HIGH PREVALENCE OF DUODENAL ULCER IN A TERTIARY CARE HOSPITAL IN THE CITY OF SÃO PAULO, SP, BRAZIL

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ABSTRACT – *Context* - In spite of *Helicobacter pylori* infection being the etiological cause of peptic ulcer and its high prevalence in Brazil, the prevalence of peptic ulcer disease has been poorly studied. *Objectives* - To verify the peptic ulcer disease prevalence in patients of a tertiary care hospital. *Methods* - Diagnostic findings from 1,478 consecutive endoscopies were correlated with the urease test results for *H. pylori* infection diagnosis and demographic data in a total of 3,779 endoscopies performed in 2005. The mean age of the patients was 51.14 ± 16.46, being 613 (41.5%) men. *Results* - Peptic ulcer was diagnosed in 494 (33.4%) patients with a mean age of 54.86 ± 14.53, 205 (52%) were men, being 391 (26.5%) duodenal ulcer and 103 (7%) gastric ulcer. Normal endoscopy was found in 272 (18.4%) patients with a mean age of 38.4 ± 15.22, being 49 (18%) men. The comparison of peptic ulcer group with the patients that had normal endoscopy revealed that *H. pylori* infection [$P = 0.005$; OR = 1.70; 95% CI = 1.17-2.47], male gender [$P<0.0001$; OR = 5.53; 95%CI = 3.67-8.34] and older age [$P<0.0001$; OR = 1.08; 95%CI = 1.06-1.09] increased the risk of peptic ulcers. The overall *H. pylori* prevalence was 53% (786). *Conclusions* - Prevalence of duodenal ulcer is high in a Brazilian population that had *H. pylori* infection associated with older age and male gender as important determinants to gastrointestinal diseases outcome. Future prospective studies should confirm these findings.

HEADINGS - Peptic ulcer, epidemiology. Helicobacter infections.

INTRODUCTION

The evidence that *H. pylori* infection was the etiological cause of peptic ulcer disease and that the triple therapy with antibiotics would cure most of the *H. pylori* infections changed peptic ulcer disease conceptually and in practice, as an infectious disease[6]. Since then, the epidemiology of *H. pylori* infection has been studied among Brazilians, being dependent on age, socioeconomic status, and ethnicity, as well as sanitation conditions. High prevalence has been reported in the low income-community in Fortaleza (Northeastern Brazil), with 73.3% positive cases in individuals 11-20 years old, and up to 87% in those over 60 years old[20]. In the city of São Paulo (Southern Brazil) that has high standard of living the prevalence of *H. pylori* was lower (65.6%)[30].

It was estimated that the lifetime risk for ulcer was higher in *H. pylori*-positive subjects, 10%-15% developed ulcer disease during long term follow-up in studies in developed areas of the world. It is unknown whether *H. pylori*-positive subjects in developing countries have similar disease risks[11]. Prevalence of peptic ulcer in Brazil has been poorly studied in spite of the high prevalence of *H. pylori* infection. A report from the South part of Brazil found low prevalence of duodenal ulcer[24], being more frequent in the male gender[15, 24], despite the preponderance of women in the peptic ulcer group in our studied population[14].

As the peptic ulcer prevalence may be decreasing; the purpose of this study was to determine peptic ulcer prevalence in patients that had undergone upper gastrointestinal endoscopy in a tertiary care medical academic center.

METHODS

Study population

This study was approved by the local Ethics Committee. Diagnostic findings and demographic data were searched in the records of 1,478 consecutive gastrointestinal endoscopies in a total of 3,779 that were performed in 2005 for diagnostic purpose of dyspeptic patients at the Endoscopy Unit of the Hospital das Clínicas, a tertiary care academic medical center. The mean age of the patients was 51.14 ± 16.46, being 613 (41.5%) men. Patients with peptic ulcer and those with normal endoscopy were grouped and their demographic data and *H. pylori* status were analyzed, and compared. Ulcer stage was classified according to Sakita[21]. Urease tests of *H. pylori* infection status were based on the results of antrum and corpus

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biopsies placed into the homemade urease test according to a previously described technique[14].

Statistical analysis

The correlation of age, gender, *H. pylori* status, and endoscopic findings were determined by the Student *t*-test, chi-square, and Fischer exact tests using SPSS software version 15.0 for Windows (Chicago, Illinois, USA). A *P* value of less than 0.05 was considered statistically significant. Significant factors were subjected to multivariate stepwise logistic regression analysis, comparing peptic ulcer group with the one that had normal endoscopy.

RESULTS

In 1,478 endoscopies, peptic ulcer was found in 494 (33.4%) patients and normal endoscopy in 272 (18.4%) patients. Among the peptic ulcer group 391 (26.5%) patients with a mean age of 54.86 ± 14.53, being 205 (52%) men had duodenal ulcer. Gastric ulcer was diagnosed in 103 (7%) patients with a mean age of 59.68 ± 15.29, being 56 (54%) men. Patients with normal endoscopy had a mean age of 38.4 ± 15.22, being 49 (18%) men (Table 1).

TABLE 1. Demographic data and *H. pylori* status in 494 patients with peptic ulcer and 272 with normal endoscopy in a total of 1,478 consecutive endoscopies performed

Endoscopic finding	Mean age	Male gender	*H. pylori* positive	Total (%)
Normal	38.4±15.22	49 (18%)	143 (53%)	272 (18.4)
Duodenal ulcer	54.86±14.53	205 (52%)	252 (64%)	391 (26.5)
Gastric ulcer	59.68±15.29	56 (54%)	59 (57%)	103 (7%)

There was a significant difference between the mean age of patients with normal endoscopy and the peptic ulcer group (38.4 ± 15.22; 55.87 ± 14.80; *P*<0.001) and the mean age of patients with gastric ulcer and the patients with duodenal ulcer (59.68 ± 15.29; 54.83 ± 14.79; *P* = 0.004).

The overall prevalence of *H. pylori* infection was 53% (786) out of a total of 1,478 individuals. *H. pylori* infection was positive in 252 (64%, *P*<0.05) of the patients with duodenal ulcer, 59 (57%) of the patients with gastric ulcer and in 143 (53%) of those with normal endoscopy (Table 1). The comparison of peptic ulcer group with the patients that had normal endoscopy revealed that *H. pylori* infection [*P* = 0.005; OR = 1.70; 95% CI = 1.17-2.47], male gender [*P*<0.0001; OR = 5.53; 95% CI = 3.67-8.34] and older age [P<0.0001; OR = 1.08; 95% CI = 1.06-1.09] increased the risk of peptic ulcers.

Most of the gastric (81; 54%) and duodenal ulcers (296; 54%) were in the scar stage (S) (Table 2). Within the duodenal ulcer group, 15 patients with serious comorbidities had *H. pylori*-negative active (A) ulcer. *H. pylori* was negative in 9 (20%) of those in healing (H) and 115 (39%) in scar stages (S).

The analysis of endoscopic findings associated with gastric and duodenal ulcers (Table 3), showed that antral erosive gastritis was the most frequent endoscopic finding and the

rate of antral gastritis in both groups of ulcers was similar. Esophagitis was more frequently observed in the duodenal ulcer group, and, unexpectedly atrophic gastritis.

TABLE 2. Stage of the peptic ulcer groups according to the Sakita classification

Sakita	Gastric ulcer (%)	Duodenal ulcer (%)
A	35 (23)	49 (13)
H	35 (23)	46 (12)
S	81 (54)	296 (54)
Total	151	391

The stage of gastric and duodenal ulcers is included in gastric ulcer group and in the duodenal ulcer group

TABLE 3. Endoscopic findings associated with gastric and duodenal ulcers

Endoscopic findings	Gastric ulcer n (%)	Duodenal ulcer n (%)
Gastritis	52 (50.5)	217 (55.5)
Antral gastritis	45 (43.7)	173 (44.2)
Superficial	11 (10.7)	51 (13.0)
Erosive	34 (33)	122 (31.2)
Corpus gastritis	0 (0)	7 (1.8)
Superficial	0 (0)	5 (1.3)
Erosive	0 (0)	2 (0.5)
Pangastritis	6 (5.8)	34 (8.7)
Superficial	3 (2.9)	20 (5.1)
Erosive	3 (2.9)	14 (3.6)
Atrophic gastritis	1 (1)	11 (2.8)
Esophagitis	9 (8.7)	67 (17.1)
Duodenitis	22 (21.4)	60 (15.3)
Superficial	2 (1.9)	10 (2.6)
Erosive	20 (19.4)	50 (12.8)

DISCUSSION

Gastric colonization with *H. pylori* induces chronic gastritis that may be asymptomatic through all lifelong, being intriguing that only 10% to 20% of infected individuals have lifetime risk of developing ulcer disease[11]. However, infection with more pathogenic *H. pylori* isolates with positive *cag*PAI genes[15, 17] was previously shown as risk of ulcer disease outcome. Other factors were being between 40 and 60 years of age, being male, cigarette smoking, alcohol consumption, use of aspirin or NSAIDs, heavy social psychological stress, frequent mobility, irregular working hours, low socioeconomic status, higher acid output, and heredity[4, 5, 29].

The worldwide ulcer prevalence differs, with duodenal ulcers dominating in Western populations and gastric ulcers being more frequent in Asia, especially in Japan[29]. In the present study 33.4% of the patients had peptic ulcer disease, mainly, duodenal ulcer (26.5%) that was high in comparison to Southern Brazil (3.3%)[24], Philippines (10.3%)[27] and Turkey (16.8%)[23]. Even though the overall prevalence of *H. pylori* infection was lower than previous reported (65%) in the city of São Paulo[30], in Southern Brazil (63.4%)[22], and

in Northeastern Brazil (92% in subjects 46-60 years)[19, 20]; the prevalence of peptic ulcers has not changed in countries with a low prevalence of *H. pylori* infection due to eradication regimens[13].

The risk of infected individuals to develop peptic ulcer was found to be 1.7 [95% CI = 1.17-2.47] which is similar to other reports that showed a relative risk of 1.6–5.7 (mean, 3.3) for infected people of developing peptic ulcer, compared with non-infected people[5]. Male gender [OR = 5.53; 95% CI = 3.67-8.34] and aging, as previously reported[26, 28], were also risks of peptic ulcer development. Within the peptic ulcer group, gastric ulcer group had significantly higher age; the incidence of gastric ulcer has been relatively higher in the elderly people, compared to that of duodenal ulcers[26] that may be due to lower defensive factors such as poor gastrin-elevating action capable of healing by its trophic effect[8], decreased mucus, bicarbonate secretion and prostaglandins[12].

Endoscopic erosive antral gastritis was more frequent than corpus gastritis in both gastric and duodenal ulcer groups, in our previous report the activity of inflammation was also more intense in the antrum of peptic ulcer patients[14]; in addition, gastritis was more intense in the peptic ulcer group than in those with normal endoscopy and *H. pylori* positive[15]. Endoscopic diagnosis has been 62% as sensitive as histological diagnosis for erosive gastritis and 84% for atrophic gastritis in the antrum[10]. In India, the antral gastritis also predominated in 82% of the cases, and *H. pylori* was usually found in gastric biopsies taken from the antrum[16].

Association of duodenal ulcer with esophagitis was already described at higher rates of 33%[1] than in the present study (17%). One possible explanation is higher acid secretion that has a role in the etiology of duodenal ulcer[9] and gastroesophageal reflux disease and its complications[7] more frequently found in the male gender[3]. The unexpected cases of duodenal ulcer with atrophic gastritis may be the result of a long-term use of proton pump inhibitors[18].

Most of the gastric (54%) and duodenal ulcers (54%) were in the S stage which may explain the prevalence of *H. pylori* infection of 57% and 64%, respectively; which may indicate that were eradication-control patients. Within the duodenal ulcer group, 15 patients with serious co-morbidities had *H. pylori*-negative A ulcer. The clinical characteristics described of patients with *H. pylori*-negative duodenal ulcers were more likely to be older, have concomitant medical problem, pre-existing malignancy, recent surgery, underlying sepsis, or taken non-steroidal anti-inflammatory drugs[2].

This study has some limitations as the information concerning proton pump inhibitors, aspirin or NSAIDs intake, cigarette smoking, and alcohol consumption was not available. In addition, *H. pylori* infection was based in a single test (urease) and may be underestimated by the use of proton pump inhibitors, even though biopsies were taken from the antrum and the corpus, presenting 97.4% sensitivity and 100% specificity[25]. A prospective study should further clarify these factors.

CONCLUSION

We conclude that the prevalence of duodenal ulcer is high in a Brazilian population that had *H. pylori* infection associated with older age and male gender as important determinants to gastrointestinal diseases outcome.

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Marques SB, Mattar R, Artifon ELA, Sakai P, Carrilho FJ. Alta prevalência de úlcera duodenal num hospital terciário na cidade de São Paulo. Arq Gastroenterol. 2011;48(3):171-4.

RESUMO – ***Contexto*** - Apesar da infecção pelo *Helicobacter pylori* ser causa de úlcera péptica e de sua alta prevalência no Brasil, a prevalência da úlcera péptica tem sido pouco estudada. ***Objetivos*** - Verificar a prevalência da doença ulcerosa péptica em pacientes de um hospital terciário. ***Métodos*** - Achados diagnósticos de 1.478 endoscopias consecutivas foram correlacionados com os resultados de testes de urease para diagnóstico de infecção pelo *H. pylori* e dados demográficos num total de 3.779 endoscopias realizadas em 2005. A média de idade dos pacientes foi 51,14 ± 16,46, sendo 613 (41,5%) homens. ***Resultados*** - A úlcera péptica foi diagnosticada em 494 (33,4%) pacientes com média de idade de 54,86 ± 14,53, 205 (52%) eram homens, sendo 391 (26,5%) úlceras duodenais e 103 (7%) úlceras gástricas. Endoscopia normal foi achada em 272 (18,4%) pacientes com média de idade de 38,4 ± 15,22, sendo 49 (18%) homens. A comparação do grupo de úlcera péptica com os pacientes que tinham endoscopia normal revelou que a infecção pelo *H. pylori* [P = 0,005; OR = 1,70; 95% CI = 1,17-2,47], gênero masculino [P<0,0001; OR = 5,53; 95% CI = 3,67-8,34] e idade mais avançada [P<0,0001; OR = 1,08; 95% CI = 1,06-1,09] aumentaram o risco de úlceras pépticas. A prevalência de infecção pelo *H. pylori* no total foi de 53% (786). ***Conclusões*** - A prevalência da úlcera duodenal é alta numa população brasileira de um hospital terciário que teve a infecção pelo *H. pylori*, idade avançada e gênero masculino como determinantes importantes de evolução para doença gastrointestinal. Estudos futuros prospectivos devem confirmar esses achados.

DESCRITORES - Úlcera péptica, epidemiologia. Infecções por helicobacter.

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