Original Research

The Relationship between Clinical and Pathologic Findings in Patients with Upper GI Disorder: A Retrospective Descriptive Study

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Abstract:

Background:

The upper gastrointestinal tract disorder is common in different countries. Clinical signs are not specific. Therefore, correct diagnosis of abnormalities can be effective in appropriate treatment. The aim of this study is to determine the relationship between clinical findings, endoscopy and pathology in adult patients with upper gastrointestinal symptoms referring to the endoscopic ward of Shahid Sadoughi Hospital in Yazd, Iran during 2017-2022 in comparison with pediatric group.

Methods: This study is a retrospective descriptive investigation. The study population includes patients with upper gastrointestinal symptoms who underwent endoscopy. The biopsy sample has been reported by the pathologist and results have been compared.

Results: Totally, 1330 patients, (1120 adults and 210 children) were enrolled in this study. There was no significant relationship between pathology findings of esophagus and clinical symptoms in children, but this association was significant in the stomach and duodenum. In adults, the relationship between clinical findings and pathology in the esophagus, stomach and duodenum was significant.

Conclusion: According to the present study, we can conclude that endoscopic data alone cannot be used to diagnose upper gastrointestinal diseases. Pathological parameters are fundamental in addition to complementary information with the results of endoscopy.

Keywords: Upper Gastrointestinal Tract, Endoscopy, Pathology, Clinical Findings

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Introduction

The digestive system can be divided into two upper and lower parts: the upper part including the esophagus, the stomach and duodenum and the lower part, which includes the small and large intestine (1). Gastrointestinal (GI) disorders are one of the most common health care problems. About 30-40% of adults have complained of frequent dyspepsia and millions cases of gastrointestinal complications are reported annually (2, 3). Food habits play an important role in the development, treatment and prevention of gastrointestinal disorders (4). The type of diet is very effective in improving the health of patients, improving the quality of life, reducing pain and costs associated with the disease (5). There are different methods for diagnosis gastrointestinal disorders. Endoscopy and biopsy are common procedures that performed for diagnosing benign and malignant tumors and other clinical symptoms of upper GI disorders; Importance of diagnostic endoscopy in controlling and treating gastrointestinal diseases is increasing due to the changes in dietary habits, the consumption of concentrated foods and fast foods and lifestyle (6). Therefore, finding proper diagnostic and therapeutic methods and correcting environmental risk factors are one of the important issues in community health. Endoscopy has actually revolutionized gastrointestinal observations, which can be done by a flexible optic tube (7). Endoscopy is a selective approach for patients who often show symptoms of dyspepsia and some other upper GI disorders (8, 9). Gastric mucosal lesions such as atrophy, intestinal metaplasia and dysplasia are detectable by endoscopy at early stages. Also, duodenal biopsy is performed to evaluate peptic ulcer, malabsorption symptoms and neoplasia.

Different studies show a significant relationship between clinical, endoscopic and histologic symptoms in patients with upper gastrointestinal disorders. One of the ways to increase accuracy of diagnosis is comparison of endoscopic findings with pathologic examination of biopsy specimens. The aim of this study is evaluation of relationship between clinical and pathologic findings in patients with upper GI disease in adult and pediatric groups

Methods

Study design. We designed a cross-sectional retrospective study to evaluate the relationship between clinical, endoscopic and pathologic findings with upper gastrointestinal symptoms in adults and children patients referred to the Endoscopy Unit of the Shahid Sadoughi hospital, Yazd, Iran from 2017 to 2022.

Study patients. Patients with gastrointestinal symptoms referred to the Endoscopy Unit of the Shahid Sadoughi hospital were enrolled into the study. 1120 adults (more than 18 years old) and 210 children (less than 18 years old) enrolled in this study. All patients provided written informed consent. Clinical findings (including clinical symptoms and laboratory tests) were collected in a questionnaire. Endoscopy was performed via flexible fiber optic endoscope and the results have been recorded. After endoscopy, the biopsy specimen was observed by pathologist.

Study Variables. Clinical symptoms including gastro-intestinal symptoms such as anorexia, upper GI bleeding, anemia, weight loss and dyspepsia was reported by physician.

Laboratory test including Anti-tissue Transglutaminase Antibody (Anti TTG), has performed in central laboratory of Shahid Sadoughi Hospital.

Upper gastro-intestinal endoscopy was performed and variables such as inflammation, gastro-intestinal ulcers, non-neoplastic lesions and malignant tumors have been checked in patients.

Pathologic findings including determination of non-neoplastic lesions and malignant

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tumors, celiac disease and other pathologic changes were accomplished in patients.

Statistical Methods. Data was first analyzed by SPSS v.20 program. Chi-square and Fisher Exact tests were used to demonstrate differences between observed variables with a p value of <0.05 used to indicate statistical significance.

Results

Clinical findings of study participants: 1330 patients including 1120 adults (more than 18 years old) and 210 children (less than 18 years old) enrolled in this study. Different clinical symptoms were evaluated in adults and children. Results showed in Table 1 demonstrated that abdominal pain was the most popular clinical sign in both study groups.

Endoscopic findings: Endoscopy procedure has been performed for study patients in three body organs; Stomach, esophagus and duodenum. Results of endoscopy have shown in table 2. According to the Endoscopic findings, inflammation in stomach, malignant tumor in esophagus and celiac disease in duodenum are the most common findings in both study groups.

Histopathological findings: Endoscopy biopsies have been observed by a pathologist and findings has been recorded in three separate groups including stomach, esophagus and duodenum. Results of histopathologic findings has been shown in table 3.The results indicated that inflammation in stomach and esophagus and celiac disease in duodenum are the most common findings in both study groups.

Comparison of histopathologic diagnosis based on clinical findings in males: In esophagus, one of the main clinical findings was dyspepsia. 28 males referred to pathology examination with dyspepsia. Based on results of histopathology examination 17 (60.7%) cases showed malignancy, 8 (28.6%) cases had adenocarcinoma and 9 (32.1%) cases had squamous cell carcinoma**.**

There is a significant difference between the frequency distribution of stomach pathologic diagnosis and clinical manifestations in males. The most common disease in males with stomach is gastritis. The most common clinical symptom in males with malignant stomach is abdominal pain. 70% of individuals who have suffered from abdominal pain had gastritis.

In duodenum, the most common clinical symptom in celiac disease in males is abdominal pain, anemia and diarrhea. The most common pathology findings in males are duodenal inflammation. 31% of males with weight loss are referred and they have celiac disease and 53% of patients with anorexia have celiac disease.

Comparison of histopathologic diagnosis based on clinical findings in females: In esophagus, one of the main clinical findings was dysphasia. 33 females referred to pathology examination with dysphasia. Based on results of histopathology examination 20 (60.8%) cases showed malignancy, 8 (24.2%) cases had adenocarcinoma and 12 (36.6%) cases had squamous cell carcinoma, so SCC is more common in females.

In stomach, pathologic diagnosis and clinical signs in females showed significant correlation. The most common problem in females is gastritis. The most common clinical sign in females with malignant stomach is abdominal pain. 76% of those who have suffered from abdominal pain have gastric inflammation.

There is a significant difference between the frequency distribution of duodenal pathological diagnosis and clinical signs in females. Abdominal pain, anemia and diarrhea in women with celiac disease are the most common symptoms. The most common pathological findings are in women with celiac disease. The incidence of celiac disease in women undergoing duodenal biopsy is 38%. In

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women with weight loss, it is possible to detect celiac in pathology in about 45% of cases.

Comparison of endoscopy and histopathologic diagnosis in patients under 18 years old: among 23 patients who have suffered from esophagitis in endoscopy, 12 ones (52%) have been confirmed in pathology**.** Among 71 patients who have been diagnosed with gastritis in endoscopy, in 47 (85.5%) cases gastritis confirmed by histopathologic examination. Among five patients who have been diagnosed with duodenitis in endoscopy, only 2 (40%) cases of duodenitis were confirmed by histopathologic examination. In celiac disease the relationship between endoscopic diagnosis and pathologic confirmation was 98.3%.

Comparison of endoscopy and histopathologic diagnosis in patients 18-40 years old: There is no significant difference between endoscopic esophagus diagnosis and histopathologic findings; while in the case of stomach, among 112 patients that diagnosed with gastritis in endoscopy, in 103 (91%) cases gastritis confirmed by histopathologic examination.

Comparison of endoscopy and histopathologic diagnosis in patients 40-65 years old: There is a significant difference between gastric endoscopic diagnosis and histopathlogic findings. Highest correlation has found in malignant tumors (96.7%) and the lowest in normal cases (0%).Among 230 patients that diagnosed with gastritis in endoscopy, in 207 (90%) cases gastritis confirmed by histopathologic examination.

Comparison of endoscopy and histopathologic diagnosis in patients older than 65 years old: There is a significant difference between gastric endoscopic diagnosis and histopathlogic findings. Highest correlation has found in malignant tumors (100%) and the lowest in normal cases (0%).Among 111 patients that diagnosed with gastritis in endoscopy, in 104 (93.6%) cases gastritis confirmed by histopathologic examination.

Analytic studies were performed by Receiver operator characteristic (ROC) curve and the Area Under the Curve (AUC) was calculated in the pathologic diagnosis of celiac disease in duodenum. The optimal ratio cut-off value was 24.5 with 80% sensitivity and 60% specificity for both study groups (figure 1).

Laboratory results: Detection anti-TTG titers in adults and children indicated that anti-TTG titers increased and are associated with elevated risk of celiac disease. In children the mean anti-TTG titer was higher than in adults but did not differ significantly. In children, the highest sensitivity was 83% and the most specificity was 60% in the 25.5 titer and in adults at the titer 22.5, highest sensitivity and specificity was 80% and 64% respectively. Therefore, in our study, antibody titers had no significant relationship with age.

One of the aims of our study was to determine the correlation coefficient of clinical findings based on age-related pathologic findings. There was no significant correlation between the esophageal pathology results with endoscopy findings in children group, but this relationship was significant in the stomach and duodenum. In adults, This association was significant only for stomach in the adolescent aged 18-40 years old (p-value= 0.001), In patients aged 40 to 65 years old, correlation between the esophageal pathology results with endoscopy findings was significant in the esophagus, duodenum stomach (p-value = 0.001) and In patients older than 65 years old, of age, this association was only significant in stomach (p-value = 0).

Discussion

The aim of this study was to investigate the relationship between clinical, laboratory, endoscopic and pathologic findings in adult patients with upper gastrointestinal symptoms and compare the results with the pediatric population.

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The most common clinical symptom of gastritis in both study groups was abdominal pain and the most common symptom in patients with celiac disease was anorexia and abdominal pain. These results are consistent with Momen F et al study stated that majority of patients presented with dysphagia and abdominal pain (13).

In our study, the anti-TTG titers in the adult and pediatric group increased and were associated with a higher probability of celiac disease however; antibody titers had no significant relationship with age. In a study conducted by malobika et al. the anti-TTG titer had no significant association with age, which is consistent with our study (10). Considering the sensitivity and specificity of the anti-TTG test, it is more acceptable in children than endoscopy, and may be a reliable test for screening children with GI symptoms. In another study, conducted by Vivas S et al, clinical manifestations were not associated with celiac disease, but the measurement of Anti TTG was an independent factor for predicting celiac disease symptoms(11). In our study, the association of clinical symptoms with celiac disease was significant (p-value = 0) and the anti TTG titer could be effective with 80% sensitivity and 60% for celiac disease detection.

According to the study of Margaret et al. in 2015, clinical signs and histological characteristics can distinguish between lymphangiomas and lymphangiectasis(12). While in our study, other disease was studied in upper GI and some significant relations between clinical and pathologic findings was observed

Another aim of the current study was to determine the concordance between clinical symptoms and pathologic findings distribution based on gender; results showed that there is a significant concordance in males and females. Also, in patients with dysphagia, 60.7% of males and 60.8% of females have esophagus malignant tumors. The most common esophagus malignant tumor in females and males was Squamous cell carcinoma. Collectively these results showed that prevalence of inflammatory and malignant diseases in males and females are similar therefore is independent of gender.

In a study conducted by Rachele el al in 2015, a significant correlation between clinical and pathological findings in children and adults in celiac disease was reported (13) which is in consistent with our results. In another study by Steven Hardee et al in children's duodenitis, the association between endoscopy and pathology findings was poor as well as our study (14).

In a study conducted by Farzaneh Motamed et al in 2014, the correlation between endoscopy and pathology in children with gastritis was significant(15). In our study, from 55 children with gastritis, 47 (85.5%) were diagnosed by endoscopy.

In our study, this association was reported 85.5% in children, 83.75% in 18-40 years old group. The association for 40-65 and older than 65 years old individuals were declared 83.5%, and 83.9%,respectively.

In a study by Ajayi A et al, association between histopathologic and endoscopic findings in gastritis was investigated. Based on this study, endoscopy is a good predictor of gastritis before histopathologic examinations (16). In our study, endoscopy diagnosed inflammation in 414 of 496 cases that confirmed with histopathologic results.

Clinical and endoscopic findings in children are less relevant to pathological findings in comparison with adults, as children often are not able to express the clinical symptoms as well as adults, and it is not possible to express the symptoms of esophageal diseases, such as reflux and heartburn. Also, anemia of iron deficiency, pallor, loss of appetite, and weight loss which can be a sign of gastrointestinal disease should be given more attention in children. In adults, clinical findings with

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pathologic findings and endoscopy are significant in some age groups, especially those aged 40 to 65 years.

Conclusion

Clinical signs can be relied upon in the diagnosis of disease. Clinical symptoms, endoscopy and pathology are also well known in the diagnosis of malignancy. This is an important point, and it should be noted that these endoscopy symptoms should considered and the patient should undergo biopsy. Also we suggest that endoscopy is not enough alone and requiring pathological confirmation.

List of abbreviations

GI: Gastrointestinal. Anti TTG: Transglutaminase Antibody. SCC: Squamous cell carcinoma. ROC: Receiver operator characteristic

Declarations

Ethics approval and consent to participate

All patients provided written informed consents and the project was approved by the Local Committee on Health Research Ethics (Shahid Sadoughi university of medical sciences and health services).

Availability of data and material

The paraffinized blocks are stored in the Department of Pathology, Shahid Sadoughi hospital, Yazd, Iran. Other datasets generated and analysed during the current study are available from the corresponding author on reasonable request.

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Author's contributions

Fariba Binesh and Maryam Vajihinejad performed the study design, histopathologic analysis and were contributed in writing manuscript. Mahmud Baghbanian planned and performed/revised the statistical analysis. Mohammad Ali Aghaei collected the patient data and revised the manuscript. Majid Aflatoonian contributed in children examinations and study design.

Competing Interests

The authors declare that they have no competing interests.

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Tables

Table 1. Clinical signs in study groups.

Symptoms	Adults	children
Anemia	125 (11.2%)	12 (5.6%)
Anorexia	61 (5.4%)	30 (14%)
Bleeding in upper GI	33 (2.9%)	11 (5.1%)
Dyspepsia	110 (9.8%)	2 (0.9%)
Abdominal pain Weight	461 (41.1%)	81 (37.9%)
loss	55 (4.9%)	15 (7.0%)
Vomiting	43 (3.8%)	11 (5.1%)
	232 (20.9%)	48 (24.4%)

Table 2. Endoscopy findings in study groups.

Endoscopy findings	Adults	Children
esophagus		
Malignant tumor	59 (69.4%)	1 (2.4%)
Inflammation	24 (28.2%)	23 (54.8%)
Normal	2 (2.4%)	11 (26.2%)
Not diagnosed	0	7 (16.6%)
Overall	85 (100%)	42 (100%)
stomach		
Malignant tumor	187 (26.8%)	2 (2.1%)
Inflammation	455 (65.3%)	72 (74.2%)
Non-malignant lesion	10 (1.4%)	14 (14.4%)
Normal	45 (6.5%)	9 (9.3%)
Overall	697 (100%)	97 (100%)
duodenum		
Malignant tumor	5 (1.6%)	0
Inflammation	14 (4.5%)	5 (3.6%)
Celiac disease	271 (87.1%)	97 (69.3%)
Normal	21 (6.8%)	38 (27.1%)
Overall	311 (100%)	140 (100%)

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Table 3. Histopathological findings in study groups.

Histopathological findings	Adults	Children
esophagus		
Malignant tumor (Adenocarcinoma)	21 (25.6%)	0
Malignant tumor (SCC*)	23 (28.0%)	0
Inflammation	20 (24.4%)	20 (46.5%)
Normal	13 (15.9%)	23 (53.5%)
Non-malignant lesion	5 (6.1%)	0
Overall	85 (100%)	43 (100%)
stomach		
Malignant tumor	125 (17.8%)	2 (2.1%)
Inflammation	512 (72.7%)	56 (57.7%)
Non-malignant lesion	24 (3.4%)	0
Normal	43 (6.1%)	39 (40.2%)
Overall	697 (100%)	97 (100%)
duodenum		
Malignant tumor	6 (1.8%)	0
Inflammation	92 (24.9%)	43 (25.3%)
Celiac disease	109 (29.5%)	69 (40.6%)
Normal	103 (27.9%)	38 (22.4%)
Non celiac mucosal changes	56 (15.2%)	20 (11.8%)
Overall	311 (100%)	140 (100%)

*SCC: Squamous cell carcinoma

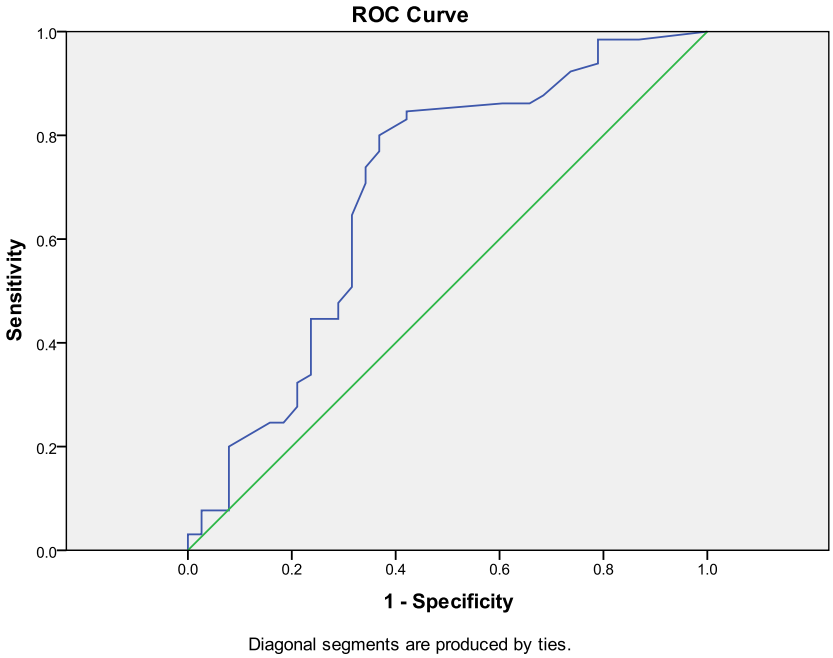


Figure 1. ROC curve in the pathologic diagnosis of celiac disease in duodenum

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