

Gastroesophageal reflux disease: Clinical and endoscopic Description of 48 paediatric Iraqi cases.

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Background:

Gastroesophageal reflux (GER) is a common problem in infants and children. During the first 6 to 12 months of life, vomiting is believed to be the result of an incompetent lower esophageal sphincter mechanism. Sign and symptoms of Gastroesophageal reflux disease (GERD) vary with age. Infants typically present with regurgitation and emesis. Children present with abdominal pain, thoracic pain and dysphagia more common than vomiting.

Setting: Gastroenterology Teaching Hospital- Medical city, Baghdad. Objective: Clinical and endoscopic description of GERD in children versus adult.

Method:

During the study period (January-2003 to November 2005) patients with symptoms of repeated vomiting, epigastric pain, dysphagia and haematemesis and melaena were endoscoped. Modified Savary-Miller grading system were followed.

Results:

A total of 132 patients were included in this study. We identified 48 patients with endoscopic GERD. They were 29 male and 19 female (M/F 1.5:1), of 6.25yr mean age. The shortest duration of illness was 2 weeks. Repeated vomiting is the main problem, followed by hematemesis and melaena, epigastric pain, growth retardation, and dysphagia. According to the modified Savary-Miller classification, it was found that 18 patients had grade I, 8 grade II, 7 grade III and 15 patients with grade IV esophagitis. Hiatus hernia (sliding) was seen in 8 (M/F 5/3) of total patients with GERD. Four (26.6%) of them associated with stricture.

Stricture were diagnosed in 15 (31.25%) patients, (shortest duration of illness was 4 month), 10 of them were male. Majority (73.33%) above 2 years old. Barretts esophagus

(BE) was reported in 2 (4.1%). out of 15 patients with esophageal stricture (M/F 1/1) both of them above 2 yr old. Three (M/F 2/1) out of 48 cases of GERD are secondary GERD all due to pyloric stenosis.

Conclusion:

In children GERD and its complication (stricture) is more common than adult, and it has distinct presentation from that in adults. In children, stricture formation may take only a few months to develop after the onset of reflux symptoms. Not like their adult counterparts, H.H is a less common finding in the children with GERD as well as in association with stricture.

Gastroesophageal reflux (GER) is defined as the retrograde movement of gastric contents into the esophagus; it is a physiologic process that occurs in everyone, young and old, particularly after meals.¹ Gastroesophageal reflux disease (GERD) in children is defined as the failure of the anti-reflux barrier, which include the angle of His, and lower esophageal sphincter mechanism.

² The most useful classification of GER divides the spectrum of reflux into 3 categories

1-Functional GER: which represents a benign condition that does not require evaluation or treatment. This does not cause inflammation, lead to long term complications, or affect growth and development.

2-Pathological GER: in contrast, necessitates intervention. This class represents GER with associated complications (e.g., failure to thrive, anemia, esophagitis, Barrett's esophagus, wheezing, apnea, pneumonia, chronic sinusitis).

3-In Secondary GER: some underlying condition causes the retrograde movement of gastric contents. The appropriate treatment may be to address the underlying cause directly (e.g., pyloric stenosis).

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The prevalence of GER depends on age. Approximately 50% of 0-3 month olds have at least 1 episode of regurgitation per day.

This increases to a peak of 67% of infants at 4 months of age. This number drops to approximately 5% of 10-12 month olds.

The sharpest drop occurs around age 6 months, which is associated with the development of improved neuromuscular control and the infant sitting up. However, only 10% of infants (i.e., <12 months old) with GER develop significant complications. Thus, the incidence of GERD is similar in infants, older children, and adults, as suggested by the GER iceberg.¹

Signs and symptoms of gastroesophageal reflux in infants Could be divided into:-

1. Typical which included:- crying/Irritability, poor appetite (feeding resistance) and regurgitation (vomiting less so), abdominal/ chest pain (heartburn), failure to thrive/weight loss, sore throat waterbrash, hematemesis and anemia.
2. Atypical which included:- apnea/bradycardia (particularly preemies), apparent life-threatening events, wheezing/asthma, stridor (subglottic stenosis) ,recurrent pneumonia, chronic cough , Sandifer's syndrome , hoarseness/laryngitis otalgia and sinusitis.

Based on data from the 1950's, the course of untreated GERD in infants and children has been well documented. GERD resolved by 2 years of age in 60% of patients, but persisted until 4 years of age in 30%. Of those, ½ developed esophageal strictures, and the other ½ died from malnutrition.¹

That said, chronic complications of GERD typically seen in adults are relatively uncommon in children which include the following:

Esophageal stricture:-

The incidence due to GERD in children is unknown; it usually presents as dysphagia to solids and is often accompanied by Barrett's esophagus. Typically, these patients do not complain of reflux symptoms, and are thought to have experienced silent reflux. In children, stricture formation may take only a few weeks after the onset of reflux symptoms, so prompt treatment is important

Barrett's Esophagus:-

Again, the incidence in children is unknown. However, metaplasia that develops in childhood likely carries over into adulthood, continuing to increase in density until about age 40.

Adenocarcinoma:-

Exceedingly rare. Fewer than a dozen cases of esophageal adenocarcinoma have been reported worldwide in children.¹

This study was carried to try and throw light on the magnitude of this condition in Iraq with clinical and endoscopic description compared to the Iraqi adults cases

Patients and Methods:

During the study period January 2003-November 2005, children aged 6 month-12 years referred to the Gastroenterology Teaching Hospital – Medical city, Baghdad for upper gastrointestinal endoscopy with symptoms of repeated vomiting ,epigastric pain ,dysphagia,haematemesis and melaena were included in this study.

An upper endoscopy was carried out for every patient using Olympus Videoendoscope GEXQ 230. The procedure was carried under general anaesthesia taking care to record the distance of squamocolumnar junction(SCJ) from incisor teeth distances and presence of hiatus hernia using centimeter markings on the endoscopic shaft. The extent and severity of esophagitis are assessed using modified Savary-Miller classification of esophagitis.³

Grade I : Single or multiple erosion, on a single fold .

Grade II : Multiple erosion affecting more than one longitudinal fold .

Grade III : Circumferential erosion.

Grade IV : Ulcer(s), stricture(s). stricture, permanent narrowing of the lumen,(used for a short less than 1 cm non-distensible segment in tubular organ) and ulcer.⁴

Result:

Out of 132 patients included in this study forty eight patients with endoscopic GERD(i.e, erosive reflux esophagitis) were identified. They were 29 male and 19 female (M/F 1.5:1),of age range 6 month-12 yeas (mean 6.25yr). The shortest duration of illness was 2 weeks .More than half of these cases (31) had repeated vomiting as a main problem, followed by

hemataemesis and melaena 13, epigastric pain and growth retardation 9, dysphagia 2 and 2 cases with chronic diarrhea and one case presented as Hirschsprung's disease (Table 1). According to the modified Savary-Miller classification, it was found that 18 patients had grade I, 8 grade II, 7 grade III and 15 patients with grade IV esophagitis (stricture). Hiatus hernia (sliding) was seen in 8 (M/F 5/3) of total patients with GERD. Four (26.6%) of them associated with stricture (Table 2).

Among the 48 patients included in the study 15 (31.25%) patients with stricture were diagnosed, shortest duration of illness was 4 months, 10 of them were male. Majority (73.33%) of them above 2 years age. According to the age patients were subdivided into 2 subsets (Table 3). The

first group those age 2 years and below in which the number of cases with GERD are 14 (29.16%) (M/F 9/5). The second group above 2 years, the number of cases with GERD are 34 (70.83%), (M/F 20/14). In first group 4 out of 14 (28.5%) cases had stricture and 11 out of 34 (30.9%) cases in the second group. Barrett's esophagus (BE) was reported in 2 (4.1%) out of 15 patients with esophageal stricture (M/F 1/1) both of them above 2 yr old. This study shows 3 (M/F 2/1) out of 48 cases of GERD are secondary GERD all due to pyloric stenosis.

Table (1) Clinical Feature of Study group

Endoscopic finding	No	%	Gender		Mean age yr
			M	F	
GERD grade I	18	37.5	7	11	7.5
GERD grade II	8	16.6	5	3	6.5
GERD grade III	7	14.5	4	3	6
GERD grade IV	15	31.25	10	5	5.7
Hiatal Hernia	8	16.6	5	3	4.3

Table (2) Endoscopic finding of study group

Symptom	No	%	Gender	
			M	F
Repeated Vomiting	31	64.5	23	8
Hematemesis+Melena	13	27.08	8	5
Dysphagia	2	4.1	0	2
Epigastric pain+Growth retardation	9	18.75	2	7
Chronic Diarrhia	2	4.1	0	2
Others	1	2.08	0	1

IV =Stricture

Table (3) Clinical and endoscopic subgroups in relation to age

Variables	Group I (2yr and below)		Group II (above 2 yr)	
	No	%	No	%
Gender	M	9	20	58.82
	F	5	14	41.17
Duration of illness	1.1		6.7	
Endoscopic Finding				
GERD I	5	35.71	13	38.23
GERD II	2	14.28	6	17.64
GERD III	4	28.57	3	8.82
GERD IV	4	28.57	11	32.35
Haital Hernia	3	21.42	5	14.70
Main Symptoms				
Repeated Vomiting	11	78.57	19	55.88
H + melena	5	35.71	8	23.52
Dysphagia	-	-	2	5.88
Growth retardation	1	7.14	2	5.88
Total Number	14	29.16	34	70.83

Discussion :

Out of the 132 child studied with repeated vomiting, haematemesis, melaena, dysphagia and epigastric pain 48 (36.36%) had erosive reflux disease endoscopically. The mean age of study group is 6.25yr (range 6 month – 12 yr)

Bassin asker and Amira Shubber studied 50 adult reflux disease and found 44(88%) to have endoscopic erosion. Comparing the clinical and endoscopic finding in these two groups we find in paediatric presentation repeated vomiting is the main symptoms 64.5% followed by haematemesis and melaena 27.08%, epigastric pain 18.75, dysphagia 4.1% and interestingly chronic diarrhea in 4.1%, while in adult heart burn is the main problem reported in all cases followed by epigastric pain 54.6% belching 18% and dysphagia 18.1%.⁵

Male preponderance is comparable to the finding in adult.⁵ The endoscopic grading of GERD in children is similar to that in adult except that stricture appear more common in children 31.25% while in adult stricture reported in 6%.⁵ The incidence of stricture is more in pediatric age group above 2 years than those below 2

years (22.91%, 8.33% respectively). Erosive reflux esophagitis in general is more common in children than adult in referred patients with dyspepsia (36.36%, 13.68% respectively).^{5,6} This is explained on the basis that our hospital is a tertiary referral hospital . Our data showed that eight (16.6%) children among 48 child had H.H (sliding). Four (8.3%) of them associated with stricture. These data contrast with adults groups, in which it is reported to be 18 (36%) among fifty adult patients, with high prevalence of H.H 66.7% in patients with stricture.^{5,6} This confirmed the observation that H.H which is seen more in association with adult patients with stricture , may contribute to the development of this complication.⁷ Alan Cameron at Myo clinic in his study reported (in adult group) high prevalence (71%) of H.H associated with esophagitis compared to 29% in control group with out esophagitis⁸ , having in mind, 30% of normal population over fifty years had H.H.⁹ Dahms B. B in his study demonstrated esophageal stricture in 5 of the 13 children; non had H.H.¹⁰ Jolley, reported in his study that the

prevalence of GERD is lower in infants with congenital diaphragmatic hernia.¹¹

It is widely acknowledged that BE in adult is an acquired condition resulting from prolonged GERD. BE is rare in children even though GERD occur common in the pediatric age.¹⁰ Taken together these observation based upon the finding in our study, GERD occurs in up one-third(36.4%) of referred dyspeptic children in comparison to 13.4% in adult patient. Two cases (both of them had stricture) of BE reported in children in comparison of 11 cases in adult (four of them had stricture).^{5,6}

Hassall E, in his study describes clinical, endoscopic and histologic finding of BE in 11 children 6-14 years. All had longstanding symptoms of GERD (more than 10 years). Eight of 11 patients had esophageal stricture and 10 of 11 required fundoplication. His clinical expression of BE in children is similar to that in adult, except that stricture appear more common in children.¹²

Briganti V, observed in last 5 years (1999-2004) esophageal stenosis in 10 out 49 children operated for gastroesophageal reflux (mean age 62.9 month, range 12- 156 month). All children under went treatment with H₂ - antagonist and prokinetic agent

followed by esophageal dilation (mean 2.8, range 2-4 cycles) with Savary Gillard dilator till esophagus adequately dilated. Only one patient required anti-reflux surgery, they preferred a Boix-Ochoa fundoplication with extensive transhiatal mobilization of thoracic esophagus. This result in tension free fundoplication and free from recurrences.¹³ Of 15 child with esophageal stricture in our study 7 required dilation with Savary-Gillard dilator (3 cycles for each patient). Results of dilation were satisfactory in 6 patients. Only one child aged 4 years presented with dysphagia, iron deficiency anemia (required multiple blood transfusion), had a past history of repeated vomiting during infancy and early childhood, in which upper gastroscopy revealed grad IV esophagitis with 3 cm H.H, repeated lower esophageal biopsies were negative for BE, required several session (28) of dilation, and lastly referred for anti-reflux surgery. More than two third (11 out of 15) of patients with stricture above 2 years old. Similar

finding were reported by Frederick S. et al.¹ Secondary GER was reported in low percentage 6.25% of total children with erosive esophagitis, all of them due to pyloric stenosis.

In conclusion, children with GERD and its complication (stricture) is more common than adult, and with distinct presentation. In children, stricture formation may take only a few months after the onset of reflux symptoms, which necessitate prompt treatment. Not like adult, H.H is a less common finding in children with GERD as well as in association with stricture.

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