MEDICAL CHANNEL

Original Article

"UPPER GASTROINTESTINAL ENDOSCOPIC EXPERIENCE IN CHILDREN."

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ABSTRACT

Objective: The Objectives of the study were to observe the different endoscopic findings and to enumerate complications associated with the procedure.
Design: Retrospective Cross Sectional study.
Place and Duration of Study: The venue of the procedure was Endoscopic unit of Pediatrics Unit of Civil Hospital Karachi from January 1998 till September 2009.
Materials & Methods: 991 gross endoscopic findings and biopsies were retrospectively analyzed from record. After taking consent history and examination of all patients were recorded on a performa. Fasting for 4-8 hours depending on age was a prerequisite and other steps were a good Hb level and I/V cannula placement.
Results: This was a retrospective study of over 10 years. From January 1998 till September 2009 a total of 991 children who underwent the procedure ranging in age from 4 mnths to 18 years and were referred from other wards of Civil Hospital Karachi, NICH, Lyari General Hospital and charitable hospitals from Lyari catchments area were analyzed. There were different reasons for referral like chronic diarrhea (for jejunal biopsy), abdominal pain, upper GI bleed, Failure to thrive , suspected acid peptic disease, CLD with or without portal hypertension, vomiting, malena, anorexia and dysphagia. Major endoscopically observed findings were gastritis, esophageal varices, GERD, duedenitis etc along with vast majority with normal or subtle findings of smaller duodenal folds and reduced sheen in cases referred for jejunal biopsy for diagnosis of Celiac Disease. It was found to be a much safer procedure than literature suggests.
Conclusions: Pediatric GI endoscopy units with independently standing are limited; our endoscopy unit is one of the 3 centers operational in the country. It is an excellent diagnostic and therapeutic tool. Complications are rare in good hands. Availability of this immensely useful diagnostic as well as therapeutic tool is certainly a limiting factor in our setup but when accessible it should be utilized.

Key words: endoscopy, children, gastritis, varices, H. Pylori

INTRODUCTION:

Sporadic attempts in children for Upper Gastrointestinal (GI)Endoscopy were made in the late 1960s and early 1970s with fibreoptic instruments designed for adults only, to witness the birth of actual pediatric gastro- and pan-endoscopes few years later.[1] Subsequently, the pediatric community received unequivocal evidence of very low rates of complications related to upper GI endoscopy, high diagnostic yield, cost effectiveness (due to safe use of procedure in OPD settings) and the ability to perform various therapeutic procedures. This led to widespread use of pediatric flexible upper GI Endoscopy.[2] Upper Gastrointestinal Endoscopy today remains one of the best diagnostic and therapeutic modalities of a great variety of upper gastrointestinal disorders. Endoscopy in pediatric patients is restricted to a few centers only therefore data is limited although Esophagogastroduodenoscopy (EGD) is the most frequently performed endoscopic procedure in children when available. It not only has diagnostic but also therapeutic benefits. Upper

Gastrointestinal Endoscopy is considered the investigation of choice in patients with upper GI disorders which often present with dyspepsia.[3] Data in our setup is limited.

OBJECTIVES:

1. To observe different findings in children referred for the GASTROINTESTINAL ENDOSCOPIC procedure.
2. Enumerate complications associated with the procedure.

MATERIAL AND METHODS:

This was a retrospective study of 11 years. Data dug out from record and was critically analyzed. The venue of the procedure was Pediatrics Unit II of Civil Hospital Karachi. Inclusion criteria: All patients referred for upper GI endoscopy with any complaints. Consent was mandatory for the procedure.

Exclusion criteria: Clinically unstable child, Parent's refusal, known history of drug reaction.

Patients were referred from other wards of Civil Hospital Karachi, Lyari General Hospital, NICH, Cement Hospital, Baqai Hospital Sobhraj Hospital, Murshid Hospital, Sindh Govt Hospital and other public hospitals and private medical centers. History and examination of all patients meeting the inclusion criteria were recorded on a performa. Four to 8 hours fasting depending on age was a prerequisite along with I/V cannula placement.

RESULTS:

A total of nine hundred and ninety one children underwent the procedure ranging in age from 4 months to 18 years. The period of study was from January 1998 till September 2009. There were different reasons for referral like chronic diarrhea, abdominal pain, upper GI bleed, failure to thrive with or without chronic diarrhea, persistent vomiting, suspected acid peptic disease, CLD with or without portal hypertension and anorexia. Some cases were that of dysphagia, foreign body and evaluation of short stature.

At some places there was more than one cause for referral.

In almost half of cases esophageal varices were seen. These children were basically referred for evaluation of hematemesis, CLD and abdominal pain. The other major endoscopic finding was that of gastritis followed by GERD and esophagitis.

Overlap of findings is present. Sclerotherapy was also done in 8 patients with adequate outcome.

47 children were found to be serologically +ve for H. Pylori, out of which 15 were endoscoped, all were positive for H.pylori.

This was found to be a relatively safe procedure with no deaths whereas 2% mortality is the expected from literature. No drug related side effects were noted.

TABLE 1: REASONS FOR REFERRAL: n=991

REASONS	NUMBER
Chronic diarrhea	368
Rec. abdominal pain	211
Abdominal Pain	156
CLD	287
Hemetemesis	178
Anorexia	92
Vomiting	154
Dysphagia	03
FTT	290
Foreign body	01
Short stature	04

TABLE 2: ENDOSCOPIC FINDINGS: n=991

DISEASE	NUMBER
Esophageal varices	461
Gastro-esophageal reflux	107
Esophagitis,	109
Esophageal narrowing, candidiasis,	
corrosive burns, foreign body, membrane	05
Lax lower end of esophagus(achalasia01)	42
Gastritis, erosions, ulcers,	339
Gastric varices	06
Gastric polyp	03
Duodenitis Duodenal ulcer	59
Hiatus hernia	41
Duodenal polyp Duodenal growth	
nodularity Biliary reflux	05
Normal	467

TABLE 3: H.PYLORI Positivity. N=47

H.PYLORI	NUMBER
Endoscopically positive	15
Endoscopically negative	0

DISCUSSION:

A major breakthrough in the diagnosis of esophago-gastro-duodenal lesions in children was evident in the early part of 1970s by introduction of Esophagogastroduodenoscopy (EGD). Since then its use has escalated the world over but still its availability is limited in our setup.

From early 1998 till late 2009 nine hundred and ninety one endoscopies were done in children in our ward. The most common endoscopic finding was Esophageal varices (461/991) followed by Gastritis, erosions, ulcers (339/991), Gastro-esophageal reflux (107/991)and Esophagitis (109/991). Other observations were Lax lower end of esophagus, Duodenitis, Duodenal ulcer, Hiatus hernia etc. Indications for upper GI endoscopy can be varied and broadly devided into 3 categories[4]:

1. Indications for emergency endoscopy.
2. Indications for elective diagnostic endoscopy.
3. Indications for therapeutic endoscopy.

Urgent indications would include GI bleed, caustic and foreign body ingestion[4]. In other studies Indications for upper GI endoscopy included haematemesis (24%), portal hypertension (21%), abdominal pain (16%) and vomiting (15%). Diagnoses included oesophageal varices (16%), gastritis (7%) and hiatus hernia (6%). This is slightly different from our findings. [5] Another study which has results more consistent with ours from Saudi Arabia which says the 2 most common indications were duodenal biopsy (29%) and abdominal pain (24%) and the most common diagnoses were gastritis and esophagitis occurring in 32% and 30% of the children.[6] We had 178 cases of bleeding varices coming

with frank hemetemesis, one case each of foreign body and caustic burns without much bleeding. Elective diagnostic endoscopy indications includes cases of recurrent upper abdominal pain[7], malabsorption, anemia, weight loss, vomiting, dysphagia, mass lesion or mucosal lesion present on imaging[4], we on the other hand had 368 cases of chronic diarrhea (malabsorption) coming for jejunal biopsy, 367 cases of abdominal pain, 154 came with vomiting, 290 had FTT, 92 had anorexia, 3 had dysphagia and 4 came with short stature for jejuna biopsy. So majority of our cases were referred for diagnosis of recurrent abdominal pain and for jejunal biopsy for malabsorption. The most common indications for gastric biopsy are to detect various types of gastritis along with evidence of Helicobacter pylori, gastric ulcers and growths.[8, 9]Additionally upper GI endoscopy with mucosal biopsy are the gold standard for the diagnosis of helicobacter pylori infection and its complications in children.[7] Forty seven serologically +ve and out of which 15 endoscoped, all positive for H.pylori. Another study which has more compatibility with our study says that the major indication for doing endoscopy in the present series was recurrent abdominal pain (51.6%), followed by upper gastrointestinal bleeding (28.8%). Overall positive yield of HP in recurrent abdominal pain cases was 45 out of 79 (57%). The sources of upper gastrointestinal bleeding could be identified in 79.5% cases. Esophageal varices indicating portal hypertension were found in 62.5% children who were endoscoped for unexplained splenomegaly with or without ascitis.[10]

Our study showed esophageal varices in 461 cases

- Gastro esophageal reflux 107
- Esophagitis 109
- Esophageal narrowing, Candidiasis, Corrosive burns, Foreign body, Membrane 05
- Lax lower end of esophagus (achalasia01) 42
- Gastritis, erosions, Ulcers 339
- Gastric varices 06
- Gastric polyp 03
- Duodenitis Duodenal ulcer 59
- Hiatus hernia 41
- Duodenal polyp Duodenal growth nodularity Biliary reflux 05
- Normal 467

Therapeutic indications include sclerotherapy, Foreign body removal, dilatation and botulinus toxin injection.[4] We had a case of foreign body removal, 2 cases of dilatation and eight cases of sclerotherapy with good results. Endoscopic injection for Sclerotherapy is a highly effective alternative to shunting procedures in patients with portal hypertension used for rapid hemostasis and to reduce recurrent bleeding. [11]

In a large prospective series of pediatric patients, complications occurred in 1.7% of upper gastrointestinal endoscopies. During endoscopy, bronchoscospasm, transient respiratory arrest, phlebitis and fever were the commonest complications. Others related to that of sedation, infection, perforation, bleeding, cardiopulmonary complications and death. [12] We observed only minor complications of bronchospasm and fever in 2 patients.

There were no complications of sedation and no deaths were seen in so many years. Some have done Upper GI endoscopy under GA with good results but with complications of sore throat in a third of the patients[13], others even recommend no sedation with good tolerance[14], another prospective study suggests intravenous sedation with midazolam and fentanyl as safe for the procedure.[15] Combination of midazolam and ketamine has also been used by some for sedation,[16] others have used combination like of propofol, fentanyl, and midazolam with treatable complications in13.5%. [17] We used conscious sedation with midazolam which gave excellent results.

Endoscopy is a newer strategy in the field of endoscopy it provides a valuable tool in the evaluation of pediatric patients for possible small bowel disease. However, the risk of developing complications appears to be greater in the pediatric population, with 20% of patients having an adverse Capsule event (CE) in one study. Since CE is associated with a high degree of morbidity, UGIE seems to be a much better option.[18]

CONCLUSIONS:

Pediatric GI endoscopy was found to be a safe procedure. Availability of this immensely useful diagnostic as well as therapeutic tool is certainly a limiting factor in our setup but when accessible it should be utilized. The most common indications for gastric biopsy are to detect various types of gastritis along with evidence of Helicobacter pylori, gastric ulcers and growths. Most common endoscopic findings were esophageal varices followed by gastric erosions and ulcers

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