Original Article

Upper Gastrointestinal Bleeding In Children

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Summary:

BACKGROUND: Gastrointestinal bleeding (GIB) in infants and children is one of the more alarming conditions encountered in pediatrics. It is nonetheless an anxiety-provoking complaint. Most etiologies are self-limited and benign.

AIM OF STUDY: To review the causes of upper gastrointestinal bleeding and its clinical presentations in children and evaluate the role of endoscopy for diagnostic and therapeutic purposes.

PATIENTS AND METHOD: Fifty eight patients from 4 days old up to the age of 18 years who referred with upper gastrointestinal bleeding to the Gastro intestinal&Hepatology unit in the Children Welfare Teaching Hospital/ Medical City/Baghdad, in the period from 1st of April 2010 to 1st of November 2010.

RESULTS: there were 58 patients (34 males and 24 females) with male to female ratio (1.4:1), 58.5% presented with hematemesis, 5.2% had melena and 31.1% had both, 5.2% of patients presented with hematochezia . The most common causes of upper GI bleeding among all patients were esophageal varices (39%), gastric erosions (19.6%), duodenal ulcer (7.4%), gastric ulcer (9.7%), (4.9%) for Mallory Weiss syndrome and also (4.9%) for oesophagitis. The causes of bleeding could not be ascertained in (30%) of cases. (15.3%) of patients, there was a history of consumption of medications predisposing them to upper GI bleeding. Fifteen patients (25.8 %) had comorbid disease. There were three deaths (5.1%) in this study.

CONCLUSION: oesophagealvarices were the common cause of upper GI bleeding. Most patients presented with hematemesis. In children with upper GI bleeding, upper GI endoscopy provides an accurate diagnostic tool and also provides therapeutic intervention when needed

Keywords: UGIB upper gastrointestinal bleeding,CWTH children welfare teaching hospital.

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Introduction:

Gastrointestinal bleeding (GIB) in infants and children is one of the most alarming conditions encountered in pediatrics. It is nonetheless an anxiety-provoking complaint. Most etiologies are self-limited and benign, 75% to 85% of GI bleeding ceases spontaneously,(1) but some are potentially serious leading to hemodynamic compromise that requires aggressive resuscitation and intervention .Although upper GIB is uncommon it causes a mortality rate of 5%-14%.(2).The UGIB usually presents with hematemesis and melena, or occasionally may present with hematochezia(3).There is considerable overlap between age groups andcauses of UGIB,however of all cases of UGIB in children 95% are related to mucosal lesions and oesophagealvarices(4) . Mucosal lesions, including oesophagitis, gastritis, stress ulcer,peptic ulceration and Mallory weiss tears.

A detailed history and physical examination along with limited laboratory studies may identify the underlying cause and predict the severity of gastrointestinal bleeding. Assessment should be made regarding the presence and severity of hematemesis and melena.The nasogastric aspirate can helpto differentiate upper from lower GI bleeding and to assess for ongoing bleeding(5)\. Therapeutic intervention is based on the cause of the bleeding,this is done after proper assessment of the patient,hemodynamic status and initiation of appropriate rescusitation measures . Aim of study This study is undertaken to review the causes of upper gastrointestinal bleeding in pediatric age group in CWTH and to find out whether the causes of upper GI bleeding in thisGI center in Iraq differed from the GI centers in different countries and to highlight the important role of Pediatric upper gastrointestinal endoscopy .

Patients and Methods:

A prospective study carried out on fifty eight patients,aged from 4 daysto 18 years who presented with UGIB in the period from 1st of April 2010 till 1st of November 2010,

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who were admitted to the Children Welfare Teaching Hospital/ Medical City/ Baghdad. All the patients were included in this study . Information were retrieved from patient>s history include age , gender, onset of illness, type of presentation,appearance of vomitus (red bloody, coffee-ground, clear), appearance of stool (red or maroon stool, melena, brown or yellow stool), presence of underlying cirrhosis, history of comorbid diseases (e.g. acute or chronic kidney diseases, diabetes, hypertension, cardiac diseases and CNS diseases, etc), history of medications used (i.e. NSAIDS, anticoagulants, corticosteroids and iron..) family history of any related conditions and history of bleeding tendency. All patients were examined thoroughly for any signs of shock (tachycardia, hypotension, cold extremities, diminished or absent pulses,delayed capillary refilling (> 2-3 sec), and decreased urine output), or any signs of chronic liver disease (spider nevi, splenomegaly , ascites , palmer erythema , and xanthomas).

Laboratory Studies: In an emergency setting only a few laboratory tests are essential in the beginning to evaluate UGIB (Table 1).Upper endoscopy was performed in 41 cases under general anesthesia without any complications , 17 cases were not endoscopied , 11 of them were neonates because endoscopy is not available for this age group ,2 families refused the endoscopy , 4 patients were critically ill so endoscopy was not done. Additional laboratory evaluation depended on the result of the initial evaluation, the patient's response to treatment, and clinical suspicion of a particular diagnosis.

Table 1:. Laboratory Studies in Initial Evaluation of UGIB (6)

Blood grouping and cross matching
Complete blood count with platelets count
Prothrombin time (PT) , partial thromboplastin time (PTT), Bleeding time
TSB with fractionation , serum AST,ALT, alkaline phosphatase Serum albumin,
Blood urea nitrogen, serum creatinine, serum electrolytes

Results:

Fifty eight patients with UGIB were included in this study;the common age of presentation was found to befrom 6 years – 12 years of age (24%) withmale to female ratio 1.4:1, and there is male predominance.Most patients of UGIB presented with hematemesis 34(58.5 %),3 (5.2 %) presented with melena, while 18 (31.1 %) presented with both hematemesis and melena , lastly only 3 (5.2 %) of cases presented with haematochezia .Forty one patients (70 %) underwent endoscopy which was performed under general anesthesia without any complications.Table 2 depicts the endoscpical findingsSixteen patients (39%) with oesophageal varices , 7 of them (10.3 %) were cirrhotic liver , while 9 patients (17.2 %) were non-cirrhotic portal hypertension . In this study the commonest cause of UGIB in children was oesophagealvarices (39 %) , while erosive gastritis (19.6 %) , gastric ulcer(9.7 %) and duodenal ulcer (7.4 %) , oesophagitis(4.9 %) , Mallory weiss syndrome (4.9 %) , and undiagnosed UGIB(14.7%).Fifteen patients (25.8 %) had comorbid disease ,5 cases (8.5%) diagnosed as neonatal sepsis ,4 cases (6.8 %) had heart problems , 2 cases (3.4%) bronchial asthma ,one case (1.7%)Henoch-SchönleinPurpura , and one case (1.7%) nephrotic syndrome , lastly 2cases (3.4%) had CNS problem (epilepsy and encephalitis). Regarding history of drugs intake, nine patients (15.3 %) had history of drug intake ,4 patients (6.8%) took NSAIDs, one of them (1.7 %) was a known case of cardiomyopathy who took prophylactic dose of Aspirin as antithrombotic and 3 patients (5.1%) took NSAID as antipyretic . Another three (5.1%) patients had history of steroid intake, two of them(3.4%) were known case of asthma and one case (1.7%) had nephrotic syndrome. One case (1.7 %) took Tegretol (Carbamezepine) for treatment of epilepsy and the last one (1.7 %) came with rat poison poisoningIn this study show 50 patients (86 %) presented with first attack while 8 patients only (14 %) had recurrence, most of them were cirrhotic liver disease It was found that erosive gastritis is more common in younger children less than 6 years of age, while gastric and duodenal ulcer is more in older children and adolescence and oesophageal varices was more common in the age between 6-12 years.

Table 2:Endoscopy findings

Endoscopic Finding	Male	Female	Total Number
OesophagealVarices	11 (26.7%)	5 (12.3%)	16 (39 %)
Gastric Ulceration	1 (2.4 %)	3 (7.3%)	4 (9.7 %)
Duodenal Ulceration	1 (2.4 %)	2 (4.9 %)	3 (7.4 %)
Oesophagitis	1 (2.4 %)	1 (2.4 %)	2 (4.9 %)
Mallory Weiss syndrome	1 (2.4 %)	1 (2.4 %)	2 (4.9 %)
Erosive Gastritis	5 (12.3%)	3(7.3 %)	8 (19.6 %)
Undiagnosed	5 (12.3%)	1 (2.4 %)	6 (14.7 %)
Total Number	25 (61%)	16 (39%)	41 (100 %

Table 3:Causes of Upper Gastrointestinal Bleeding in Diffe rent Age Groups

Endoscopic Finding	>1mo - 1 year	>1year - 6 years	>6 years – 12 years	>12 years – 18 years	Total number
Oesoph ageal Varices	1(20%)	3(23%)	10(76%)	2 (20%)	16 (39%)
Gastric Ulceration	--	1(8%)	1 (8%)	2 (20%)	4 (9.7%)
Duodenal Ulceration	--	--	1 (8%)	2 (20%)	3 (7.4%)
Oesophagitis	--	--	--	2 (20%)	2 (4.9%)
Mallory Weiss syndrome	--	1(8%)	--	1 (10%)	2(4.9%)
Erosive Gastritis	4(80%)	3(23%)	--	1 (10%)	8(19.5%)
Undiagnosed	--	5(38%)	1 (8%)	--	6 (14.7%)
Total Number	5(100%)	13(100%)	13(100%)	10(100%)	41(100%)

Outcome:

All patients received proper treatment , in39 patients (67 %) the bleeding stopped spontaneously , while 19 (33 %) by medical therapy (octreotide , Fresh frozen plasma and platelets) , and 6 cases (10.3 %) by endoscopic therapy (4 of them 6.9 % by sclerotherapy and 2 cases 3.4 % by variceal band ligation) .

Seventeen patients (29.3 %) needed blood transfusion; none of them needed surgical intervention.

Three patients (5.1 %) died, one case with neonatal sepsis presented with picture of DIC, 2 cases had cirrhotic liver diseases presented with uncontrolled GI bleeding

Discussion:

The incidence of upper GI hemorrhage is not well established in children. The causes of UGIB in children vary depending upon age and the geographic setting. [2] Hematemesis was the commonest cause of UGIB in children and in this study UGIB most commonly presented with hematemesis which accounts for 58.5% of patients ,this result agrees with other studies such as Dehghaniet al[7] (50%), Al Azzawi(2004) [8](74.5%), and also in other studies like Huang IF et al (2000) [9] (68.8%) . The reason for this could be explained by the fact that hematemesis is a bright red color of blood that usually alarms the patient and the family to seek medical advice earlier.

Malena in this study had a lower rate in presentation(5.2%). This finding was nearly similar to that observed by Dehghani et al[7]and also by Huang IF et al[9].This can be explained because melena is usually not noticed by the patient and the family especially in older children, so there was a delay in the presentation .The other cause is the appearance of hematemesis before melena.

Haematochezia was the presentation in 3 cases (5.2%), this finding is nearly similar to that observed in Huang IF et al[9].Of the 3 cases with haematochezia two were neonates and one patient was having a cirrhotic liver .Haematochezia can be due to increased transit time in neonates and brisk bleeding from oesophageal varices with no enough time for hemoglobin to be denatured by bowel flora to develop melena ,or the patients with liver cirrhosis may had rectal varices leading to hematochezia. Most patients presented in the age groups of > 1 year to 6 years and 6 years to 12 years (36.2%) and (24%) respectively ,with male predominance and a male /female ratio of 1.4 : 1 these finding were nearly similar to those observed in studies conducted in Iran by Dehghaniet al[7], which showed a male to female ratio of 1.3: 1and also presenting in the age groups of >1year and of 6-12 years (44.9% and 27.9% respectively).On the other hand an earlier study conducted in Iraq by Al Azzawi[8]showed a nearly equal male to female ratio of 1:1.04.In contrast a study conducted inSaudi Arabia by El Mouzanet al[10] showed a reversed male/female ratio of1:1.5.The present study also revealed that the most common cause of UGIB was oesophagealvarices which accounted to 39% .This finding was nearly similar to that observed in

studies conducted in India by Mittal SK et al[11](39.4%) and to another Iraqi study conducted by Al Azzawi[8] (34.2%).In contrast other studies revealed that gastric erosions were the most common including El Mouzanet al[10] (44%) and also those conducted in Taiwan by Huang IF et al[11] (44.6%) . while in the present study gastric erosion accounted only to 17.1%.These different results are probably due to referring patients with chronic liver disease to the Gastrointestinal and hepatology unit in Children welfare teaching Hospital from all other governerates in Iraq where most of them presented with UGIB as a sequale of cirrhotic portal hypertension. Gastric and duodenal ulceration accounted for (9.7%) and (7.4%) of UGIB respectively , these finding were nearlycomparable to other studies including Dehghani et al[7] (8.5%,6.8% respectively) and Mittal SK et al[11](1.3% and0.4% respectively). However, age-related analysis in the present study showed that erosive gastritis was a more common cause of UGIB in the younger age group (83%) versus (10%) in adolescents. These finding were nearly similar to that observed byDehghani et al[7], which showed gastritis in younger age group and adolescents (71.4%) versus (24%) respectively.An explanation might be that younger age group were more vulnerable to stressful conditions that play a role in developing gastritis. In contrast the opposite finding were reported by El Mouzan et al[10]which reported that erosive gastritis were more common in adolescents (56%) versus (30%) in younger age group.Nine patients (15.3%) had history of drug intake , 4 (6.8 %) had ingested NSAID and 3 patients (5.1%) ingested steroids. one case of epilepsy (1.7%) was on Tegretol(Carbamezepine) and the other case(1.7%) ingested a rat poison ,all of them presented with UGIB. Similar finding were also reported in Al Azzawi[8] and in Dehghani et al[7].The cause of bleeding could not be ascertained in 17 (30%) of cases, while results revealed by Dehghani et al[7](20.5%) .The reason why the cause was undetermined in this study was because of difficulties in performing endoscopy for those patients.In this study (14.7%) patients who underwent endoscopy had negative results , while in other study done in Uganda approximately 51% of the upper GI endoscopy done in children was negative [12] This is important because a reliable negative finding relieves anxiety of patients and may prove cost effective by reducing drug prescription and number of consultations. On the other hand the endoscopy in these patients were not done in the first 24 hours after presentation of bleeding which might carry false negative results.

Conclusion:

The most common cause of of upper GI bleeding in this study was oesophagealvarices,most of the patients presented with hematemesis and gastritis was the leading cause of UGIB in younger age group. There is an important role of NSAID and Steroid in predisposition to development of gastric and duodenal ulceration with bleeding andupper GI endoscopy provided an almost accurate diagnostic tool which also served as therapeutic interventional tool when needed.

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