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CHRONIC GASTRITIS AND Helicobacter pylori IN DIGESTIVE FORM OF CHAGAS' DISEASE

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SUMMARY

Patients with the digestive form of Chagas'disease frequently present chronic gastritis. As the microorganism **Helicobacter pylori** is now accepted as the most common cause of human chronic gastritis, the present work was undertaken to verify a possible relationship between the presence of this bacterium and inflammatory changes of antral mucosa in chagasic patients. Seventeen chagasics, with megaesophagus and or megacolon were studied. Fragments from two different regions of antral mucosa were obtained by endoscopy, fixed in 4% neutral formaldehyde and embedded in paraffin. The sections were stained by haematoxylin and eosin for histology analysis, and by carbolfuchsin for **H. pylori** identification. **H. pylori** was found in 16 (94.1%) chagasic patients, all of them presenting chronic gastritis. Superficial gastritis was seen in 9 (52.9%) while atrophic gastritis was present in 8 (47.1%) patients. **H. pylori** was present on gastric mucosa of 8 (100%) patients with atrophic gastritis and of 8 (88.8%) patients with superficial gastritis. We concluded that the microorganism **H. pylori** should be considered a possible factor connected with the etiopathogenesis of chronic superficial and atrophic gastritis frequently observed in patients with the digestive form of Chagas' disease.

KEY WORDS: Chagas' disease; Megaesophagus; Megacolon; Chronic gastritis; **H. pylori.**

INTRODUCTION

In Chagas' disease (American trypanosomiasis) the intramural nervous system of gastrointestinal tract is affected and in consequence a variable degree of reduction in the number of neurons occurs [11,23].

Therefore, some patients develop megaesophagus and megacolon, the main anatomo-clinical disorders concerning the digestive tract. Stomach, duodenum and small intestine do not show characteristic manifestations even though, they also present variable degree of neuronal depletion. This nervous tissue damage associated to minor degree of secretory and motor disorders of the stomach, which was first named "chagasic gastropathy" in the 50's and 60's [5,18] has been frequently reported [8,15,16,24,25]. In addition, we have often observed chronic gastritis in antral or in antral and oxyntic mucosa of chagasic patients with megaesophagus or megacolon. These gastric inflammatory changes in Chagas'disease are thought to be due to multiple causes such as esophagus-gastrointestinal motility disorders, as duodenogastric reflux, and also those putative causes believed to be the responsible for chronic gastritis in the general population.

Recently, a Gram-negative spiral bacterium, named **Helicobacter pylori**, has been described in association with antral chronic gastritis[12] and it is now accepted as the most important etiologic agent of human chronic gastritis [3,4,9,13]. Therefore, the present work was carried out to study the frequency of this microorganism and antral chronic gastritis in Chagas' disease patients presenting megaesophagus and/or megacolon.

MATERIALS AND METHODS

Seventeen chagasic patients (10 male, 7 female, mean age 50.6 yr, range 27-61 yr), presenting megaesophagus (n = 9), megacolon (n = 2),

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and concomitantly megaesophagus and megacolon (n = 6), confirmed by gastrointestinal X-ray, and presenting positive reaction to the indirect immunofluorescence test for Chagas' disease were studied prospectively, in accordance with the Helsinki declaration.

Endoscopic biopsy fragments from the lesser and greater curvature of the antral mucosa, were collected and fixed in 4% neutral buffered formaldehyde. The fragments were embedded in paraffin and 5 μm thick sections were stained with haematoxylin and eosin (H&E) for histological evaluation and by carbolfuchsin for evaluation of the presence of spiral microorganisms on gastric mucosa [22]. Gastritis was classified according to WHITEHEAD et al [26]. The diagnosis and classification of gastritis were based on the histological pattern of the more severely affected gastric region. Activity of gastritis was based on the presence of numerous polymorphonuclear leukocytes in lamina propria. All sections stained by H&E and by carbolfuchsin were blind examined by two different pathologists and two different bacteriologists, respectively, without prior knowledge of patients complaints and endoscopical findings.

RESULTS

Chronic gastritis was present in all patients studied. Superficial gastritis was diagnosed in 9 (52.9%) while discrete or moderate atrophic gastritis was seen in 8 (47.1%) patients. Active gastritis was observed in 13 (76.5%) patients, 8 (61.5%) with superficial, and 5 (38.5%) with atrophic gastritis (Table 1).

H. pylori was present on antral mucosa of 16 (94.1%) chagasic patients. The microorganisms could be identified in the superficial layer of mucus or adjacent to the gastric epithelial cell surface (Fig. 1). All **H. pylori** positive patients presented superficial (n = 8) or atrophic (n = 8) gastritis. Among the 13 patients with active gastritis 12 (92.3%) were **H. pylori** positive (Table 1).

Table 1
Presence of **Helicobacter pylori** and histology of gastric mucosa in chagasic patients with megaesophagus (n=9), megaesophagus and megacolon (n=6) and megacolon (n=2).

Histology of Gastric mucosa	*H. pylori* +	*H. pylori* -
Atrophic gastritis	8 (5)	0
Superficial gastritis	8 (7)	1 (1)
Normal	0	0
Total	16 (12)	1 (1)

( ) = Gastritis presenting inflammatory activity

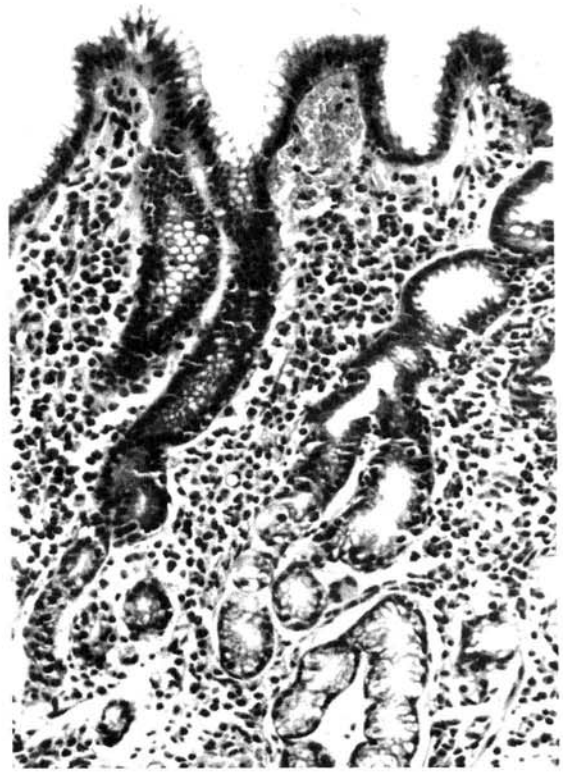

Figure 1. Active chronic atrophic gastritis in a **Helicobacter pylori**-positive patient with Chagas' disease and megaesophagus. Diffuse, dense inflammatory cells infiltration, with numerous polimorphonuclear leukocytes in lamina propria of antral mucosa associated with mild glandular atrophy. H & E staining, x 200 (original magnification).

DISCUSSION

After the recent identification of spiral Gram-negative bacterium **H. pylori** in patients with chronic gastritis[12] there is an accumulating body of evidence that links this microorganisms as cause of antral chronic gastritis in both, adults and children, with and without duodenal ulceration [1, 3, 7, 10, 14, 27] and to acute exudative antral gastritis[2] that could eventually simulate gastric neoplasia[21].

On the other hand, in our experience, the fre-

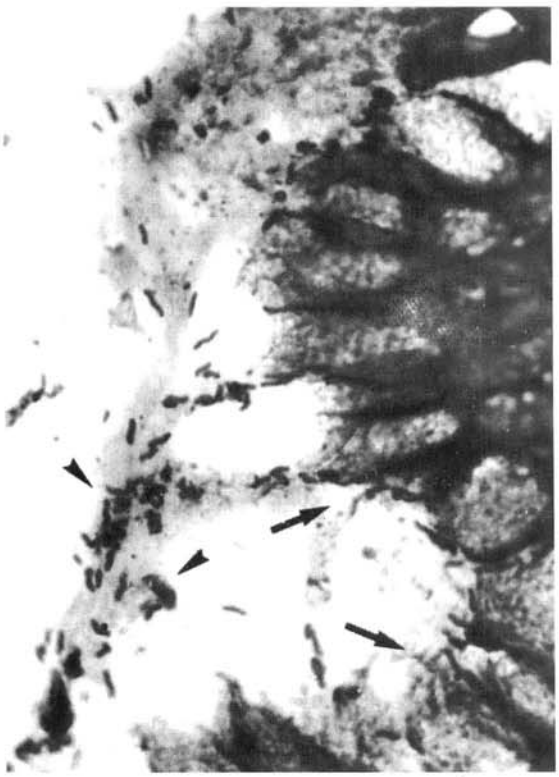

Figure 2. Foveolae of the antral mucosa from a patient with Chagas' disease and megaesophagus. **Helicobacter pylori** clumps immersed in the mucus (head arrows) or adjacent to the epithelial cell surface (arrows) are observed. Carbolfuchsin staining, x 1000 (original magnification).

quency of histologic gastritis observed in chagasic patients presenting megaesophagus and megacolon is higher when compared to non-chagasic dyspeptic patients without anatomical abnormalities of the upper gastrointestinal tract. These previous observations are now confirmed by the present study; moreover, the high frequency of antral gastritis (100%) observed in the present series of chagasic patients was parallel to the frequency (94.1%) of **H. pylori** identified in the histological sections.

Duodenogastric reflux, a cause of a distinct histological type of gastritis[6], has been considered as an important cause of gastric mucosa inflammatory changes in Chagas' disease; however, duodenogastric reflux[25] or just bilious reflux as observed at endoscopy in a series of 600 chagasic patients with megaesophagus[20] did not seem to be significantly different from dyspeptic, non chagasic patients. In addition, the histological pattern of gastritis in Chagas' disease observed herein was similar and consistent to that described as type B and A/B gastritis, usually associated to **H. pylori**[19]. Thus, the gastric inflammatory changes observed in association to the digestive form of Chagas' disease may not be related to duodenogastric reflux; otherwise, it would be related to the microorganism **H. pylori**.

The high frequency of **H. pylori** observed in association with digestive form of Chagas' disease can represent an important factor in the development of chronic gastritis observed in chagasic patients with megaesophagus and megacolon, as it is believed to occur in general population. In addition, Chagas disease patients with megaesophagus and megacolon exhibit low levels of gastric acid secretion both in basal conditions[24] and after administration of insulin[8], histamine[16] or pentagastrin [17]. These abnormalities have been considered to be a primary functional event closely related to gastric intramural denervation since the addition of the cholinergic agonist urecholine restores the sensitivity of the parietal cells to pentagastrin[17]. Whether not gastric secretion imbalance observed in chagasic patients is also linked in anyway to **H. pylori** or to **H. pylori**-associated atrophic chronic gastritis, which presented a relatively high frequency (47%) in our patients, is a matter of further investigation.

RESUMO

Gastrite Crônica e *Helicobacter Pylori* na Forma Digestiva da Doença de Chagas.

Pacientes com a forma digestiva da doença de Chagas frequentemente apresentam gastrite crônica. Tendo em vista que o microrganismo **Helicobacter pylori** é hoje considerado a causa mais comum de gastrite crônica no homem, propôs-se a realização deste trabalho para se verificar a possibilidade de esta bactéria estar também associada com as alterações inflamatórias da mucosa gástrica em pacientes com a forma digestiva da doença de Chagas. Fragmentos de duas regiões diferentes da mucosa antral foram obtidos endoscopicamente de 17 pacientes chagásicos com megaesôfago e ou megacolon. Os fragmentos foram processados rotineiramente para inclusão em parafina e cortes de 5 µm de espessura foram corados pela H & E para análise histológica e pela carbolfucsina para a identificação do **H. pylori**. A bactéria foi encontrada em 16 (94,1%) pacientes, todos eles apresentando gastrite crônica. Gastrite crônica superficial foi ob-

servada em 9 (52,9%) enquanto que gastrite crônica atrófica estava presente em 8 (47, 1%) pacientes. **H. pylori** estava presente em todos os pacientes com gastrite crônica atrófica e em 8 (88, 8%) pacientes com gastrite crônica superficial.

Conclue-se que o microrganismo **H. pylori** deve ser considerado como possível fator ligado à etiopatogênese da gastrite crônica superficial e atrófica frequentemente observadas em pacientes com a forma digestiva da doença de Chagas.

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