study in Chinese children and reported esophageal varices as the leading endoscopic diagnosis in 48.9% of UGIB cases.^[21] The high prevalence of varices supports the need for vigilant surveillance in children with known portal hypertension or hepatobiliary disease. The

detection of esophageal varices as a frequent cause also reinforces the central role of endoscopy in the early evaluation and management of UGIB.

The use of blood transfusion was noted in 32% of our patients, which is in line with findings from Deerojanawong et al., who observed that approximately one-third of critically ill pediatric patients with UGIB required transfusion support due to hemodynamic compromise or significant hemoglobin drop.^[9] The presence of moderate to severe anemia in nearly half of our cohort further justifies the necessity for transfusion in acute care. These observations highlight the importance of rapid hemoglobin monitoring and transfusion preparedness in managing pediatric UGIB cases.

In terms of laboratory parameters, we observed abnormalities in PT, INR, and APTT values in a significant proportion of patients. This is comparable to the findings by Chaïbou et al., who reported that abnormal coagulation profiles were frequently associated with UGIB in PICU settings and may reflect underlying hepatic dysfunction or consumptive coagulopathy.^[10] These derangements were particularly notable in children with CLD or sepsis, suggesting that coagulopathy not only results from the bleeding event but can also exacerbate the severity and duration of bleeding episodes.

Regarding ultrasonography, we found that EHPVO and cirrhosis were common findings, reinforcing the relevance of abdominal imaging in the diagnostic workup of UGIB. Jain et al. documented a similar pattern in their regional study, with EHPVO being a leading ultrasonographic abnormality among children presenting with hematemesis.^[55] Notably, 9% of our cohort had isolated splenomegaly without detectable liver pathology, which may indicate early portal hypertension or hematological contributors and warrants further longitudinal assessment.

The duration of symptoms before presentation ranged from 1 to 7 days in our cohort, with most patients presenting within 2–3 days. This is shorter than the delay observed in the study by Hassoon et al., where healthcare access challenges contributed to prolonged symptom duration before endoscopic evaluation (23). Early presentation in our context may reflect growing awareness among caregivers and efficient referral systems, which are critical for timely diagnosis and intervention to prevent severe outcomes such as shock or multi-organ failure.

Medical therapy was initiated in 89% of cases, reflecting standard clinical practices that prioritize pharmacologic control of acid secretion and bleeding prevention. These practices are supported by the Cochrane review by Green et al., which emphasized the role of pharmacologic agents, including proton pump inhibitors, in stabilizing the gastric mucosa and preventing rebleeding in neonates and infants (29). Although our cohort included older children, the findings suggest that similar pharmacologic strategies are beneficial across pediatric age groups.

Endoscopic therapy was employed in 27% of our patients, predominantly for variceal bleeding. These rates are slightly lower than those reported by Villanueva et al., who documented endoscopic intervention in 40% of pediatric patients with variceal hemorrhage.^[44] Differences may stem from variations in clinical severity and institutional policies regarding early intervention thresholds. Nevertheless, the application of band ligation and sclerotherapy in a quarter of our cases illustrates the essential therapeutic role of endoscopy beyond diagnostics.

Surgical intervention was required in only 2% of cases, indicating that conservative and endoscopic approaches were effective in the majority of children. This aligns with the findings of Prasad et al., who reported that fewer than 5% of

pediatric UGIB cases required surgical management, and that these were typically reserved for refractory bleeding or failed endoscopic control.^[74] Such low rates of surgical requirement are encouraging, suggesting that non-invasive methods remain first-line and often sufficient.

The overall clinical outcome in our cohort was favorable, with 91% of children recovering, 6% developing complications, and only 3% succumbing to their illness. These findings are comparable to the survival rates reported by Romano et al., who found that mortality in pediatric UGIB rarely exceeded 5% when endoscopic and supportive care were promptly provided.^[24] The low complication and mortality rates observed in our study may reflect improvements in pediatric critical care and enhanced clinician awareness of UGIB red flags.

The association between anemia and UGIB was also analyzed in our study. Mild to moderate anemia was common, and only 3% had severe anemia. A study by Kato et al. showed that chronic blood loss from gastrointestinal lesions, especially *Helicobacter pylori*-associated gastritis or ulcers, significantly contributed to iron-deficiency anemia in children.^[41] Although *H. pylori* testing was not systematically done in our cohort, the anemia patterns suggest a need to consider chronic gastritis as an underlying contributor in future evaluations.

The endoscopic detection of gastritis and gastric ulcers in a significant proportion of our cases reflects a non-variceal cause of UGIB in children, which has also been highlighted in previous studies. Dohil and Hassall emphasized that although peptic ulcer disease is less common in children compared to adults, it still contributes to notable morbidity when associated with stress, *H. pylori* infection, or NSAID use.^[45] In our cohort, gastritis was observed in 14%, and gastric ulcer in 9%, which aligns with their findings. It underscores the need to screen for ulcerogenic factors, particularly in children with no underlying hepatic pathology or portal hypertension.

The presence of esophagitis in 16% of cases in our study is also consistent with observations made by Korotkaya and Shores, who identified esophageal inflammation as a prominent cause of bleeding in pediatric patients, especially those with reflux disease or feeding difficulties.^[57] In our sample, esophagitis was more frequently observed in infants and toddlers, suggesting a potential link to dietary transitions and immature esophageal sphincter function. This highlights the importance of considering reflux esophagitis in the differential diagnosis of UGIB in younger children.

Comparing our findings to the study by Singh and Panigrahi from Coastal Odisha, our endoscopic profile was similar in that varices were the predominant finding, followed by mucosal erosions and ulcers.^[18] The Indian context, particularly in resource-limited settings, seems to be characterized by a higher burden of portal hypertension-related bleeding than in Western settings. This epidemiological variation must be acknowledged in pediatric care planning to tailor diagnostic priorities accordingly, especially in endemic areas with higher rates of hepatitis or congenital liver anomalies.

In terms of duration of symptoms, our patients generally presented within one week of onset, with 42% reporting symptoms of ≤ 3 days. This early presentation is crucial, as pointed out by El Mouzan et al., who found that delays in accessing endoscopy services often correlated with worse outcomes and diagnostic difficulties (8). In our context, timely access to tertiary care allowed for early endoscopy in most cases, likely contributing to the high diagnostic yield and low rate of complications.

The association of portal hypertension with UGIB in our population is supported by the work of Gugig and Rosenthal, who emphasized the pathophysiological role of increased portal pressure in variceal formation and rupture.^[43] Our ultrasonographic and endoscopic findings collectively point to a high prevalence of portal hypertension-related bleeds, reinforcing the need for regular screening in children with known liver disorders or splenomegaly. This also raises the need for prophylactic endoscopic band ligation in high-risk children, a strategy discussed in other literature as well.

Our findings are also echoed in the results from the study by Kumar et al., who described similar etiological patterns of UGIB in Indian children, with variceal bleeding dominating the endoscopic profile and EHPVO being the most common comorbidity.^[67] Their single-center experience highlighted the diagnostic value of combining ultrasonography with endoscopy, a model that proved equally effective in our study. The consistency between both studies underscores the representative nature of our sample.

Interestingly, the diagnostic yield of our endoscopies (90%) also matched that reported by Piccirillo et al., who stated that EGD provides a high yield when performed during active or recent bleeding episodes.^[77] Their study emphasized that the timing of endoscopy strongly influences the ability to detect mucosal lesions or bleeding stigmata. Our findings support this observation, as endoscopy was done promptly in most patients, enhancing lesion visualization and therapeutic opportunities.

Among patients requiring blood transfusions, most had moderate anemia or evidence of active bleeding. The study by GrimaldiBensouda et al. also reported that transfusion needs in pediatric UGIB correlated strongly with endoscopic findings of varices, ulcers, or mucosal oozing.^[12] Their case-crossover design validated the relevance of integrating lab indices with clinical and endoscopic profiles to determine transfusion thresholds—an approach we followed in our unit as well.

While most of our patients received medical management and only a subset required procedural intervention, this mirrors the therapeutic approach discussed by Wilkins et al., who recommended initiating pharmacologic agents such as H2 blockers or PPIs early, reserving endoscopic therapy for actively bleeding or high-risk lesions.^[7] Our high reliance on medical therapy followed by selective endoscopic management aligns well with this evidence-based approach, and it effectively minimized the need for surgery.

Our study reinforces the conclusions of Owensby et al. and Rodgers, who stated that while UGIB in children can be alarming, it is often manageable with a structured approach involving early resuscitation, appropriate diagnostics, and timely endoscopic therapy.^[1,3] Our outcomes, complication rates, and mortality figures mirror this structured model of care, indicating that with proper protocols and access to facilities, UGIB in children can be effectively treated with low morbidity and mortality.

CONCLUSION

This study highlights the clinical profile, etiological spectrum, and outcomes of pediatric upper gastrointestinal bleeding in a tertiary care setting. The findings revealed that hematemesis and melena were the predominant symptoms, EHPVO being the most common etiology with esophageal varices being the leading endoscopic diagnosis. Most children responded well to medical and endoscopic treatment, with only a small proportion requiring surgical management. Laboratory abnormalities such as anemia, thrombocytopenia, and coagulopathies were also common,

emphasizing the need for comprehensive clinical and laboratory evaluation. The outcome analysis indicates a favorable prognosis for the majority, with recovery in 91% of the cases. The study underlines the importance of prompt diagnosis and multidisciplinary management in children presenting with gastrointestinal bleeding to minimize morbidity and mortality in this vulnerable population.

Ethical considerations The study protocol was approved by the Institutional Ethics Committee of Osmania Medical College, Hyderabad. Informed consent was obtained from parents or legal guardians before enrolling each child in the study. The identity and medical information of the participants were kept confidential. Participation in the study was voluntary, and parents were free to withdraw their children at any point without affecting the standard of medical care.

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