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Evaluation of the clinical impact of preoperative gastroscopy in patients undergoing cholecystectomy: A retrospective study

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ABSTRACT

Introduction: The role of esophagogastroduodenoscopy (EGD) in the preoperative period for patients scheduled for cholecystectomy due to cholelithiasis is controversial. Some studies recommend routine application, while others suggest selective application. Our study aimed to evaluate EGD findings in patients who underwent EGD before cholecystectomy.

Materials and Methods: In our single-center retrospective study, patients who underwent cholecystectomy between 2020 and 2023 and had an EGD in the preoperative period were included. Patients who did not have a preoperative EGD, those who underwent cholecystectomy as part of another surgical procedure, and those with missing data were excluded from the study. Patients were evaluated based on demographic, clinical, endoscopic, and pathological findings.

Results: A total of 336 patients were analyzed. The median age was 53 years (range 24–87), and 216 (64.3%) of the patients were women. Endoscopic pathology was detected in 180 (53.6%) of the patients. Histopathological abnormalities were detected in 199 (87.3%) of 228 patients. Helicobacter pylori (HP) positivity was detected in 90 patients (39.5%), atrophic gastritis in 45 patients (19.7%), and intestinal metaplasia in 41 patients (18%). Statistically, significantly more active and severe gastritis findings were observed in mucosal areas that appeared endoscopically pathological ($p<0.001$ and $p<0.001$, respectively).

Conclusion: It can be concluded that the routine application of EGD before cholecystectomy may impact the clinical approach.

Keywords: Cholelithiasis, Esophagogastroduodenoscopy, Gastritis

Introduction

Epigastric abdominal pain is a common condition in the population and can result from various diseases, with cholelithiasis and gastritis being particularly prominent in its differential diagnosis. The distinct treatment approaches for these two etiological factors make accurate diagnosis crucial. Cholelithiasis can be detected via abdominal ultrasonography (US), while gastritis is typically diagnosed through clinical findings and esophagogastroduodenoscopy (EGD). The preferred treatment for symptomatic cholelithiasis is laparoscopic cholecystectomy, whereas medical treatments for gastritis are based on the

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presence of *H. pylori* and pathological findings. Some patients with symptomatic cholelithiasis may also have concomitant gastritis, and it is important to consider that in some cases, the symptoms may be attributable solely to gastritis, with cholelithiasis being asymptomatic.[1] This may be the underlying condition in patients with persistent abdominal pain after laparoscopic cholecystectomy, initially considered due to symptomatic cholelithiasis.[2]

EGD is the gold standard for diagnosing and evaluating gastritis, but it is more invasive and costly than abdominal US. The necessity of performing EGD before cholecystectomy is debated in the literature; however, some studies suggest that it aids in identifying asymptomatic cholelithiasis cases accompanied by gastritis and helps reduce unnecessary cholecystectomies.[3–6] In our study, we aimed to examine the preoperative gastroscopy findings in patients scheduled for cholecystectomy and evaluate the rates of pathological findings.

Materials and Methods

In our single-center retrospective study, we evaluated 336 patients who underwent cholecystectomy and preoperative EGD between 2020 and 2023. Patients participating in our study were informed, and written consent was obtained. The study was conducted in accordance with the Declaration of Helsinki and was approved by the Clinical Research Ethics Committee of Şişli Etfal Training and Research Hospital (30.01.2024, No: 2565).

Patients over the age of 18 who underwent cholecystectomy for gallbladder diseases between 2020 and 2023 were included. Patients who underwent cholecystectomy as part of a larger surgical procedure (e.g., pancreaticoduodenectomy), did not undergo preoperative gastroscopy, or had missing archival data were excluded. The patients were evaluated based on demographic, clinical, endoscopic, and pathological data.

Statistical Analysis

Statistical analyses were performed using SPSS (Statistical Package for the Social Sciences) version 25.0 (IBM Corp., Armonk, NY, USA). Categorical data were expressed as numbers and percentages, while continuous data were expressed as median and range. Chi-square tests (Pearson's chi-square, Fisher's exact test, etc.) were used to compare categorical data. All p-values were two-sided, and results were evaluated at a significance level of $p<0.05$ with a 95% confidence interval.

Results

A total of 336 patients were included in the study. The median age was 53 years (range 24–87), and 216 (64.3%) of the patients were women. It was observed that 136 (40.5%) of the patients had an American Society of Anesthesiology (ASA) score of I, 156 (46.4%) had ASA II, and 44 (13.1%) had ASA III. Among the EGDs performed, 156 (46.4%) were macroscopically normal, while endoscopic pathology was detected in 180 (53.6%) of the patients. Gastroscopic biopsies were taken from 228 (67.9%) patients (Table 1).

Histopathological abnormalities were detected in 199 (87.3%) of the 228 patients for whom biopsies were taken. Helicobacter pylori (HP) was found to be positive in 90 patients (39.5%). Atrophic gastritis was detected in 45 patients (19.7%), and intestinal metaplasia was detected in 41 patients (18%) (Table 2).

Table 1. Demographic and clinicopathologic features of the participants

Variables	N	%
All Patients	336	100
Age (Median 53, Range 24-87)		
18-49	128	38.1
50-69	164	48.8
≥70	44	13.1
Gender		
Female	216	64.3
Male	120	35.7
ASA Score		
ASA I	136	40.5
ASA II	156	46.4
ASA III	44	13.1
Endoscopic Findings		
Normal EGD	156	46.4
Antral gastritis	76	22.6
Pangastritis	48	14.3
Bile reflux gastritis	36	10.7
Peptic ulcer	20	6
Biopsy Sampling		
No	108	32.1
Yes	228	67.9

ASA: American Society of Anesthesiology.

Table 2. Pathological findings

Variables	N	%
All Biopsied Patients	228	100
Histopathological Findings		
Normal	29	12.7
Abnormal	199	87.3
HP Detection		
No	138	60.5
Yes	90	39.5
Atrophic gastritis		
No	183	80.3
Yes	45	19.7
Intestinal Metaplasia		
No	187	82
Yes	41	18

HP: Helicobacter pylori.

When the 199 patients with histopathological abnormalities were examined, mild gastritis findings were observed in 74 (37.2%) patients, moderate gastritis in 98 (49.2%), and severe gastritis in 27 (13.6%). Of the 199 patients, 44 (22.1%) had inactive gastritis, 45 (22.6%) had mild activity, 82 (41.2%) had moderate activity, and 28 (14.1%) had severe activity. Statistically, significantly more active and severe gastritis findings were observed in mucosal areas that appeared endoscopically pathological ($p<0.001$ and $p<0.001$, respectively) (Table 3).

Discussion

Cholelithiasis is prevalent in society and can be incidentally detected during examinations performed for unrelated reasons.[7–9] When gallbladder stones are detected in these patient groups, there is often a tendency to focus solely on this issue and overlook other differential diagnoses. Abdominal ultrasonography (USG) is typically one of the initial examinations requested for patients presenting with upper quadrant and epigastric abdominal pain. Patients diagnosed with gallbladder stones on abdominal USG are often directly referred for surgery.

Articles advocating the routine necessity of EGD evaluation before cholecystectomy emphasize the likelihood of detecting pathological findings during EGD in patients with gallstones. They also suggest that in some cases, appropriate treatment can lead to symptom resolution without the need for cholecystectomy.[4,10] In contrast, articles that do not advocate routine EGD before cholecystectomy note that the detection rate of endoscopic pathology is low in patients presenting with "typical" gallbladder pain during detailed anamnesis. It is suggested that EGD may be considered if pain persists after cholecystectomy.[6,11] In our study, we found that 53.6% of EGDs performed before cholecystectomy revealed endoscopic pathology, and histopathological abnormalities were detected in 199 (87.3%) of 228 patients who underwent biopsies.

Based on these findings, while it may be argued that routine EGD before cholecystectomy could be beneficial, it is important to consider the retrospective nature of our study. There is also the possibility that some patients un-

Table 3. Abnormal histopathologic fingings according to endoscopic findings

Variables (N=199, %)	All Patients	Normal EGD	Antral Gastritis	Pangastritis	Bile Reflux Gastritis	Peptic Ulcer	p
Severity of Chronic Gastritis							
Mild	74 (37.2)	4 (2)	34 (17.1)	18 (9)	18 (9)	0 (0)	<0.001[a]
Moderate	98 (49.2)	14 (7)	39 (19.6)	23 (11.6)	12 (6)	10 (5)	
Severe	27 (13.6)	1 (0.5)	3 (1.5)	7 (3.5)	6 (3)	10 (5)	
Activity of Chronic Gastritis							
Inactive	44 (22.1)	1 (0.5)	25 (12.6)	9 (4.5)	9 (4.5)	0 (0)	<0.001[a]
Mild	45 (22.6)	5 (2.5)	16 (8)	12 (6)	11 (5.5)	1 (0.5)	
Moderate	82 (41.2)	11 (5.5)	30 (15.1)	21 (10.6)	12 (6)	8 (4)	
Severe	28 (14.1)	2 (1)	5 (2.5)	6 (3)	4 (2)	11 (5.5)	

[a]Fisher's Exact Test; EGD: Esophagogastroduodenoscopy.

dergoing EGD before cholecystectomy may present with dyspeptic complaints. Prospective studies focusing on patients with typical symptoms of gallstones would provide further clarity on this matter.

The prevalence of HP infection is reported to be approximately 35% globally, with a decreasing trend in recent years. However, there is variability in HP prevalence, with lower rates observed in developed Western societies and higher rates in Asia.[12,13] In our study, Helicobacter pylori (HP) positivity was detected in 90 (39.5%) of 228 patients from whom biopsies were taken, consistent with the literature.

In a study investigating the incidence of atrophic gastritis, Adamu et al.[14] reported that its prevalence in the general population varies between 0% and 11%. In our study, 19.7% of biopsied patients had atrophic gastritis, and 18% exhibited intestinal metaplasia. These higher-than-normal rates of atrophic gastritis and intestinal metaplasia in our study cohort support the rationale for performing EGD before cholecystectomy.

When examining the distribution of histopathological findings based on endoscopic results, we observed more severe and active gastritis in patients with peptic ulcer and bile reflux, whereas patients with normal endoscopic findings showed milder and less active gastritis.

The primary limitations of our study include its retrospective and single-center nature. Due to missing data regarding the indications for gastroscopy in patients undergoing cholecystectomy, we cannot accurately determine the prevalence of complaints such as dyspepsia. Consequently, there is a possibility that pathological findings may be detected at a higher rate than normal. This issue requires evaluation through prospective studies, particularly focusing on EGD findings in patients presenting with typical symptoms of cholelithiasis.

Conclusion

The detection rates of pathology are high in patients who undergo EGD before cholecystectomy, suggesting that routine preoperative EGD could enhance clinical management.

Disclosures

Ethics Committee Approval: The study was conducted in accordance with the Declaration of Helsinki and was approved by the Clinical Research Ethics Committee of Şişli Etfal Training and Research Hospital (30.01.2024, No: 2565).

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Conflict of Interest: None declared.

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