

Correlation Between *Helicobacter pylori*, Hiatal Hernia and Barrett's Esophagus

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Background: The incidence of adenocarcinoma of the esophagus has dramatically increased during the last 2 decades and so has the incidence of Barrett's esophagus, one of the most important risk factors for esophageal adenocarcinoma.

Aim: The aim of this study was to determine whether infection with *Helicobacter pylori* is associated with a lower risk of Barrett's esophagus development in our area, and if there is a direct correlation between hiatal hernia and Barrett's esophagus.

Material and method: We studied a series of 4359 patients who were investigated by upper endoscopy in the Gastroenterology and Endoscopy Unit of Targu Mures County Clinical Emergency Hospital between the 1st of January 2009 and 31st of December 2009. Barrett's esophagus was defined as the presence of specialized columnar epithelium with goblet cells in the esophagus. We compared the patients with Barrett's esophagus with a similar series with patients without reflux disease.

Results: In 33 patients a diagnosis of Barrett's esophagus was established. There was a strong predominance of males. The mean age at diagnosis was 64.18 years. *Helicobacter pylori* was present in 17 cases (51.51%) in the control patients compared to 42.42% in patients with Barrett's esophagus ($p = 0.622$, Odds Ratio: 0.69 95% CI: 0.26-1.83). Hiatal hernia was present in patients with Barrett's esophagus in 21 cases (63.63%), and in patients without reflux disease only in 5 cases (15.15%) ($p < 0.001$, Odds Ratio: 9.8; 95% CI: 2.99-32.18).

Conclusions: A significant correlation between hiatal hernia and Barrett's esophagus was demonstrated in our study ($p < 0.001$).

Keywords: *Helicobacter pylori*, hiatal hernia, Barrett's esophagus

Introduction

Barrett's esophagus (BE) is a metaplastic alteration of the distal esophageal epithelium with transformation in specialized intestinal epithelium, which is present in 8% to 20% of patients with chronic gastro-esophageal reflux disease (GERD). Barrett's esophagus is associated with a 0.5% yearly risk of progression to esophageal adenocarcinoma [1], an aggressive cancer with increasing incidence [2]. From 1975 to 2001, the incidence of esophageal adenocarcinoma rose approximately sixfold in the United States (from 4 to 23 cases per million), being greater than that for melanoma, breast, or prostate cancer [3]. The incidence of Barrett's esophagus is also increasing. One study reported that the incidence of diagnosed Barrett's esophagus was increasing from 1997 to 2002, independently of the number of upper gastrointestinal endoscopies that were performed [4]. Age, male sex, caucasian ethnicity and GERD symptoms for more than 10 years are risk factors well known for Barrett's esophagus. Males are three to four times more likely to have BE compared to females. The relationship between *H. pylori* infection, reflux esophagitis and Barrett's esophagus is complex and not fully understood. It has been hypothesized that the presence of *H. pylori* infection or corpus gastritis may have a protective effect against GERD because of the reduced gastric acid output [5-7].

Over the years, the role of hiatal hernia in GERD has been emphasized and de-emphasized. The presence of a hiatus hernia impairs the function of the low esopha-

geal sphincter and may impair the clearance of refluxed acid from the distal oesophagus. The prevalence of hiatal hernia seems to increase with age and the mean size of hiatal hernia can be an independent risk factor for severe esophagitis [8].

We tested the hypothesis that infection with *Helicobacter pylori* protects against the development of BE. We also investigated a correlation between hiatal hernia and Barrett's esophagus.

Material and method

We studied a number of 4359 patients who were investigated by upper endoscopy in the Gastroenterology and Endoscopy Unit of County Clinical Emergency Hospital Targu-Mures between 1 January 2009 and 31 December 2009. Endoscopy was performed in a standardized manner by experienced endoscopists using an Olympus 160 instrument. Barrett's esophagus was endoscopically suspected when a reddish epithelium was seen above the gastroesophageal junction. Esophageal biopsies were obtained from this area. Barrett's esophagus was defined as the presence of specialized columnar epithelium with goblet cells in the esophagus. Hiatal hernia was considered present if the esophago-gastric junction was displaced 1 cm or more proximal to the diaphragmatic hiatus. In addition, five biopsy specimens were obtained using a biopsy forceps from the antrum and corpus to detect *Helicobacter pylori* using the histological methods.

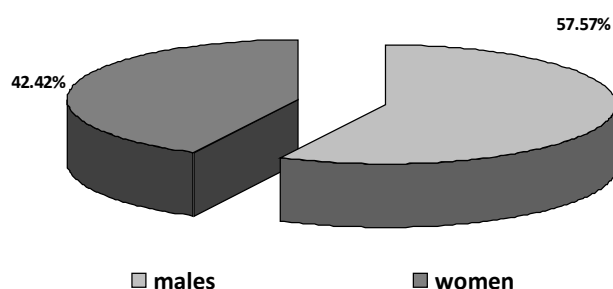


Fig. 1. Distribution of Barrett's esophagus by sex

The patients with previous gastrectomy and diagnosis of esophageal or gastric cancer, patients with unclear pathological diagnosis and patients with severe underlying systemic disease were excluded. We included in study patients with Barrett's esophagus and we compared this group with a control group patients without BRGE.

Data were collected with Microsoft Excell programme and analysed with GraphPad InStat programme. Categorical data analysis was conducted with the Fisher exact test. The level of significance was set at $p < 0.05$.

Results

A total of 33 cases (19 men and 14 women) were diagnosed with Barrett's esophagus. There was a predominance of males (57.57 %) (Figure 1). The mean age at diagnosis was 64.18 years (range 41–89), 23 patients (69.69%) were in the group of 60 age or more (Table I).

Helicobacter pylori was present in 14 cases (42.42%) and negative in 19 cases (57.57%). It was more frequent in the 70 to 90 years age group (6 cases – 18.88%) and less frequent in the group of 60–70 years (15.55%) or 50–60 years (9.09%). Hiatal hernia was present in 21 cases and most of the cases were in the group of age 60–70 years (8 cases) (Figure 2).

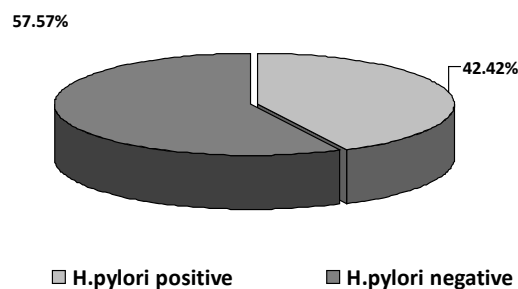
When we compare our results with the group without BRGE, *Helicobacter pylori* was present in 17 cases (51.51%) respectively 14 cases (42.42%) in patients with Barrett's esophagus ($p = 0.622$, Odds Ratio: 0.69 95% CI: 0.26–1.83). Hiatal hernia was present in patients with Barrett's esophagus in 21 cases (63.63%), and in the group without BRGE only in 5 cases (15.15%) ($p < 0.001$ Odds Ratio: 9.8; 95% CI: 2.99–32.18).

Discussions

Our results show a male predominance of Barrett's esophagus, like in others endoscopic studies [10,11]. Barrett's

Table I. Distribution of Barrett's esophagus by age groups

Age group	Number of patients
40-50	2
50-60	8
60-70	11
70-90	12

Fig. 2. Distribution of *H. pylori* in Barrett's esophagus patients

esophagus was more frequent in older patients. A recent study showed that among white men with GERD, the yield of Barrett's esophagus increases steeply from early adulthood (2.1% in the third decade of life) to middle adulthood (9.3% in the sixth decade) and then plateau (the difference for the eighth decade minus the sixth decade is – 1.1%; 95% CI -3.9% to 1.7%) [12]. A significant correlation between hiatal hernia and Barrett's esophagus was demonstrated in the present study. Avidan *et al.* [13] found that 65% of patients with BE had endoscopic documentation of hiatal hernia as compared with 24% of control subjects without GERD. We founded hiatal hernia in similar proportion – 63.63%.

Our results showed that *Helicobacter pylori* was found less frequent in patients with Barrett's esophagus compare with the group without BRGE. Results are similar with previous studies showing that *Helicobacter pylori* was less prevalent in patients with GERD than in control subjects 14-15. In the meta-analysis by Gisbert *et al* [15] the prevalence of *Helicobacter pylori* infection in patients with Barrett's esophagus was lower than the incidence in controls (28% vs. 45%; Odds Ratio: 0.6; 95% CI: 0.48–0.76). These results are similar with our study.

Conclusions

A significant correlation between hiatal hernia and Barrett's esophagus was demonstrated in the present study.

Infection with *Helicobacter pylori* is not associated with a lower risk of Barrett's esophagus development.

Barrett's esophagus is more frequent in male patients and the incidence increases with age.

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