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Is peptic ulcer a common cause of upper gastrointestinal symptoms?

Received: 25 September 2000 and in revised form: 22 February and 28 March 2001 / Accepted: 29 March 2001

Abstract The aim of the study was to investigate retrospectively a cohort of children with peptic ulcer disease during a period that covers the recent changes in diagnosis and management of the disease. Over a period of 9 years, 2550 children underwent upper gastrointestinal endoscopy for various reasons. All children, in whom a diagnosis of primary peptic ulcer was established, were included in the study. Previous and current medical history, family history, endoscopic and histological outcome were evaluated and the children were regularly followed-up on an out-patient basis. Primary peptic ulcer was diagnosed in 52 (10 gastric and 42 duodenal, 2%) out of 2550 children. The median age of children with gastric ulcer was 6.5 years, whereas of those with duodenal ulcer was 10.5 years ($P = 0.04$). With regard to clinical symptoms no significant difference was found between children with and without ulcer. The prevalence of Helicobacter pylori infection was significantly higher in children with duodenal ulcer (62%) compared to those with gastric ulcer (20%; $P < 0.001$). At first follow-up visit, 1 month after the end of treatment, 19 symptomatic children underwent a repeat endoscopy, which showed ulcer healing in 95% and failure in H. pylori eradication in 27%. During the long-term follow-up (median 3.5 years), six children became symptomatic. Two of them had duodenal ulcer associated with positive H. pylori.

Conclusion Peptic ulcer disease is an uncommon disorder in childhood with non specific clinical features; it seems that efficient treatment and successful Helicobacter pylori eradication result in clinical improvement and cure as well as in long-term healing of ulcers.

Key words Long-term follow-up · Helicobacter pylori · Paediatric endoscopy · Peptic ulcer

Introduction

The widespread application of endoscopic techniques, the identification of Helicobacter pylori and the use of new pharmacological agents have shown a dramatic impact on the clinical course of peptic ulcer disease over the last decade [1, 8, 14, 18]. Although peptic ulcer is considered uncommon in childhood, the new diagnostic tools have contributed to a more efficient documentation and management of the disease [2, 5, 10, 20]. However, data concerning peptic ulcers in children under the new circumstances are limited and studies are difficult to perform due to the low prevalence of the disease [8]. The aim of this study was to investigate a cohort of children with peptic ulcer and to present the experience over a
period that covers the recent changes in diagnosis and management of the disease.

Subjects and methods

Over a period of 9 years, between January 1990 and January 1999, a total of 2550 children aged from 2 months to 14 years underwent upper gastrointestinal endoscopy for various reasons. These children were admitted to the 1st Paediatric University Clinic in ‘Aghia Sophia’ Children’s Hospital of Athens. Upper gastrointestinal endoscopy was performed by three paediatric gastroenterologists using an Olympus GIF-XP20 endoscope. Children were examined under general anaesthesia or sedation using diazepam or midazolam intravenously. Primary peptic ulcer disease was diagnosed in 52 children. Patients without a predisposing factor such as prior ingestion of ulcerogenic drugs or acute stress of a severe underlying disease were considered to have primary ulcer disease. Children with superficial mucosal ulcerations or erosions, characteristics of severe gastritis, were not included in the study. The patients’ medical records were studied retrospectively and detailed information about presenting symptoms and duration, previous or underlying diseases and family history for peptic ulcer was collected. In order to investigate whether there is any discriminating symptoms that could identify children with peptic ulcer, an analysis was done between the group of children with primary peptic ulcer and the group of children that underwent endoscopy for upper gastrointestinal symptoms which did not reveal ulcer.

Biopsies were taken for routine histology and identification of H. pylori. These included one duodenal, at least three antral (for histological assessment, rapid urease test and culture) and two oesophageal biopsies. Children were considered H. pylori infected if histology and/or culture were positive. Both the endoscope and the biopsy forceps were cleaned and disinfected with glutaraldehyde after each use. Informed consent was obtained from the patients’ parents in all cases.

Histology

The biopsy samples were fixed in 10% neutral formalin, embedded in paraffin and sections were stained with haematoxylin-eosin and modified Giemsa or Masson trichrome and assessed under light microscopy. All histological analyses were performed by a single histopathologist who assessed the presence and the degree of inflammation and the presence or absence of H. pylori. Classification of gastritis was according to the Sydney system [13]. The grading of oesophagitis, gastritis or duodenitis was classified as mild, moderate and severe according to the severity of inflammation using the Carrick code [3].

Treatment and follow-up

Patients with ulcer were treated with H2-receptor antagonists or proton pump inhibitors for 4 to 6 weeks. Colloid bismuth subcitrate or omeprazole combined with antibiotics, depending on the treatment protocol in use at the time of the diagnosis, were given where H. pylori was identified in gastric biopsies. Children were clinically reassessed 1 month after the completion of treatment. All symptomatic children were further investigated by upper gastrointestinal endoscopy after parental consent was obtained. The patients attended regularly (at least every 6 months) the Gastroenterology Out-Patient Clinic for follow-up.

Statistics

Bivariate analysis was done either by the chi-squared or two sample t-test for nominal or continuous variables respectively. P values of <0.05 were accepted as significant.

Results

Primary peptic ulcers were diagnosed in 52 (2%) out of 2550 children, 35 boys and 17 girls (2:1). Ages ranged from 1.5 to 15 years with a median age of 10.5 years. Ten gastric and 42 duodenal ulcers were diagnosed. The median age of children with gastric ulcer was 6.5 years and 10.5 years in those with duodenal ulcer (P = 0.04). The duration of symptoms ranged from 1 day to 11.5 years (median 1.5 years). A total of 25 children (48%) had a first degree relative with peptic ulcer disease.

The presenting symptoms were epigastric pain in 31 (60%), peri-umbilical pain in three (6%), gastrointestinal bleeding in 17 (33%) and vomiting in six (12%). The pain was associated with nocturnal awakening in six (12%), while it was relieved by meals in 2 (4%) out of 52 patients. No significant difference was found regarding initial clinical manifestations between children with ulcer and those whose endoscopy did not reveal ulcer (Table 1).

H. pylori was identified in 28 (54%) out of 52 gastric biopsies performed in children with peptic ulcer disease. The main characteristics for children with peptic ulcer, H. pylori-positive or -negative are shown in Table 2. The H. pylori-positive children were older than the negative ones (P < 0.001). Only two children (20%) with gastric ulcer were H. pylori-positive. Conversely, in 26 cases (62%) with duodenal ulcer, H. pylori was identified on the gastric mucosa. The age of H. pylori-positive children with duodenal ulcer ranged from 7 to 14 years (mean 11.7) while the negative ones ranged from 3 to 12 years (mean 8.9), (P = 0.0008). No significant difference in the incidence or character of the presenting symptoms between H. pylori-positive and -negative groups was found. A positive family history of peptic ulcer disease was reported in 57% of H. pylori-positive and in 37% of H. pylori-negative patients (P > 0.05). Gastritis was the most prominent histological finding in the H. pylori-positive group (96%), while duodenitis and oesophagitis were more common in the H. pylori-negative group (Table 3).

Out of 52 children, 33 (63%) were asymptomatic after the completion of treatment. In 19 symptomatic patients (4 H. pylori-negative, 15 H. pylori-positive) with intermittent abdominal pain and/or vomiting, a repeat endoscopy was carried out. In 18 out of 19 patients

| Table 1 Symptoms in children with and without peptic ulcer disease |
|----------------------|-------------------|-------------------|
| Symptoms             | Peptic ulcer (n = 52) | Non ulcer (n = 2498) | P* |
| Epigastric pain       | 60%               | 57%               | 0.66 |
| Peri-umbilical pain   | 6%                | 8%                | 0.80 |
| Bleeding              | 33%               | 21%               | 0.07 |
| Vomiting              | 12%               | 36%               | 0.001 |
| Nocturnal awakening   | 12%               | 8%                | 0.8  |

*Chi-squared test