

***Helicobacter Pylori*: Prevalence, Clinical and Endoscopic Findings in Children who Underwent Upper Endoscopy for Abdominal Ailments**

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Summary

A total of 97 children aged 1 month to 16 years (mean 6.6 years) had upper endoscopies performed in Paediatric Institute, Kuala Lumpur Hospital between January 1997 and December 1999 for various gastrointestinal symptoms. Of these 70 children were tested for *Helicobacter pylori*. The four most common indications for upper endoscopy were recurrent abdominal pain, upper gastrointestinal bleeding, epigastric pain and vomiting.

The overall prevalence of this infection in this heterogeneous group of symptomatic children was 10% (7/70). This study shows that *H.pylori* positivity in a routine endoscopy population is low and does not appear to be associated with specific symptoms.

Key Words: *Helicobacter pylori*, Upper endoscopy, Children

Introduction

Helicobacter pylori (*H.pylori*) gastritis, in the absence of duodenal ulcer, does not appear to be associated with specific symptoms¹. Children with *H.pylori* gastritis cannot be distinguished from uninfected children on the basis of initial symptoms. Recent paediatric consensus conferences recommend testing for *H.pylori* infection by endoscopy only those patients presenting symptoms suggestive of organic origin¹. There are a number of epidemiological studies on the prevalence of *H.pylori* infection in asymptomatic children^{2,3} including one Malaysian

study⁴ but no Malaysian study on the prevalence in children with gastrointestinal symptoms. The aim of this study is to examine the prevalence of *H.pylori* in the children who underwent endoscopy as well as the clinical and endoscopy variables associated with *H.pylori* infection.

Materials and Methods

All children admitted to the paediatric medical wards in the Paediatric Institute and requiring upper gastrointestinal endoscopy for abdominal ailments during a 3-year period between

January 1, 1997 and December 31, 1999 were evaluated. Recurrent abdominal pain was defined as "at least discrete episodes of abdominal pain of sufficient severity interrupt normal activities that occur over a period of 3 or more months (Apley's criteria). All had no prior ulcer-healing medications nor were they on antibiotics or proton-pump inhibitors. Endoscopy was performed with an Olympus GIF-N30 or GIF-P20 fiberoptic endoscopic (Olympus, Tokyo, Japan). Based on the macroscopic appearance, findings were noted as follows: antral gastritis, body gastritis, nodular gastritis, duodenitis, oesophagitis, haemorrhagic gastritis or just erosions.

The *H.pylori* status was assessed using finger-prick serology (Helipack, Abbott Laboratories), rapid urease test on gastric biopsy, histological assessment for *H.pylori* colonisation and culture. A positive result in any of the investigation was considered to indicate infection by *H.pylori*.

The antral biopsy was immediately placed in a 'home-made' rapid urease solution. A positive test result was made if there was a change in the colour of the solution from orange to red. The maximum time duration between insertion of biopsy into the urease test medium and reading of the test was 24 hours. Histological examination was done using Haematoxylin and Eosin stain followed by Warthin-Starry stain in equivocal and positive specimens.

The prevalence of *H.pylori* infection was analysed in relation to sex, age, race, symptoms, indication for endoscopy, endoscopic appearance and type of diagnostic test done.

Results

A total of 97 patients aged 1 month to 16 years (mean 6.6 years) had 106 upper endoscopies performed during the 3-year study period. Of these, 70 children (42 boys, 28 girls) were investigated with at least one of the tests for detection of *Helicobacter pylori*. There were 43

(61.4%) Malays, 16 (22.9%) Chinese, 8 (11.4%) Indians and 3 (4.3%) of other races. Of these 70 evaluable patients, 23 had endoscopy done for recurrent abdominal pain making it the commonest indication for endoscopy. Other indications included upper gastrointestinal bleeding (20/70; 28.6%), epigastric pain (12/70; 17.1%) and vomiting (7/70; 10%). *H.pylori* was detected in 7 out of 70 children giving an overall prevalence of 10%. Of these 7 patients, 1 was an infant, 2 were below 5 years old and 4 aged from 5 - 12 years old. Five were boys and 2 were girls. The racial distribution was as follows: 5 (71.4%) Malays, 1 (14.3%) Chinese, 1 (14.3%) Indian, reflecting the racial distribution of all children seen in the Paediatric Institute, Kuala Lumpur Hospital.

Only 1 patient with recurrent abdominal pain (4.3%) tested positive for *H.pylori*. Table I shows the *H.pylori* prevalence in relation to indication for upper endoscopy.

Evidence of antral gastritis was observed in 32 patients, 4 of whom (12.5%) were positive for *H.pylori*. Nodularity was noted in 4 children and 1 tested positive for *H.pylori*. The organism was found on the histopathological examination of the gastric biopsy of 1 patient.

In 6 of 70 patients, *H.pylori* was identified on the gastric mucosa with rapid urease test. Thirty-three children had serology done using finger-prick method and 5 were positive. Four patients tested positive for both rapid urease test and serology.

Table I
***H.pylori* Prevalence in Relation to Indication for Upper Endoscopy**

| Indication | Frequency of <i>H.pylori</i> Infection (%) |
|------------------------------|--|
| Recurrent abdominal pain | 1/23 (4.3%) |
| Upper gastrointestinal bleed | 2/27 (7.4%) |
| Epigastric pain | 3/14 (7.1%) |
| Recurrent vomiting | 1/12 (8.3%) |

Discussion

The infection is mostly acquired before 5 years old. It is a major cause of antral gastritis and duodenal ulcer in children⁵. *H.pylori* has been found in 92% of children with duodenal ulcers and 25% with gastric ulcers⁶. In this instance, the relationship between organism and abdominal pain is clear. However, the majority of patients infected do not have peptic ulcer disease. Boey *et al*⁴ found that 10.3% of 514 healthy urban asymptomatic Malaysian children (mean age 5.9 years) who had blood tested for *H.pylori* IgG using lab-based ELISA were positive for *H.pylori*. A study similar to ours conducted in Lima, Peru showed that children with recurrent abdominal pain, endoscopic findings of nodulo-gastritis and histologic findings of chronic active gastritis were infected more commonly than age-matched children endoscoped for other indications but there was no statistical significance between infected and non-infected children investigated because of recurrent abdominal pain regarding the duration or type of pain or other symptoms⁷.

In unselected samples, infected children do not report abdominal pain more often than age-matched non-infected children⁸. Histological examination of their gastric mucosa is likely to reveal a degree of gastritis but its significance in terms of symptoms remains unclear.

Recent studies highlight that the presence of *H.pylori* could be assessed on the basis of the macroscopic pattern only, in particular nodularity. Three types of lesions on endoscopy previously associated with the presence of *H.pylori* are nodules, erosions and red patches in the antrum⁹. In the presence of nodules and/or erosions, the existence of *H.pylori* infection is practically the norm. Nodularity showed the highest positive predictive value in detecting the *H.pylori* presence.

This study shows that *H.pylori* is not a common cause of recurrent abdominal pain in this endoscopic population. The prevalence of *H.pylori* infection in this heterogenous group of children who were subjected to upper endoscopy is low and similar to the seroprevalence in asymptomatic children.

Current evidence suggests no association between *H.pylori* infection and recurrent abdominal pain in children. The evidence to date indicates that routine investigation for *H.pylori* infection in children who present with the classical symptoms of recurrent abdominal pain based on Apley's criteria is not warranted¹⁰.

Based on our results, one might consider treating a child with recurrent abdominal pain and positive serology for *H.pylori* without further work-up and only perform additional investigations when anti *H.pylori* therapy fails to resolve the complaints, This was also shown in other clinical studies^{11,12,13}.

Endoscopy is not necessary in the initial work-up to detect *H.pylori* infection in children with recurrent abdominal pain. According to this proposition, endoscopy of the upper gastrointestinal tract remains indicated in children if the non-invasive tests for *H.pylori* are negative in the absence of a diagnosis or if symptomatology persists despite treatment.

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