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Annotations

Helicobacter pylori and gastrointestinal symptoms

Helicobacter pylori is a Gram negative spiral organism which colonises the gastric mucosa in humans. *H pylori* is the major cause of chronic gastritis in children and adults.^{1–3} Furthermore, *H pylori* colonisation of the gastric mucosa determines the natural history of duodenal ulcer disease. Primary duodenal ulcers do not recur after eradication of *H pylori* unless the bacteria reinfects the gastric mucosa.^{4 5} Confusion exists as to whether or not *H pylori* associated gastritis is a cause of symptoms in the absence of duodenal ulcer disease. Recurrent abdominal pain and non-ulcer dyspepsia are difficult conditions to define as many patients have imprecise symptoms. Adult gastroenterologists have been seeking an association between *H pylori* and non-ulcer dyspepsia. Paediatricians are anxious to study the significance of *H pylori* infection and chronic gastritis in recurrent abdominal pain.

***Helicobacter pylori* and symptoms in adults**

There is a high prevalence of *H pylori* infection in asymptomatic adults.⁶ This is especially true in lower socioeconomic groups and in underdeveloped countries.^{6–8} Seroprevalence increases with age.⁸ Up to 50% of the population in industrialised nations may be infected by the fifth decade and many of these are asymptomatic.⁶ In a population based study in Norway, Bernersen *et al* found that 36% of a group of asymptomatic adults who underwent endoscopy had *H pylori* colonisation of the gastric mucosa.⁹ In India, Katelaris *et al* determined that 97% of subjects were colonised by *H pylori* in a population based study.¹⁰ There was an association in their study between symptoms and the presence of peptic ulcer disease but there was no association between symptoms and *H pylori* colonisation of the gastric mucosa or gastritis. Parsonnet *et al* have found that abdominal pain occurs with equal frequency in *H pylori* colonised and - non-colonised individuals.¹¹

Acute infection of adults with *H pylori* is associated with symptoms such as bloating, vomiting, anorexia, and flatulence.^{12 13} However these symptoms subsequently disappear despite on-going infection and associated chronic gastritis.¹³

Studies in adults who have symptoms consistent with non-ulcer dyspepsia have not provided evidence to support a role for the organism in causing this condition. Early

studies suggested that the prevalence of *H pylori* associated gastritis was higher in patients with non-ulcer dyspepsia than in control subjects. However subsequent studies have shown that the prevalence of infection in non-ulcer dyspepsia is the same as in age matched controls. It is not possible to differentiate adult patients with non-ulcer dyspepsia who are colonised by *H pylori* from those patients who are not.¹⁴

Several studies have attempted to document relief of symptoms in patients with non-ulcer dyspepsia after treatment of *H pylori* associated gastritis. Loffeld *et al* showed that clearing of *H pylori* and resolution of gastritis using a bismuth preparation resulted in an improvement of symptoms.¹⁵ However a similar improvement was also present in patients treated with a placebo who had no change in their *H pylori* status or in the severity of gastritis.¹⁵ In Nigeria Holcombe *et al* also found that while symptoms improved in patients with non-ulcer dyspepsia treated with a bismuth preparation, the improvement did not relate to clearance of *H pylori*.¹⁶ Several other groups have demonstrated that symptoms improve in *H pylori* colonised patients treated for gastritis irrespective of whether or not *H pylori* is cleared.^{14 17 18} These studies suggest that bismuth preparations may have a beneficial effect on symptoms of dyspepsia unrelated to the clearance of *H pylori*.

Symptoms in children

H pylori colonisation of the gastric mucosa is always associated with antral gastritis in children.^{2 3} If *H pylori* gastritis is associated with specific symptoms, these symptoms should be easier to identify in children than in adults because of the low prevalence of infection among children in developed countries. Furthermore, causes of gastric symptoms, such as smoking, alcohol, and non-steroidal anti-inflammatory drug use are generally not confounding variables in children.

There is no evidence to show that *H pylori* gastritis is a cause of abdominal pain in children. Children with *H pylori* associated gastritis are often asymptomatic.^{7 19} The clustering of *H pylori* infection within families also suggests that the infection is not associated with specific symptoms.³ Fiedorek *et al* studied 245 asymptomatic children for evidence of *H pylori* and determined that 30% of them were colonised.⁷ More recently Blecker *et al* investigated

466 asymptomatic children for evidence of *H pylori* infection using a *H pylori* specific serological response.¹⁹ They demonstrated a rising prevalence of *H pylori* infection with increasing age.

Glassman *et al* assessed the presence of abdominal pain and vomiting in children undergoing upper endoscopy. These symptoms did not differentiate children with *H pylori* colonisation of the gastric mucosa from those who were not colonised.²⁰ Mahony *et al* similarly found that the presence of epigastric pain and vomiting did not discriminate between children with *H pylori* gastritis and those with a normal gastric mucosa.²¹ Recently, in an attempt to avoid observer bias, Reifen *et al* documented symptoms in all children presenting for upper gastrointestinal endoscopy and subsequently determined their *H pylori* status.²² *H pylori* infected children could not be differentiated from those who were not infected on the basis of their presenting symptoms.

Fiedorek *et al* investigated 20 children with recurrent abdominal pain using both the ¹³C urea breath test and serology. Only two patients were colonised by *H pylori*.²³ In a prospective study the authors then investigated seven children with recurrent abdominal pain and none had *H pylori* colonisation as determined by gastric biopsy or by the urea breath test.²³ Similarly, in Holland the prevalence of *H pylori* specific antibodies in children with recurrent abdominal pain was similar to that in asymptomatic children.²⁴

The evidence supporting an association between *H pylori* gastritis and recurrent abdominal pain is based on a few studies in which the authors have reported an improvement in symptoms after treatment with bismuth containing compounds and antibiotics. Oderda *et al* treated *H pylori* gastritis in children who had presented with recurrent abdominal pain.²⁵ The majority of these children had resolution of their symptoms after the eradication of *H pylori*. However while *H pylori* gastritis recurred in 73% of these children, symptoms recurred in only 13%. This suggests that the placebo effect of the treatment may be very significant. De Giacomo *et al* also reported an improvement in symptoms in children after clearance of *H pylori* infection, although no details were given as to how the improvement was measured.²⁶

In examining the potential impact of *H pylori* eradication on symptoms it is important to distinguish between patients with duodenal ulcer disease and those with gastritis alone. An early study in children found that *H pylori* eradication was associated with an improvement in symptoms in children who had duodenal ulcer disease but not in those with gastritis alone.²⁷ Katelaris *et al* also found this association in adult patients.¹⁰ This implies that the beneficial effect of *H pylori* eradication may be due to resolution of the duodenal ulcer disease.

The evidence to date strongly suggests that in the absence of duodenal ulcer disease *H pylori* infection is not an important cause of symptoms in children. Should *H pylori* be treated in children without peptic ulcer disease? In order to answer this question attention will have to be focused on the possible association between early colonisation by *H pylori* and the subsequent development of gastric cancer.²⁸ At present the evidence suggests that eradication of *H pylori* in patients without duodenal ulcer disease is unnecessary. The enormous body of evidence, however, suggests that this organism has an important role in the pathogenicity of duodenal ulcer disease in adults^{4,5} and children.^{29,30} Eradication of *H pylori* should now be

considered as a major part of the treatment of duodenal ulcer disease.

STOBHAN GORMALLY
BRENDAN DRUMM

Department of Paediatrics,
University College Dublin,
The Children's Research Centre,
Our Lady's Hospital for Sick Children,
Crumlin, Dublin 12,
Republic of Ireland

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