

Yield of endoscopy in children with haematemesis

MOHAMMAD ISSA EL MOUZAN, ASAAD
MOHAMMAD ABDULLAH, IBRAHIM
ABDULKARIM AL-MOFLEH

ABSTRACT

Upper gastrointestinal (UGI) endoscopy is an important tool in the evaluation of patients presenting with haematemesis. The objective of this study was to report the yield of this procedure in a Saudi Arabian population. We analysed the result UGI endoscopy in children and adolescents of 0-18 years of age who presented with haematemesis over a period of 10 years. From 1993 to 2003, endoscopy was performed on 60 consecutive children presenting with haematemesis. This group represented 12% of the indications during the same period. The majority (98%) were Saudi nationals, with an age range from 4 days to 18 years, and a male to female ratio of 1:1.5. The overall yield of endoscopy was 75%; however, the yield was higher (91%) in children below 12 years of age. Gastritis was the commonest cause of haematemesis (44%), followed by oesophagitis (36%). However, age-related analysis shows that oesophagitis was a more common cause of haematemesis in the younger age group (45%) than gastritis in adolescents (30%). In contrast, gastritis was more common in older children (56%) than oesophagitis (28%). Peptic ulcer disease and oesophageal varices were seen in only 3 (7%) and 2 children (4.3%), respectively. The overall yield of endoscopy in our patients is similar to that in most reports. However, oesophagitis and gastritis were the commonest causes of haematemesis, whereas oesophageal varices and peptic ulcer disease were much less common.

INTRODUCTION

Haematemesis, is a frightening event that requires prompt evaluation and management decisions. Although a systematic approach is needed to reach a diagnosis, upper gastrointestinal (UGI) endoscopy is usually indicated when systemic and extraintestinal causes are excluded. A recent medical position paper of the North American Society for Pediatric Gastroenterology and Nutrition states that endoscopy is generally indicated in children with active, persistent or recurrent bleeding.¹ The accuracy and yield of this invasive procedure

has been reported from many countries.^{2,3} However, information on the subject in children from developing countries in general and from Saudi Arabia community in particular, is limited.⁴⁻⁶ In this paper, we report our experience on the yield of UGI endoscopy in Saudi Arab children and adolescents presenting with haematemesis.

MATERIAL AND METHODS

We analysed the results of UGI endoscopy done in children and adolescents below 18 years of age who presented with haematemesis to the King Khaled University Hospital (KKUH), Riyadh over a period of 10 years. Endoscopy was usually performed within 24 hours of admission to the hospital in all cases of persistent or recurrent bleeding. All the procedures were performed by consultants for adult (for adolescents), or paediatric gastroenterologists (for children below 12 years of age), or by experienced fellows directly under the supervision of consultant gastroenterologists. All the procedures were performed under sedation with midazolam and pethidine except for young children presenting with severe corrosive ingestions or those with failed sedation requiring general anaesthesia. Data retrieved from the records included age, gender, nationality and endoscopic diagnosis. Simple descriptive statistics were performed and the data were analyzed for two age groups (0-12 years and 13-18 years) in an attempt to detect any effect of age on the results.

RESULTS

From 1993 to 2003, endoscopy was performed on 60 consecutive children presenting with haematemesis. This accounted for 12% (60/521) of the indications for UGI endoscopies in children presenting with UGI symptoms during the same period. The majority (98%) were Saudi nationals, the age range was from 4 days to 18 years, and the male to female ratio was 1:1.5. The overall yield of UGI endoscopy was 45/60 (75%); however, the yield was much better in children aged 0-12 years, being 20/22 (91%). The causes of haematemesis are presented in Table I, indicating that endoscopic features of gastritis was the commonest cause, seen in 20/45 patients (44%), followed by oesophagitis in 16/45 patients (36%). However, age-related analysis shows that oesophagitis was a more common cause of haematemesis in the younger age group than gastritis (45% v. 30%). In contrast, in older children (13-18 years), gastritis was the commonest cause 14/25 (56%), followed by oesophagitis in 7/25 (28%). Peptic ulcer disease (PUD) and oesophageal varices were seen in only 3 (7%) and 2 children (4.3%), respectively, from both age groups.

DISCUSSION

Haematemesis, or the vomiting of blood, usually results from lesions of the UGI tract, anywhere from the oesophagus to the ligament of Treitz. Knowledge of the yield and pattern of endoscopic diagnosis are important for both the clinician who requests this procedure and the endoscopist who performs it. The ability of endoscopy to reveal the cause of bleeding depends on many factors. The timing of the procedure has been shown to affect the yield. In one report, the yield of endoscopy

College of Medicine and King Khaled University Hospital, King Saud University, Riyadh, Kingdom of Saudi Arabia
Department of Pediatrics, Division of Gastroenterology
MOHAMMAD ISSA EL MOUZAN, ASAAD MOHAMMAD ABDULLAH,
Department of Medicine, Division of Gastroenterology,
IBRAHIM ABDULKARIM AL-MOFLEH
Correspondence to: MOHAMMAD I. EL MOUZAN, College of Medicine and KKUH King Saud University, P.O. Box 2925, Riyadh 11461, Kingdom of Saudi Arabia.
email: Drmouzani@hotmail.com

Table I. Yield of endoscopy in 45 children with haematemesis.

| | 0-12 Abnormal/ total (%) | 13-18 Abnormal/ total (%) | 0-18 Abnormal/ total (%) |
|----------------------|--------------------------------|---------------------------------|--------------------------------|
| No. of Procedures | 20/22(91) | 25/38(66) | 45/60(75%) |
| Gastritis | 6(30) | 14(56) | 20(44) |
| Oesophagitis | 9(45) | 7(28) | 16(36) |
| Peptic ulcer disease | 2(10) | 1(4) | 3(7) |
| Others* | 3(15) | 3(12) | 6(13) |
| Total | 20(44) | 25(55) | 45(100) |

* Include: Oesophageal varices 2, papillotomy site 2, Mallory-Weiss tears 1, telangiectasia 1

was highest (82%) when the procedure was performed in the first 24 hours, and dropped to 68% and 48% when the procedure was performed between 24 and 72 hours and after 72 hours, respectively.⁷ In our hospital, endoscopy is usually performed in bleeders within 24 hours of admission.

The 75% yield in our experience is comparable to the results of others from France⁷ and India reporting a yield of 72.5%,⁸ but lower than the value of nearly 89% reported from Taiwan and Mexico.^{9,10} Other important factors include the experience of the endoscopist who should be able to perform a complete oesophagogastroduodenal inspection, including blind areas. In our setting, in order to ensure maximum yield, the procedure was performed by consultant gastroenterologists or experienced fellows under close supervision. The selection of patients for endoscopy can affect the yield of the procedure. The vomiting of ingested coloured drinks in the form of bright red or coffee-ground vomitus may simulate haematemesis. Similarly, the vomiting of swallowed blood of maternal origin (i.e. during delivery or breast-feeding) or of nasopharyngeal origin may also simulate haematemesis.¹¹ The ability to exclude these cases before endoscopy will reduce the number of negative procedures and improve the yield. Finally, the prevalent pattern of diseases presenting with haematemesis in the community also affect the yield of the procedure. In hospitals caring for children with chronic liver diseases, the proportion of bleeders from oesophageal varices will be greater than in another which provides mostly gastroenterology services.

In this report, the causes of haematemesis were oesophagitis and gastritis accounting for 80% of the causes, whereas bleeding PUD, and oesophageal varices were very rare. Such a pattern, which is similar to the nearly 78% reported from Taiwan,⁹ reflects the type of patient population in our hospital which mostly provides gastroenterology services, whereas children with chronic liver disease are referred to other hospitals which provide hepatology services. However, this pattern contrasts with a report from India indicating that 95% of the causes of UGI bleeding in their hospital were variceal.¹² However, in another

study from India, esophageal varices were associated with upper gastrointestinal bleeding in 39% of the children below 12 years of age.⁸ The effect of age on the pattern of endoscopic diagnoses is demonstrated in this study. The higher yield of endoscopy in young children (92%) compared to older children (66%) may be related to better selection of young children for such an invasive procedure. However, the more common finding of oesophagitis in younger children is consistent with the high prevalence of peptic esophagitis (51%) as a complication of gastroesophageal reflux disease in this age group.¹³

Similarly, the more common finding of gastritis as a cause of haematemesis in older (70%) compared to younger children (<12 yrs) reflects the higher prevalence of gastritis and *Helicobacter pylori* infection in older children.

In an earlier report from our institution, which included children presenting with UGI symptoms, gastritis caused by *Helicobacter pylori* infection, was seen in 67% of children above 12 years of age compared to 34% in those below 12 years.¹⁴⁻¹⁵ This trend is similar to the experience of others.¹⁶⁻¹⁹ Finally, our finding that PUD was a rare cause of haematemesis reflects the low prevalence of PUD in children. Data from our institution indicated a prevalence of PUD in 5% children and 13% of these presented with haematemesis.²⁰ Such a finding is similar to the data from Greece and other countries confirming that PUD is an uncommon disorder in childhood.²¹

CONCLUSION

In our experience, oesophagitis and gastritis were the commonest causes of haematemesis, whereas oesophageal varices and PUD were much less common. The yield of endoscopy in children presenting with haematemesis is influenced by the timing of the procedure, experience of the endoscopist, the prevalent pattern of the disease in the country.

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