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Original Research Article

Analytical study of upper gastrointestinal endoscopy in patients of gallstones with dyspepsia

Mehnish Malik, Zulekha Bhimani*, Anuradha Panchal, P. S. Eswar, Nidhi Shah, Shivam Singh

Department of General Surgery, Dr. D.Y Patil School of Medicine, Navi Mumbai, Maharashtra, India

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***Correspondence:**
Dr. Zulekha Bhimani,
E-mail: zulekhabhimani10@gmail.com

ABSTRACT

Background: The relationship between gallstones and dyspepsia is complex and not fully understood. This study aimed to analyze the use of upper gastrointestinal endoscopy as a pre-operative investigation tool in gallstone disease associated with dyspepsia.
Methods: A prospective observational study was conducted among 100 patients with gallstones and dyspepsia at D. Y. Patil University School of Medicine, Navi Mumbai, over a two-year period. Demographic data, clinical presentations, endoscopic findings and treatment outcomes were analyzed.
Results: The majority of patients (46%) were in the 41-50 age group, with a female preponderance (68%). Abdominal pain was the most common symptom (99%). Upper GI endoscopy revealed abnormal findings in 66% of patients, with gastritis (26%) being the most frequent abnormality. H. pylori infection was present in 75% of patients. Most patients (92%) underwent cholecystectomy, with 58% receiving additional H.PYLORI treatment. Symptom relief within 1-4 weeks was observed in 64% of patients. Significant associations were found between USG findings and treatment choice ($p<0.001$) and between USG findings and time for symptom relief ($p<0.001$).
Conclusions: Upper GI endoscopy revealed a high prevalence of abnormal findings in patients with gallstones and dyspepsia. The significant associations between USG findings, treatment choice and symptom relief highlight the importance of comprehensive pre-operative evaluation in these patients. These findings suggest that upper GI endoscopy and H. pylori testing may be valuable in guiding management decisions for patients with gallstones and dyspepsia.

Keywords: Cholecystectomy, Dyspepsia, Gallstones, *H. pylori*, Upper gastrointestinal endoscopy

INTRODUCTION

Gallstone disease and dyspepsia represent two of the most common gastrointestinal conditions encountered in clinical practice, often presenting with overlapping symptoms that pose significant diagnostic challenges.[1] The global prevalence of gallstones ranges from 10-20% in adults, while dyspepsia affects approximately 20-30% of the population worldwide, creating a substantial burden on healthcare systems.[2] The coexistence of these conditions and their similar symptomatology necessitates careful diagnostic evaluation to guide appropriate therapeutic interventions. Upper gastrointestinal endoscopy (UGIE) has emerged as a pivotal diagnostic tool in the evaluation of dyspeptic symptoms, offering direct visualization of the upper gastrointestinal tract and the ability to obtain tissue samples when necessary.[3]

In patients with gallstones presenting with dyspepsia, the role of UGIE becomes particularly significant as it helps differentiate between biliary and non-biliary causes of symptoms, potentially influencing the decision for cholecystectomy.[4] The relationship between gallstones and dyspeptic symptoms remains complex and sometimes controversial. While some patients experience resolution of dyspeptic symptoms following cholecystectomy,

others continue to experience persistent symptoms, suggesting the presence of concurrent upper gastrointestinal pathology.[5] Studies have shown that up to 40% of patients with gallstones may have coexisting upper gastrointestinal conditions that could be responsible for their symptoms, emphasizing the importance of comprehensive evaluation before surgical intervention.[6]

Recent evidence suggests that routine preoperative endoscopy in patients scheduled for cholecystectomy might be beneficial in identifying concurrent pathologies that could influence surgical decision-making and patient outcomes.[7] The findings from endoscopic evaluation can range from gastritis and peptic ulcer disease to more serious conditions such as malignancy, each requiring specific therapeutic approaches.[8]

The economic implications of this diagnostic approach must also be considered, as unnecessary cholecystectomies in patients whose symptoms are primarily due to non-biliary causes can lead to increased healthcare costs and potential complications.[9] Furthermore, the identification of significant upper gastrointestinal pathology through endoscopy can prevent delayed diagnosis and ensure appropriate management strategies are implemented early in the disease course.[10]

This analytical study aims to evaluate the role and findings of upper gastrointestinal endoscopy in patients presenting with both gallstones and dyspepsia, with the goal of establishing evidence-based guidelines for the optimal diagnostic approach in this patient population.

METHODS

Study type

This prospective observational study.

Study place

Study was conducted at Dr. DY Patil hospital and research centre, Navi Mumbai.

Study duration

The study duration from April 2023 to June 2024.

Sample size

The study included 100 patients with cholelithiasis and dyspepsia who presented to either the surgery outpatient department or were admitted to the surgery ward.

The researchers used a pretested structural proforma to collect relevant information from each patient. They obtained detailed medical histories and ultrasonography reports from all participants. Additional investigations were conducted when warranted based on patient history and complaints. All patients provided written informed consent after receiving detailed explanations about the procedures, associated risks, complications, advantages and disadvantages. Patient selection followed specific inclusion and exclusion criteria.

Inclusion criteria

The inclusion criteria encompassed patients with ultrasound-confirmed gallbladder stones who presented with at least one dyspeptic symptom (upper abdominal pain/discomfort, nausea/vomiting, early satiety or bloating/fullness).

Exclusion criteria

Patients with acute cholecystitis requiring emergency surgery were excluded from the study.

Upper GI endoscopy was performed on all participants to identify significant lesions. Based on the findings, patients underwent either cholecystectomy alone or cholecystectomy with additional treatment. The researchers followed up with patients for two months post-procedure to assess symptom relief. They then compared the data between patients who received cholecystectomy alone versus those who received cholecystectomy with additional treatment.

Statistical analysis

The study used a sample size of 100 patients, calculated based on an anticipated proportion of endoscopic findings of 72.8% among cholelithiasis patients, with a 5% level of significance and 10% absolute error. Statistical analysis included mean±SD, percentages, diagrams and associations between variables were determined using chi-square test/Fisher's Exact test.

RESULTS

Table 1 shows that the study population showed a distinct age and gender distribution pattern. The majority of patients (46%) were in the 41-50 age group, followed by 33% in the 31-40 age group, demonstrating that gallstone disease predominantly affects middle-aged adults. There was a clear gender disparity, with females comprising 68% of the study population. Most patients (73%) had experienced symptoms for more than 30 days before seeking medical attention, indicating a chronic nature of the condition.

Table 2 shows the symptom profile revealed abdominal pain as the overwhelmingly predominant symptom, affecting 99% of patients. Other significant symptoms included epigastric burning (32%), early satiation (17%) and bloating sensation (12%). Upper GI endoscopy findings were particularly revealing, with 66% of patients showing abnormal results. The most common abnormality was gastritis (26%), followed by combined

oesophagitis with gastritis (17%) and isolated oesophagitis (11%). This high prevalence of abnormal findings underscores the importance of endoscopic evaluation in these patients.

Table 1: Demographic and clinical characteristics (n=100).

Characteristic	Category	Frequency
Age (in years)	20-30	11
	31-40	33
	41-50	46
	51-60	10
Gender	Females	68
	Males	32
Duration of symptoms	≤15 days	13
	16-30 days	14
	>30 days	73

Table 2: Clinical presentation and endoscopic findings.

Characteristic	Category	Frequency
Clinical symptoms	Pain abdomen	99
	Epigastric burning	32
	Early satiation	17
	Bloating sensation	12
	Belching	11
	Nausea	3
UGI endoscopy findings	Normal	34
	Gastritis	26
	Oesophagitis+gastritis	17
	Oesophagitis	11
	Other findings (hiatus hernia, antral gastritis, duodenitis and pangastritis)	12

Table 3 shows that the treatment strategies varied based on endoscopic findings. While the majority of patients (92%) underwent cholecystectomy, 58% required additional H. pylori eradication therapy. The rapid urease test was positive in 75% of patients, indicating a high prevalence of H. pylori infection in this population. Symptom relief patterns showed that 64% of patients experienced improvement within 1-4 weeks of treatment, while 36% required longer recovery periods.

Statistical analysis revealed several significant correlations. There was a strong association between USG findings and treatment choice ($p<0.001$), indicating that imaging results significantly influenced therapeutic decisions. Similarly, USG findings showed a significant correlation with symptom relief time ($p<0.001$) and duration of symptoms ($p=0.04$). However, no significant associations were found between USG findings and gender or rapid urease test results, suggesting these factors may be independent of gallstone pathology.

Table 3: Treatment characteristics and outcomes.

Characteristic	Category	Frequency
Treatment given	Cholecystectomy alone	34
	Cholecystectomy+HPE KIT	58
	HPE KIT alone	8
Time to symptom relief	1-4 weeks	64
	>4 weeks	36
Rapid urease test	Positive	75
	Negative	25

Table 4: Significant Statistical Associations.

Comparison	P value	Key finding
USG findings vs duration of symptoms	0.04	Longer symptom duration associated with significant USG findings
USG findings vs Treatment	<0.001	Treatment choice strongly correlated with USG findings
USG findings vs relief time	<0.001	Normal USG findings associated with faster symptom relief
USG findings vs gender	0.95	No significant association
USG findings vs RUT	0.22	No significant association

DISCUSSION

The study of 100 patients with gallstones and dyspepsia revealed significant demographic patterns, with the majority (46%) falling in the 41-50 age group and showing strong female preponderance (68%). This aligns with previous research by Khan et al, Srikantaiah et al and Chandio et al, who reported mean ages between 43.6-46.1 years.[11-13] The female predominance was similarly observed in studies by Mozafaretal.[14] (74.15%), Ure et al, (75%) and Gaharwar et al, (91.66%), with Novacek attributing this to estrogenic effects.[15-17] Age distribution patterns were consistent with Aravind et al and Sasoda et al, who found 60-68.25% of cases in the 30-60 year age group.[18,19]

Clinical presentation analysis showed abdominal pain as the predominant symptom (99%), followed by epigastric burning sensation (32%). This pattern was consistent with Khan et al, who reported 55% atypical upper abdominal symptoms and 45% classic biliary colic.[11] Similar findings were noted by Berger et al,20 (89% abdominal pain), Ure et al, (82.9%) and Rashid et al, (75%).[15,21] Endoscopic evaluation revealed abnormal findings in 66% of patients, with gastritis (26%) being most common, comparable to Kunnura et al, (75.5% abnormal findings). The study also found a high *H. pylori* prevalence (75%), though this differed from Khan et al, possibly due to regional variations or testing methods.[11,22]

Treatment outcomes showed that 92% of patients underwent cholecystectomy, with 58% receiving additional PPI treatment. The significant association between USG findings and treatment choice ($p<0.001$) aligned with Tokyo guidelines recommendations. Khan et al, reported 100% symptom relief in patients with normal UGE findings after one month, while those with abnormal UGE showed 85.7-87.5% relief rates.[11]

Notably, patients with normal USG findings experienced faster symptom relief (within 1-4 weeks) compared to those with significant findings ($p<0.001$), suggesting that factors beyond gallstones may contribute to persistent symptoms. These findings emphasize the importance of thorough upper GI evaluation in patients with gallstones and dyspepsia, though larger-scale prospective studies are needed for definitive management guidelines.

Limitations of the study was that patients with comorbidities, patients with underlying GI disorders, patient unable to tolerate conscious sedation, patient with recent MI, Pneumonia, foregut surgeries, coagulopathies, patients with caustic ingestion and high Mallampati score.

CONCLUSION

The study demonstrates that upper gastrointestinal endoscopy is a valuable diagnostic tool in patients with gallstones and dyspepsia, revealing abnormal findings in 66% of cases and a high prevalence of *H. pylori* infection (75%). The significant associations between USG findings, treatment choices and symptom relief times ($p<0.001$) underscore the importance of comprehensive pre-operative evaluation. With 92% of patients requiring cholecystectomy and 58% needing additional *H. pylori* treatment, the findings suggest that concurrent upper gastrointestinal pathologies are common and require attention beyond cholecystectomy alone. This supports the routine use of upper GI endoscopy as a pre-operative investigation tool in these patients to optimize treatment outcomes and ensure appropriate management of all contributing pathologies.

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