

Characterization of *Helicobacter pylori* infection in children and adolescents in an ambulatory service

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Helicobacter pylori infection is widespread, particularly in developing countries, and plays a vital role in acid peptic disease.^b

Helicobacter pylori, under certain clinical situations, presents a very varied evolution, which includes a broad spectrum, from chronic superficial gastritis to gastric cancer, and includes chronic atrophic gastritis, gastric ulcer, duodenal ulcer, and gastric lymphoma of B cells of the mucosa-associated lymphoid tissue (MALT lymphoma) in the infected patient. [1, 2, 3] This strong association of *Helicobacter pylori* with gastric cancer has allowed it to be declared by the WHO as a class I carcinogen. [3] Most of the population world is infected with *Helicobacter pylori*. People generally acquire the infection in childhood, which usually persists throughout life. In children, the prevalence of *Helicobacter pylori* infection varies between 10-80% in different populations worldwide. By ten years of age, more than 50% of the world's children are infected. Therefore, identifying the transmission mechanisms in this age group is of fundamental importance. [4, 5]

Objectives

- (1) To know the prevalence and some clinical, epidemiological data for describing the endoscopic findings (erythematous gastritis, nodular and duodenal ulcer) and relate them with the histological findings.
- (2) To describe the association among the histological degrees of chronic gastritis and the positivity of the rapid urease test, and the presence of *Helicobacter pylori* according to histology and identifying by *Helicobacter pylori* with age the number of patients with chronic antral gastritis and duodenal ulcer.

Methods

A prospective, descriptive study was carried out during three years. A survey of symptoms and a physical examination was made to the patients and/or parents. Panendoscopy was performed with prior informed consent, two antral mucosa biopsies for rapid urease test, and a histopathological study (hematoxylin-eosin and Giemsa) to determine the degree of gastritis and the presence of *Helicobacter pylori* according to the Sydney system. Infection was demonstrated by one of the methods.

Results

196 patients among 7-18 years (mean 14.6) were selected of 471 (41.6%). 53% were female, and 59.7% were between 10 and 14 years old. By endoscopy, 49.5% had antral erythematous gastritis, 36.8% antral nodular gastritis, and 13.7% duodenal ulcer with associated gastritis. 29.6% had a family history of peptic ulcer, 85.2% of epigastralgia, 46.4% with acidity, 21% with vomiting, and 16.3% with nausea. Concerning the time of evolution to the diagnosis, the group of more than one year prevailed (24.5%), followed by one of 4-6 months (22.4%). All presented chronic gastritis of different degrees: light (34.7%), moderate (37.2%), and severe (28.1%), with *Helicobacter pylori* by rapid urease 83.2%, and 93.4% by histology with a coincidence of both methods in 150 (76.5%). The presence of lymphoid nodules was observed in 41.8% atrophies of different degrees (3.06%) and one patient with intestinal metaplasia (0.5%). The presence of chronic gastritis (59.7%) and duodenal ulcer (55.6%) due to *Helicobacter pylori* predominated in the 10 to 14 years old group. Our results coincide with expectations since it is a population with peptic acid disease.

Discussion

The prevalence of infection rises with increasing age. There are no sex differences in the rate of infection. The prevalence is higher in groups with lower socioeconomic status. The highest frequency was found in the 10 to 14 years old group in our series, which is consistent with the different authors. [4, 5, 6] These data indicate, without a doubt, that infection by this bacterium occupies one of the first places, due to its frequency, among all bacterial infections that affect humankind. [1, 2, 3, 4, 5] *Helicobacter pylori* were more frequently found by histology compared to the rapid urease test. There was a good relationship between the endoscopic findings and the histological findings found. The most significant association of the rapid urease test's positivity and the histology with the endoscopic diagnosis was in patients with duodenal ulcer, followed by antral nodular gastritis, which coincides with most of the authors. [4, 5, 7] *Helicobacter*

pylori infections are common and cause gastroduodenal inflammatory lesions in children and adolescents, particularly antral nodular gastritis. The highest association found of the rapid urease test's positivity was in patients with chronic gastritis degree III, and the highest association found in the histology was in chronic gastritis degree II. There was a significant association of *Helicobacter pylori* by both methods. It is suggested that *Helicobacter pylori* infection is a potent aggressor of the stomach mucosa, and in a study of infected asymptomatic children evaluated two years after diagnosis without having received treatment, progressive mucosal damage was observed, despite the absence of symptoms. It has been reported that the inflammatory infiltrates of polymorphonuclear leukocytes in the gastric mucosa persisted up to two months after the eradication of the bacillus; normal mucosa was observed in most of the patients in the fourth year of follow-up, and lymphoid aggregates were maintained, despite observing normal mucosa for a period of 3 or 4 years. *Helicobacter pylori* infection is frequent in children and adolescents, causing gastroduodenal inflammatory lesions, particularly antral nodular gastritis, an endoscopic indicator of a high degree of bacterial colonization and severe gastritis.

Conclusions

Helicobacter pylori infection is frequent in children and adolescents, causing gastroduodenal inflammatory lesions, particularly antral nodular gastritis. Both diagnostic methods find an essential association of *Helicobacter pylori*. Follow-up by biopsy is recommended, especially for those who continue with chronic infection and have lymphoid nodules due to the risk of presenting B-cell gastric lymphoma of the lymphoid tissue associated with the mucosa (MALT lymphoma) if *Helicobacter pylori* eradication is not achieved. It is recommended to use Giemsa stain, in addition to hematoxylin-eosin, due to its ease of performance and to increase the identification of *Helicobacter pylori*. In developing countries, *Helicobacter pylori* infection is a health problem. The high prevalence of infection makes it necessary to develop public health interventions.

Notes

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- b. Original version of this article is Ref. [8]

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