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Original Research Article

Clinico-etiological pattern of upper gastrointestinal bleeding in children

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ABSTRACT

Background: Upper GI bleeding (UGIB) is defined as bleeding occurring proximal to ligament of treitz. Upper gastrointestinal bleeding (UGIB) can lead to potentially serious and life-threatening clinical situation in children. Globally, the cause of UGIB differs significantly depending on variations in patient population and the presence of comorbid conditions. The objective of this study was to understand the clinico-etiological pattern of upper gastrointestinal bleeding in children in the age group 5-18 years, at a tertiary care centre in central India.
Methods: This prospective study was carried out at a tertiary health care centre between January 2011 and August 2012. We consecutively enrolled all patients in the age group 5-18 years who came to our centre with hematemesis or hematemesis and malena both. Blood sample for CBC, stool sample for occult blood was taken and Ultrasonography of abdomen for liver echotexture, portal vein diameter/pressure and splenomegaly, done. Then, all patients underwent upper gastro intestinal endoscopy (Olympus GIF-V70 upper GI video endoscope).
Results: Total 112 patients were included in the study during the study period. UGIB is most common in the age group 5-10 years (71.4%), followed by 10-14 years (26.8%). Hematemesis is the most common presenting symptom (75%) followed by both hematemesis and melena (25%). The most common causes of UGIB on EGD were oesophageal or gastric varices (91.1%) followed by erosive gastritis (5.3%), gastric ulcer (1.8%) and esophagitis (1.8%). Most common finding on ultrasonography (USG) abdomen was extra-hepatic portal venous obstruction (EHPVO) 75%, followed by liver cirrhosis (16.1%). No abnormality was detected on USG in 8.9% of patients.
Conclusions: We conclude that Upper GI bleeding is more common in 5-10 years age group with hematemesis as the main presenting symptom. The causes of upper GI bleeding in children in developing countries are different from those in developed countries (variceal bleeding due to extra hepatic portal venous obstruction is the most common cause and peptic ulcer is rare).

Keywords: Children, EGD, Hematemesis, UGIB, Varices

INTRODUCTION

Gastro-intestinal (GI) bleeding can be divided into upper and lower, depending on whether it is originating proximal or distal to ligament of treitz. Upper GI bleeding (UGIB) is defined as bleeding occurring proximal to ligament of treitz, which is placed at the junction of duodenum and jejunum. It can present as hematemesis, which is presence of blood in vomitus, and/or malena, which is defined as presence of blood in stools.[1] Upper gastrointestinal bleeding (UGIB) can lead to potentially serious and life-threatening clinical

situation in children. Globally, the causes of UGIB differs significantly depending on variations in patient population and the presence of comorbid conditions.[2] Multiple disorders can contribute to the development of an UGIB in pediatric patients like portal hypertension due to various causes, liver disorders, bleeding and coagulation defects.[3] Some more common differential diagnoses for UGIB, which should be kept in mind while evaluating a patient include ingested epistaxis blood or maternal blood in neonates, and food sources imitating hematemesis or melena.[4] Mortality due to Upper GI bleeding can be decreased by early identification of UGIB and prompt intervention. The objective of this study was to study the clinico-etiological pattern of upper gastro intestinal bleeding in children aged 5-18 years.

METHODS

This prospective, hospital based study was carried out at a tertiary health care centre (Children's Hospital, Department of Pediatrics, GSVM Medical college, Kanpur, Uttar Pradesh, India) between January 2011 and August 2012. We consecutively enrolled all patients in the age group 5-18 years who came to our centre with hematemesis or hematemesis and malena both. We excluded those who did not give consent for endoscopy, who needed emergency surgical intervention, critically ill children in pediatric intensive care, children with bleeding or coagulation disorders and children less than five years of age (owing to technical difficulties of the procedure).

All patients were initially seen by a pediatrician. Information pertaining to the patient's demographic characteristics, co-morbidities, and clinical findings were recorded. Blood sample for CBC, stool sample for occult blood was taken and Ultrasonography of abdomen for liver echotexture, portal vein diameter/pressure and splenomegaly, done. Then, all patients underwent upper gastro intestinal endoscopy (Olympus GIF-V70 upper GI video endoscope) which were performed by a Gastroenterologist in the Medicine department of our center and the findings were recorded. The procedure was done only after proper informed consent from the parents. Patients received midazolam 1 mg/kg intravenously five minutes before the endoscopy as a sedative agent and repeated once with same dose, if required. The endoscopy was performed after overnight or at least 6 hours of fasting.

Statistical analysis

All values are presented as mean±standard deviation (SD) with 95% confidence intervals. Statistical differences between the parameters were tested using Chi-square test. The Statistical analysis of the study data was carried out using SPSS software, version 16.0 (SPSS Inc., Chicago, IL, USA).

RESULTS

Total 112 patients were included in the study with above mentioned inclusion and exclusion criteria, during the study period. Male to female ratio in LGIB is 1.24:1, thus it is more common in males but there is no significant association ($x^2 = 0.99$, $p>0.05$, non-significant). UGIB is most common in the age group 5-10 years (71.4%), followed by 10-14 years (26.8%). Hematemesis, defined as presence of fresh or altered blood in vomitus, is the most common presenting symptom (75%) followed by both hematemesis and melena (25%), which is passage of black tarry stools per rectum. Relation of duration of illness with the time of presentation of UGIB showed that most patients (37.5%) visited the hospital within 6 months of illness.

Table 1: Various studies related to etiology of upper gastro intestinal bleeding.

UGI endoscopy findings	Mittal SK, India	Yachha SK, India	Huang IF, Taiwan	Mouzan EI, Saudi	Dehghani SM, Iran	Our present study
Esophagitis and Mallory Weiss tear	23.7%	-	30.4%	36%	9.5%	1.8%
Esophageal varices	39.4%	95%	10.7%	4.3%	16%	91.1%
Gastric erosions	7.2%	1.3%	44.6%	44%	28%	5.3%
Gastric ulcer	1.3%	-	9.8%	7%	8.5%	1.8%
Duodenal erosions	-	-	2.7%	-	10%	-
Duodenal ulcer	0.4%	-	15.2%	-	6.8%	-
Normal scopy	25%	-	9.8%	25%	20.5%	-

The most common causes of UGIB were oesophageal or gastric varices (91.1%) followed by erosive gastritis (5.3%), gastric ulcer (1.8%) and esophagitis (1.8%). Most common finding on ultrasonography (USG) abdomen was extrahepatic portal venous obstrcution (EHPVO) 75%, followed by liver cirrhosis (16.1%). No abnormality was detected on USG in 8.9% of patients. Anemia was present in 94.6% patients at the time of presentation.

Recurrence of LGIB was noted in 71.4% of patients (2 or more than 2 episodes).

Table 2: Comprehensive table of various characteristics of children with lower gastro-intestinal bleeding.

Different variables	Frequency	%
Sex		
Male	62	55.4%
Female	50	44.6%
Age distribution		
5-10 year	80	71.4%
10-14 year	30	26.8%
14-18 year	02	1.8%
Causes on esogastroduodenoscopy		
Varices	102	91.1%
Erosive gastritis	06	5.3%
Gastric ulcer	02	1.8%
Esophagitis	02	1.8%
Type of presentation		
Hematemesis	84	75%
Hematemesis+melena	28	25%
Anemia at presentation		
Present	106	94.6%
Absent	06	5.4%
Abdominal ultrasonography findings		
EHPVO	84	75%
Cirrhosis	18	16.1%
Normal USG	10	8.9%
Total	**112**	**100%**

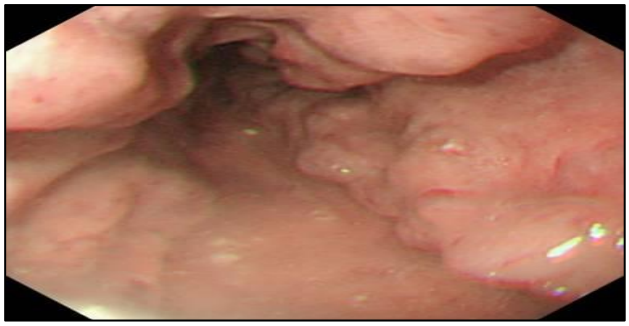

Figure 1: Endoscopic of esophageal varices.

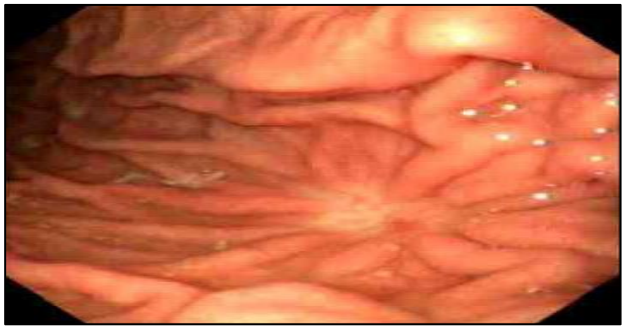

Figure 2: Endoscopic of gastric ulcers.

DISCUSSION

The above study conducted in our hospital to understand the clinic-etiological pattern of Upper GI bleed in children between age group 5-18 years. We evaluated 112 children during the study period between January 2011 and August 2012.

Upper GI bleeding can manifest as hematemesis or both hematemesis and malena. Rafeey et al studied 90 children under 16 years with upper GI bleeding during 2 years of study (November 2001-November 2003) and found that fresh bloody vomiting (hematemesis) was the most common presenting symptom (73% of cases).[5] Cleveland K et al did 167 endoscopic procedures for upper GI bleed and among 73.4% of cases, the most common symptom was hematemesis, which is also the most common presenting symptom in our study (75%).[1] In our studied population, male to female ratio is 1.24:1. The most common age group is 5-10 years (school age). The male dominance in upper GI bleed was not significant ($p>0.05$). Okello found male to female ratio to be 1:2.5. He explained the difference by the fact that female children have poor tolerance to GI diseases.[6]

The most common causes of upper GI bleeding in children vary depending upon age and geographic setting. In western developed countries, the most common reported causes are gastric and duodenal ulcers, esophagitis, gastritis and varices while in India, variceal bleeding predominates.[2] In our study, the most common causes of upper GI bleeding is varices (91.1%) followed by erosive gastritis (5.3%), then both gastric ulcer and esophagitis (1.8%). The majority of our children presents with variceal bleeding due to extra-hepatic portal venous obstruction (75%) which is slightly lower than the previous reported frequency of 98% by Dilawari et al.[7] Upper GI endoscopy is a safe and useful mode of investigation in cases of hematemesis in children as it diagnosed the etiology in all cases of our study though mittal et al found that the cause of bleeding could not be ascertained in 27.54% of cases.[8]

During the study, there were two deaths in case of upper GI bleeding. Both deaths were seen in patients who had multiple and massive episodes of hematemesis. They had cirrhosis of liver. There were also 2 deaths in Upper GI bleed in study done by Dehghani et al, one was the case of cryptogenic cirrhosis and other was Wilson's disease.[9] There is recurrence of bleeding in 71.4% of cases of upper GI bleed. This is almost similar to the recurrence of bleeding noticed by Yachha et al.[10] El-tawil found that there is 70% chance of recurrence of bleeding once a single episode of esophageal variceal bleeding has occurred.[11] Urgent endoscopy is indicated for bleeding that requires transfusion or for hemodynamic instability; otherwise, endoscopy can be performed within the first 24 hours of admission.[13] The reported efficacy of endoscopy for controlling UGIB is approximately 90%.[14] Repeat endoscopy in children with life-threatening UGIB

should be considered within 48 to 72 hours after the initial endoscopy.[13,15-16]

CONCLUSION

Upper GI bleeding is more common in 5-10 years age group with hematemesis as the main presenting symptom. The most common causes of UGIB were oesophageal or gastric varices (91.1%) followed by erosive gastritis (5.3%), gastric ulcer (1.8%) and esophagitis (1.8%). The causes of upper GI bleeding in children in developing countries are different from those in developed countries (variceal bleeding due to extra hepatic portal venous obstruction is the most common cause and peptic ulcer is rare).

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