

# Peptic Ulcer Disease in Children and Adolescents

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## Summary

Peptic ulcer disease (PUD) has been reported to occur in children worldwide, but no information is available for our community. The aim of the study was to report our experience on the pattern of this condition in Saudi Arabian children. The records of all children below 18 years of age who were diagnosed by endoscopy to have PUD over a period of 10 years were analysed. From 1993 to 2002, 24 children out of 521 (5 per cent) who presented with upper gastrointestinal tract (GIT) symptoms were diagnosed by endoscopy to have PUD. All but one (96 per cent) were Saudi nationals, the average age was 15 years (range 5–18 years), and the male to female ratio was 7:1. The commonest presentation was chronic abdominal pain in 15/24 (63 per cent) of the children, followed by vomiting associated with abdominal pain in four (17 per cent). Hematemesis and melena occurred in three (13 per cent), and two children (8 per cent), respectively. There were 20 duodenal (92 per cent) and four gastric ulcers. The primary type was the most common, occurring in 19 (79 per cent) of the children. Histopathology results of antral biopsies were available for 15 children; all of them had antral gastritis. *Helicobacter pylori* organisms were present in 13/15 (87 per cent) of the antral biopsy specimens. In Saudi children, peptic ulcer disease occurs more commonly in boys. It is a rare cause of upper GIT symptoms, but highly associated with *H. pylori* antral gastritis. This study documents a pattern similar to descriptions from other countries.

## Introduction

Peptic ulcer disease (PUD) may be defined as a loss of tissue extending beyond the muscularis mucosa into the submucosa occurring in parts of the gastrointestinal tract that are exposed to hydrochloric acid and pepsin.<sup>1</sup> The development of PUD is thought to result from a disturbed balance between the protective factors represented by the mucosa–bicarbonate barrier and the aggressive forces represented by acid and pepsin.<sup>2</sup> In the pre-endoscopy era, PUD was diagnosed by barium meal and incidence data were difficult to determine because of the number of false-positives and false-negatives. Miller, *et al.* found that 63 per cent of the children who were thought to have PUD by radiology had normal endoscopy.<sup>3</sup> The introduction of endoscopy has increased the ability to diagnose PUD. In one study, the diagnosis of PUD increased three-fold after the introduction of endoscopy.<sup>4</sup> Whether this observation is caused by a true increase in incidence or simply increased awareness and availability of better diagnostic methods is unknown.

Although the pattern of PUD has been reported in children from many parts of the world, a search of the literature revealed two reports in which PUD

was the endoscopic findings, indicating that PUD does occur in Saudi children.<sup>5,6</sup> In this study, we report our experience on the pattern of this condition in children living in Saudi Arabia.

## Materials and Methods

This is a retrospective analysis of all cases of PUD diagnosed by endoscopy in children below 18 years of age at King Khaled University Hospital (KKUH) in Riyadh, Kingdom of Saudi Arabia, over a period of 10 years. Data retrieved from the records included age, gender, nationality, clinical presentation, endoscopy, and histopathology reports. In our hospital, all abnormal histopathology specimens are examined routinely for the presence of *Helicobacter pylori* by either hematoxylin and eosin stain or modified giemsa stain, and the results are recorded in the histopathology report. The epidemiological and clinical characteristics of PUD were analysed using simple descriptive statistics.

## Results

From 1993 to 2002, 24 children out of 521 (5 per cent) who presented with upper GIT symptoms to KKUH were diagnosed by endoscopy to have peptic ulcer disease. All but one (96 per cent) were Saudi nationals, the average age was 15 years (range 5–18 years), and the male to female ratio was 7:1. The

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commonest presentation was chronic abdominal pain in 15/24 (63 per cent) of the children, followed by vomiting associated with abdominal pain in 4 (17 per cent). Hematemesis and melena occurred in three (13 per cent) and two children (8 per cent), respectively. None of the children presented with simple vomiting. There were 20 duodenal (92 per cent) and only four gastric ulcers. Primary PUD was the most common occurring in 19/24 (79 per cent) of the children. Histopathology results of antral biopsies were available in 15 children; all of them had antral gastritis. *Helicobacter pylori* organisms were present in the antral biopsy specimens of 13/15 (87 per cent).

### Discussion

Peptic ulcer disease is generally considered a rare cause of gastrointestinal complaints in children. In a study from Australia, Mitchell, *et al.*<sup>7</sup> reported 12 cases of PUD in 227 (5.3 per cent) of the children who underwent endoscopy for upper GIT complaints; whereas in a report from Greece, Roma, *et al.*<sup>8</sup> found 52 primary PUD in 2550 (2 per cent) of the children who underwent upper GIT endoscopy for various reasons. The 5 per cent prevalence of PUD in this study is clearly within the range reported by others.<sup>7,8</sup> These data suggest that even in the endoscopy era, PUD remains a rare cause of upper GIT symptoms in children worldwide. The predominance of PUD in males in this study is consistent with patterns reported in the literature.<sup>9</sup> Our finding of more duodenal (92 per cent) than gastric ulcers is similar to patterns reported by most authors. In reports from several countries, the percentages of duodenal ulcers were 91 per cent, 81 per cent, 75 per cent, and 60 per cent in the USA, Greece, Australia, and Cameroun, respectively.<sup>7-11</sup> However, an older study from the USA reported a ratio of gastric ulcer to duodenal ulcer of 17:11.<sup>12</sup>

Peptic ulcer disease in children has been classified as primary and secondary. The majority of PUDs in young children are secondary to systemic illnesses (such as head trauma, extensive burns, sepsis), or to drug ingestion (non-steroidal anti-inflammatory agents). These ulcers do not usually recur. By contrast, most duodenal ulcers in older children and adolescents are primary with a relapsing tendency.<sup>13,14</sup> In the present study, primary PUDs accounted for 79 per cent of the cases, presumably because most of our patients are older children and adolescents.

The role of *H. pylori* in primary PUD has evolved over the last two decades. At present, it is generally accepted that *H. pylori* causes gastritis and PUD in most children and adults. Our finding of a prevalence of 87 per cent of *H. pylori* antral gastritis in children with PUD is in agreement with the experience of others.<sup>13,14</sup> The clinical implication of this finding was

considerable. The addition of antibiotics to the regimen of duodenal ulcer therapy (triple therapy) has improved the response to treatment and reduced recurrences.<sup>15-18</sup> However, it is well recognized that not all the primary PUDs are caused by *H. pylori*. The prevalence of non-*H. pylori*-associated PUDs has been reported to vary from 73 per cent to 20 per cent. The 13 per cent prevalence of non-*H. pylori*-associated PUDs in our patients is lower than that reported by most authors.<sup>10,19</sup>

The clinical features of PUD in children are generally non-specific and consist of a combination of vomiting, abdominal pain, hemorrhage or perforation. In fact, the clinical presentation is age-related. In infants, PUD usually presents with a complication such as hemorrhage or perforation, whereas in preschool children vomiting predominates and in older children and adolescents, recurrent epigastric abdominal pain is the usual presenting clinical feature. In this study, the high proportion of children presenting with abdominal pain alone (63 per cent) or associated with vomiting (17 per cent), is similar to patterns reported from other countries,<sup>20</sup> and consistent with the age group of our patients, which was largely in the older children and adolescent age group.

In conclusion, in Saudi children, PUD occurs more commonly in boys. It is a rare cause of upper GIT symptoms, but highly associated with *H. pylori* antral gastritis. Such a pattern is similar to descriptions reported from other countries.

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