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Original article

Dominant Symptomatology and Clinically Significant Endoscopic Findings in Patients with Dyspepsia

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SUMMARY

Introduction. The role of esophagogastroduodenoscopy (EGDS) is reflected in the evaluation of various symptoms and signs of numerous organic disorders such as ulcer disease, reflux disease, diverticula, achalasia and tumors of the upper gastrointestinal tract, but also in the exclusion of the same conditions in patients, the basis of which is a functional disorder. Functional diseases of the digestive system are a great challenge in everyday clinical work.

Aim. The goal of this study was to determine the frequency of functional dyspepsia in relation to the organic one by sex and age as well as the frequency of *Helicobacter pylori* infection (HBP) in patients with dyspepsia, performing upper endoscopy as the gold standard in differential diagnosis.

Methods. The study analyzed 5,200 patients over a four-year period. All patients underwent upper endoscopy with dyspeptic disorders and all subjects underwent the biopsy of the gastric mucosa and pathohistological verification.

Results. The frequency of dyspeptic disorders was higher in women than in men, with the average age being 43 years. The most common complaints were epigastric pain and postprandial fullness. Endoscopic findings were positive in 55% of patients, predominantly over 55 years of age, with no statistical difference between the HBP status. The most common changes were reflux esophagitis, gastric ulcer and duodenal ulcer.

Conclusion. Our study showed a high rate of positive endoscopic findings in patients with dyspepsia according to the criteria of Rome IV. Gastroscopy has significant implications in patients with dyspepsia.

Keywords: **upper endoscopy, dominant symptomatology, dyspepsia, endoscopic findings**

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INTRODUCTION

Upper endoscopy as a diagnostic and therapeutic procedure in gastroenterology represents a revolutionary step in medicine (1). The role of esophagogastroduodenoscopy (EGDS) is reflected in the evaluation of various symptoms and signs of numerous organic disorders such as ulcer disease, reflux disease, diverticula, achalasia and tumors of the upper gastrointestinal tract, but also in the exclusion of the same conditions in patients, the basis of which is a functional disorder (2 - 4). Functional gastrointestinal disorders (FGIDs) are characterized by clear gastrointestinal symptoms without the presence of a morphological substrate. According to the Roma IV criteria, they can be classified into 33 disorders in adults and 20 disorders in children. The most common FGDI below the Treitz ligament are irritable bowel syndrome (IBS) and functional dyspepsia (FD) as the most common disorders of the upper gastrointestinal tract, characterized by pain in the area of the epigastrium, which is not associated with food intake and the appearance of postprandial distress syndrome (PDS) (5).

There is a prevalence in females and it is estimated that about 40% of the world's population has some type of FGIDs (6). In order to diagnose functional dyspepsia (FD), as a subtype of FGID, organic causes must first be ruled out (7). FGIDs are a major burden on the health and economic system due to frequent visits to gastroenterologists and absences from work as well as the cost of treatment, which according to the National Health Service amounted to 72.3 million pounds in 2014/2015 (8, 9).

Functional diseases of the digestive system are a great challenge in everyday clinical work for the following reasons: they are incomparably most common, without nonspecific chronic symptoms, without visible structural disorders; they are a clinical reflection of altered gastrointestinal function, with no specific diagnostic markers and no specific targeted therapy; the socioeconomic workload is high and is traditionally diagnosed by the exclusion method. Functional diseases significantly contribute to the decline in the quality of everyday life, but do not lead to serious morbidities. It is a well-known dogma that functional disorders are "the easiest diseases that are the most difficult to treat" (10).

The goal of this study was to determine the frequency of functional dyspepsia in relation to the organic one by sex and age as well as the frequency of *Helicobacter pylori* infection (HBP) in patients with dyspepsia, by performing upper endoscopy as the gold standard in differential diagnosis.

AIMS AND METHODS

The study analyzed 5,200 patients who were treated at the University Clinical Center Kragujevac, Clinic for Gastroenterohepatology, over a four-year period. All patients underwent upper endoscopy. All subjects had anamnestic dyspeptic disorders according to the recommendations of the Roman III and IV classification (11). During the endoscopic examination, all subjects underwent a biopsy of the gastric mucosa to determine the status of *Helicobacter pylori*, according to the valid criteria. *Helicobacter pylori* infection was confirmed by pathohistological verification. All results are presented in tables and graphs.

RESULTS

The study included 5,200 patients with a clinical picture of dyspepsia who underwent upper endoscopy over a period of 4 years. The average age of the analyzed patients was 43.1 years. No statistically significant difference in the frequency of dyspeptic symptoms was found in 45.57% of men and 55.43% of women in relation to the sex of patients, $p > 0.05$.

In the further course of the research, the frequency of dyspeptic symptoms as individual symptoms was analyzed (Table 1). We analyzed each symptom in all patients included in the option "present (yes)" and "not present (no)". The leading symptom in the analyzed patients was epigastric

Table 1. *The frequency of dyspeptic symptoms (dominant symptom)*

Dyspeptic symptoms	**Yes (%)**	**No (%)**	**p**
Pain in the epigastrium	72	28	**p = 0,021**
Epigastric discomfort	46	56	p > 0,05
Postprandial fullness	73	27	**p = 0,033**
Flatulence	60	40	p > 0,05
Early satiety	54	56	p > 0,05
Nausea	60	40	p > 0,05
Vomiting	58	42	p > 0,05
Burping	49	51	p > 0,05

pain, which was dominant in 72% of patients and showed a statistically significant difference (72 vs. 28, p = 0.021) between the group of patients who reported pain and the group of patients who did not have pain. The second leading symptom in the analyzed patients (yes/no) was postprandial fullness, which was present in 73% of patients and showed a statistically significant difference (73 vs. 27, p = 0.033). No statistically significant difference was shown with respect to other symptomatology: epigastric discomfort (46 vs. 56, p > 0.05), bloating (60 vs. 40, p > 0.05), early satiety (54 vs. 56, p > 0.05), nausea (60 vs. 40, p > 0.05), vomiting (58 vs. 42, p > 0.05) and belching (49 vs. 51, p > 0.05) between the group of patients who had and who did not have the described symptomatology.

A positive endoscopic finding (Table 2) was diagnosed in 55% of patients. Analyzing by year, we discovered that endoscopically significant findings were more common in those older than 50 years compared to younger patients, with clear statistical significance. An analysis of endoscopic findings depending on the presence of HBP infection (Table 2) did not show a statistically significant difference between HBP positive and negative patients in normal and positive endoscopic findings, although a higher percentage of *Helicobacter pylori* infection was shown in the group with positive endoscopic findings.

Table 2. *Presentation of patients with orderly and positive findings during gastroscopy according to HBP status and age*

	Endoscopic finding negative	Endoscopic finding positive	p
%	45%	55%	p > 0,05
HBP (+)	62%	68%	p > 0,05
HBP (-)	38%	32%	
< 50 years	27%	10 %	**p = 0,023**
50 years	17%	45%	

According to age-related analysis, endoscopically significant findings were more prevalent in elderly patients (older than 50 years) than in younger patients (Table 3). Reflux esophagitis was diagnosed in a higher percentage in the population of patients older than 50 years (8 vs. 1, p = 0.001). Gastric ulcer was diagnosed in a higher percentage in the population of patients older than 50 years (10 vs. 1, p = 0.001), as a duodenal ulcer (18 vs. 6, p = 0.001). As well as gastric ulcers, gastric erosions were statistically significantly more prevalent in the group over 50 years (8 vs. 2, p = 0.003). No statistically significant difference was shown in the endoscopic finding of Barrett's esophagus, which was equally present in both categories of patients and in the erosions of the duodenum.

Table 3. *The frequency of positive endoscopic findings by age*

	Age: < 50 (%)	Age: > 50 (%)	**p**
Reflux esophagitis (%)	1	8	**p = 0,001**
Barrett's esophagus (%)	1,5	1,5	p > 0,05
Gastric ulcer (%)	1	10	**p = 0,001**
Duodenal ulcer (%)	6	18	**p = 0,001**
Stomach erosions (%)	2	8	**p = 0,003**
Duodenal erosions (%)	1	2	p > 0,05

DISCUSSION

Patients in the absence of morphological changes and organic cause, in which the component of dyspepsia is pronounced, belong to the category of patients with FD (12). The most common symptom is epigastric pain. The pathophysiological disorders that lead to the manifestation of symptomatology are multifactorial, but it is most often a combination of organic disease and functional disorder. The incidence of FD in the world is 22%, and the etiological factor in the largest percentage remains unknown (13). In one conducted study, about 381 patients participated and approximately 45% were diagnosed with FD at the end of the study despite the presence of symptoms (14).

In our study, a higher incidence of female patients with increased rate of FD and EGDS was observed (65%). Among 45% of patients who met the requirements for FD according to the Roman criteria, 65% were women and 35% were men, with a statistical significance of p = 0.005. After EGDS and exclusion of organic damage, we showed a statistically significant difference in relation to gender. Numerous studies have shown a higher prevalence of FD in females. One explanation is the association of

female sex pimarily with mental and physical injury (15 - 17).

Earlier studies have assessed the epidemiological association between HBP and functional dyspepsia. In the study, we had 62% of patients who were HBP positive and 38% negative. It can be noticed that there is a statistically higher percentage of subjects with dyspeptic symptoms and HBP infection.

The incidence of pathological findings during EGDS was 55%. Normal endoscopic findings were confirmed in 45% of patients. Barrett's esophagus was confirmed in 3% of patients, ulcer change in 11%, duodenal ulcer in 24% and duodenal erosion in 3% of patients. A study conducted at our clinic showed that patients with FD had a higher prevalence of morphological findings on EGDS. According to the age category, positive findings on EGDS were more common in those older than 50 years of age, of which reflux esophagitis, erosions and ulcers on the stomach and duodenum were more common. No statistically significant difference was found in the endoscopic findings of Barrett's esophagus and duodenal erosion, which were equally present in both categories of patients. Our study had similar results as previous studies conducted in other centers, showing the frequency of pathological findings in people over 50 years with dyspepsia (18).

A statistically significant difference was shown in the endoscopic finding of ulcers on the duodenum, where the largest number of patients had verified HBP infection. Similar to our study, the results of other studies showed a 10-fold higher incidence of duodenal ulcers in HBP-positive patients (19).

Research conducted by Turkkan and co-workers has shown that patients with changes in the region of the gastric antrum had a higher degree of expression of dyspeptic symptoms. It has been observed that the prevalence of HBP infection in patients with dyspeptic symptoms increases with age. The additional presence of this microorganism affects the delayed emptying of stomach contents (20 - 22).

CONCLUSION

Our study showed a high rate of positive endoscopic findings in patients with dyspepsia according to the criteria of Rome IV. Gastroscopy has significant implications in patients with dyspepsia. According to the results of our research, esophagogastroduodenoscopy with biopsies of the gastric mucosa to detect *Helicobacter pylori* infection should be the initial strategy for the treatment of these patients, especially in the category of patients older than 50 years of age.

Conflict of interest

There are no conflicts of interest.

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Dominantna simptomatologija i klinički značajni endoskopski nalazi kod bolesnika sa dispepsijom

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SAŽETAK

Uvod. Uloga ezofagogastroduodenoskopije (EGDS) ogleda se u proceni različitih simptoma i znakova brojnih organskih poremećaja kao što su ulkusna bolest, refluksna bolest, divertikula, ahalazija i tumori gornjeg gastrointestinalnog trakta, ali i u isključivanju istih stanja kod bolesnika čija je osnova funkcionalni poremećaj. Funkcionalne bolesti organa za varenje predstavljaju veliki izazov u svakodnevnom kliničkom radu.

Cilj. Cilj ove studije je da se utvrdi učestalost funkcionalne dispepsije u odnosu na organsku prema polu i starosti, kao i učestalost infekcije *Helicobacter pilori* (HBP) kod bolesnika sa dispepsijom, izvođenjem gornje endoskopije kao zlatnog standarda u diferencijalnoj dijagnozi.

Metode. Studija je analizirala 5200 bolesnika tokom četvorogodišnjeg perioda. Svim bolesnicima sa dispeptičnim poremećajima urađena je gornja endoskopija; svim ispitanicima pak urađene su biopsije sluzokože želuca i patohistološka verifikacija.

Rezultati. Učestalost dispeptičkih poremećaja je veća kod žena nego kod muškaraca, sa prosečnom starošću od oko 43 godine. Najčešće tegobe su epigastrični bol i punoća nakon obroka. Endoskopski nalazi su pozitivni kod 55% bolesnika, pretežno starijih od 55 godina, bez statističke razlike između HBP statusa. Najčešće promene su refluksni ezofagitis, čir na želucu i dvanaestopalačnom crevu.

Zaključak. Naša studija je pokazala visoku stopu pozitivnih endoskopskih nalaza kod bolesnika sa dispepsijom prema kriterijumima Rim IV. Gastroskopija ima značajne implikacije kod bolesnika sa dispepsijom.

Ključne reči: gornja endoskopija, dominantna simptomatologija, dispepsija, endoskopski nalaz