Diagnostic Value of Upper Gastrointestinal Endoscopy Prior to Cholecystectomy in a Tertiary Care Institute

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ABSTRACT

BACKGROUND

Cholelithiasis is one of the most common problems encountered in surgery department. It has always been a challenge to distinguish upper gastrointestinal symptoms due to gall stones from other causes. The persistence of abdominal symptoms even after cholecystectomy is highly discouraging for surgeons.

METHODS

This is a prospective study conducted on 50 cases at the Department of Surgery, MMU Hospital, Mullana among ultrasonographically proven gall bladder stones. After history taking and examination, all the patients were subjected to endoscopy 1-2 days prior cholecystectomy, and biopsies were obtained for histopathology if required.

RESULTS

Out of a total of 50 patients, 44 (88%) were females and 6 (12%) were males with a M:F ratio of 3:22. 28 (56%) presented with typical pain and 22 (44%) presented with atypical pain. All patients were subjected to upper gastrointestinal endoscopy (UGE) and no lesion was found on endoscopy of 28 patients who presented with typical pain while out of 22 patients who presented with atypical pain, 18 (81.8%) had abnormal endoscopic finding and only 4 (18.2%) had normal endoscopy ($p<0.001$). Gastritis (72.2%) was the most common finding on upper gastrointestinal endoscopy followed by duodenitis (27.8%), oesophagitis (22.2%) and peptic ulcer (11.1%). On follow-up after 1 week of cholecystectomy all the patients except 10 from atypical group had persistence of preoperative symptoms.

CONCLUSIONS

Presence of atypical pain in patients with gall stones is highly likely to have other coexisting upper gastrointestinal pathologies. Hence, upper gastrointestinal endoscopy prior to elective cholecystectomy in patients with atypical presentation can be clinically helpful.

KEY WORDS

Gallstones, Upper Gastrointestinal Endoscopy, Dyspepsia

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BACKGROUND

The term "Symptomatic Gallstones" is widely used to describe the symptoms arising secondary to gallstones. The symptoms of gallstones are variable ranging from non-specific symptoms to acute medical emergency.[1] Commonest causes of upper abdominal symptoms are gallstones, peptic ulcer and acute and chronic gastritis.[2] there is a marked geographic variation in the prevalence of gallstones. Age, gender, ethnicity, diet, and sedentary lifestyle influence the prevalence of gallstones. In India, the prevalence of gallstones ranges from 6% to 9% in adult population.[3] Increase in incidence of gallstones in India mainly attributed to westernization of diet, wide availability of ultrasound as basic investigation and socioeconomic structure. There are multiple aetiologies for gall stone disease which includes increase lithogenecity, decrease in motion of gall bladder, augmented gall bladder volume, number of pregnancies, post-operative periods, family history, obesity, oestrogen replacement therapy, serum lipids and decreased physical activity. Symptomatic gallstones and inflammatory disorder of the stomach and duodenum are common causes of upper abdominal pain. It's a great challenge to differentiate between upper gastrointestinal symptoms because of gall stones or any other conditions. After ultrasound detection of gallstones the main focus of the attending surgeon stays around treating the gallstones and further investigations to rule out other pathologies, which may produce similar symptoms are seldom considered.[4] Nearly 80% of the referred patients with gallstones presented with other abdominal symptoms.[5] Thus to distinguish between these two situations is crucial, because both gallstones and upper gastrointestinal symptoms are common in the general population, these are not always related, and therapeutic strategies may be different regarding to each of them.[6]

The natural history of gallstones suggests that a large number of affected individuals remain asymptomatic for life. 80% of patients with cholelithiasis are asymptomatic. Only 1-4% per year will develop symptoms or complications of Gallstones. Only 10% will develop symptoms in the first five years after the diagnosis and 20% will develop symptoms 20 years after diagnosis.[6] Among these 2% patients has an overall risk of biliary complications such as acute choledocholithiasis or acute pancreatitis and the risk of gallbladder carcinoma in 0.02% patients.[6] Almost all the patients will experience symptoms for a period of time before they develop complications. None of the features, like number of stones, shape, size, nature, wall thickness, gallbladder contractility, patients gender or age, were found to be predictive of symptoms or complications like acute cholecystitis, obstructive jaundice, pancreatitis or gallbladder cancer.[6] The present study was conducted to contribute upper gastrointestinal endoscopy as routine preoperative investigation prior cholecystectomy to evaluate the association between gastrointestinal symptoms with gallstones along with incidence of associated treatable medical conditions in gall stone patients especially in the upper gastrointestinal tract to save unnecessary cholecystectomies.

METHODS

The present cohort study conducted in the Department of Surgery of Maharishi Markandeshwar Institute of Medical Sciences and Research, Mullana (dist. Ambala) from December 2017 to June 2019 (prospective study). 50 Patients presenting with single or multiple symptomatic gallstone disease confirmed by the ultrasound findings admitted in Department of Surgery and posted for elective cholecystectomy.

A total of 50 patients were included in the study who were divided into two groups based on symptomatology- Group 1: (N-28) patient presented with typical symptoms of biliary colic. Group 2: (N-22) patients presented with atypical or dyspeptic symptoms.

Exclusion Criteria

- Patients less than 18 years of age,
- Patients presenting with acute cholecystitis.
- Patients unfit for surgery or Patient with poor general condition.
- Patient not willing to sign consent for endoscopy.
- Pregnant females.
- Patients presenting with complicated gall stone disease like –
    1. Gall stone pancreatitis
    2. Gallbladder carcinoma
    3. Obstructive jaundice
    4. Cholecystoenteric fistula
    5. Gastric carcinoma
    6. Previous biliary or pancreatic surgery.

Details of history, clinical examination & consent and prior ethical clearance was taken among the patients. A special emphasis was placed on recording the history which could suggest the flatulent dyspepsia. This dyspepsia may be due to gall stones, peptic ulcer, or gastrointestinal reflux or irritable bowel syndrome.

Biliary colic defined as the pain due to the obstructing stone that causes sudden expansion of the gall bladder. This typical pattern of pain occurs at right upper quadrant or epigastric region hours commonly after a fatty meal and progresses in less than an hour to a steady plateau that ranges from moderate to excruciating remaining constant for more than an hour and then slowly declines over several hours. Symptoms which do not fit typical pain criteria is considered atypical and included any abdominal discomfort, dyspepsia (belching, food intolerance, heart burn, vomiting, flatulence, loss of appetite). All the patients were advised to remain fasting overnight. Fibreoptic endoscopy of upper gastrointestinal tract was carried out next morning, with endoscope (PENTAX model no EG29i10). A pharyngeal anaesthesia with local acting xylocaine used. Upper gastrointestinal endoscopy done usually 1-2 days before cholecystectomy to look for significant upper gastrointestinal lesions like:

- Gastritis.
- Gastric carcinoma.
- Oesophagitis.
- Duodenal ulcer.
- Duodenitis.

- Hiatus hernia.
- GERD (gastroesophageal reflux disease).

Endoscopic findings divided the problem into four main groups, normal, inflammation, ulcer, and others (polyps, varices etc.) whilst the pathological findings were defined as benign and malignant. Laparoscopic cholecystectomy was preferred and done using standard American technique. Laparoscopic cholecystectomy was converted to open cholecystectomy if there was no progress in dissection of Calot's triangle within 30 minutes or uncontrolled bleeding. Standard Open Cholecystectomy is done through sub-hepatic incision. Intra operative findings noted especially if adhesions, multiple or single stone, impacted stone, gall bladder distention.

Statistical Analysis

All the data of study fed in MS excel and analyzed using SPSS 16. Simple statistical test such as average or percentage and chi square test used to analyze various findings of the study.

RESULTS

Out of 50 patients included in the study, 7 patients (14%) were in age group 20-30 years, 15 patients (30%) were in age group 30-40 years, 12 patients (24%) were in age group 40-50 years, and 9 patients (18%) were in age group 50-60 years with the mean age 44.72 years. The maximum number of patients were presented in the third decade (30%) and fourth decade (24%).

44 Female patients (88%) predominated over 6 male patients (12%) making the female to male ratio 22:3. 21 patients (42%) from the rural area while 29 patients (58%) came from the urban areas. Among these Fifty patients, only fifteen (20%) were vegetarian while remaining thirty-five (70%) were non-vegetarian. 25 patients (50%) were from middle class, 14 patients (28%) were from upper class and remaining 11 patients (22%) were from lower class. The pain was typical colicky in 28 (56%) patients and continuous in 22 (44%) patients. Since 22 patients presented with atypical or dyspeptic symptoms, nausea was the most common feature, which was seen in 21 patients (42%), followed by epigastric burning in 19 patients (38%), heart burn in 18 patients (36%), belching in 15 patients (30%), post prandial fullness in 14 patients (28%) and vomiting in 7 patients (14%). There was no history suggestive of any chronic disease like diabetes mellitus, hypertension. Ultrasonography of abdomen was done in every case. In five patients (10%) the gall bladder was found distended. Multiple stones were found in 44 cases (88%), in six (12%) cases there was a single stone.

All of these patients were subjected to upper gastrointestinal endoscopy 1-2 day before cholecystectomy to inspect the gut from oesophagus up to second part of the duodenum. No lesion was found on endoscopy in 32 (64%) patients while the remaining 18 (36%) patients were with some kind of endoscopy findings. It was noted that out of 22 patients who presented with atypical symptoms (group 2), 18 had positive finding on upper gastrointestinal endoscopy while 4 patients had normal findings on endoscopy which is statistically significant ($p<0.001$). While none of the patients had any associated lesion in upper gastrointestinal tract who were presented with typical biliary colic pain (group 1).

Presenting Symptom	No. of Patients	Patients with Positive Endoscopic Findings	Percentage
Typical, biliary colic (Group 1)	28	0	0%
Atypical, dyspeptic (Group 2)	22	18	81.8% ($p<0.001$)*
Total	**50**	**18**	**36%**

Table 1. Distribution of Patients Having Abnormal Findings on Upper GI Endoscopy According to Presenting Complaints

* ($p<0.05$ considered as significant)

Among these 18 patients who had positive finding on endoscopy, 15 patients (30%) were having disease in stomach in form of mild to moderate gastritis or ulcer. Gastric ulcers were found only in two (4%) patients while in the remaining 13 (26%) patients there were signs of inflammation. In one doubtful case endoscopy biopsy of ulcer was taken which was proved on histopathology as benign. In five (10%) patients, duodenum was affected, and all these patients were having inflammation of the duodenum. In four patients (8%) there was oesophagitis.

Overall from abnormal endoscopic findings most common finding was gastritis (72.2% of the patients with abnormal endoscopy), followed by duodenitis in 27.8%, oesophagitis in 22.2% and peptic ulcer in 11.1% of the patients with positive endoscopic finding. None of the patient had any finding suggestive of hiatus hernia, any polyp or abnormal growth. Out of 18 patients, 12 patients had single pathology on endoscopy while 6 patients had more than one abnormal upper gastrointestinal findings.

Organ	Type of Lesion	No. of Patients	%age
Oesophagus	Inflammation	4	22.2%
	Hiatus hernia	0	0%
	Polyp	0	0%
Stomach	Inflammation	13	72.2%
	Peptic ulcer	2	11.1%
Duodenum	Duodenitis	5	27.8%
	Duodenal ulcer	0	0%

Table 2. Distribution of Patients According to Findings of Upper GI Endoscopy

Intraoperatively Four cases were converted to open cholecystectomy from laparoscopic cholecystectomy owing to adhesions. In 33 (66%) patients, adhesions of all gall bladder with surrounding structures were identified. Multiple stones were found in 44 (88%) patients and a single stone in 6 (12%) cases. Postoperatively two of these operated patients (4%) suffered from port-site wound infection. These patients were treated with regular antiseptic dressing and debridement. Both of these responded very well to the treatment and were discharged in a satisfactory condition.

DISCUSSION

Cholelithiasis is one of the commonest problems encountered in general surgery.[7] In Asia, the prevalence of gallstones is 5-10% of population especially among female and older individuals.[7] In Western countries, the prevalence of gallstones ranges from approximately 16.6% in women and 7.9% in men.[7] 80% of patients with gall stones are

asymptomatic.[8] Most studies shows, patients appear to be symptomatic at the rate of two and three percent per year.[8]

In present study, 28 (56%) patients presented with typical biliary colic (group 1) and 22 (44%) with atypical symptoms (group 2). These finding was consistent with study done by Karmacharya[9], 2013, in which out of 196 patients Fifty-three patients (55.2%) presented with typical pain and 43 patients (44.8%) with atypical pain. Almost similar pattern of presentation noted by Mozafar[10], 2010, in which out of 360 patients, 182 patients (50.6%) presented with typical colic while 178 patients (49.4%) presented with atypical symptoms.

Study	Typical Symptoms (Group 1)	Atypical Symptoms (Group 2)
Present study (n=50)	56%	44%
Karmacharya study,[9] 2013 (n=96)	55.2%	44.8%
Mozafar study,[10] 2010 (n=360)	50.6%	49.4%
Kolla V et al,[11] 2016 (n=216)	45.4%	54.6%
Chandio A et al,[6] 2018 (n=382)	38.1%	61.7%

Table 3. Distribution of Presenting Complaints of Gallstones in Various Studies

In present study we aimed to determine the association between the nature of pain (typical/ or atypical) with the preoperative endoscopic findings. Out of 22 patients who presented with atypical symptoms (group 2), 18 patients (81.8%) had abnormal endoscopic finding and 4 patients (18.2%) had normal endoscopy while all patients with typical presentation (group 1) had normal endoscopic finding. Normal findings in these patients with typical pain reinforces the fact that patients with typical abdominal pain has less likelihood of presenting with coexisting upper gastrointestinal lesion as evidenced in other studies.[12,13]

In contrast patients with atypical abdominal pain had higher incidence of concomitant upper gastrointestinal lesions besides gallstones which would not have been diagnosed if endoscopy had not been performed preoperatively. In similar studies by Faisal et al[14] and Mozafar et al[10] found among 77.2% and 83% of patients with atypical pain had abnormal endoscopic findings. This establishes the importance of upper gastrointestinal endoscopy prior to elective cholecystectomy especially with atypical pain. Thybusch et al[15] found 50% of patients undergoing endoscopy prior to cholecystectomy had pathological findings in endoscopic examination. These findings are consistent with study done by Karmacharya[9] where none of the patient in group 1 had abnormal endoscopic finding while all the patients from group 2 had some abnormal endoscopic findings.

In 18 patients who had positive upper GI endoscopy, gastritis was the most common finding present in 12 out of 18 patients accounting 72.2%. Second most common finding was duodenitis present in 27.8% followed by oesophagitis 22.2% and peptic ulcer 11.1%. These findings were consistent with study by Karmacharya,[9] 2013, in which most common finding was gastritis present in 69.8% of the patient had positive endoscopy finding, followed by duodenitis in 16.3% and oesophagitis 9.3%. Similarly, in a study done by Singh S. et al[16] gastritis was present in 58.97% of patient with positive endoscopy followed by duodenitis in 20.5%.

In present study, 10 patients (20%) from the atypical group presented with persistence of symptoms on follow up after 1 week which resolved using proton pump blocker that significantly subsided the residual atypical symptoms over the period of 1 month.

	Group 1		Group 2		Total	
Study	No. of Patients	Patients had Abnormal Endoscopic Findings	No. of Patients	Patients had Abnormal Endoscopic Findings	No. of Patients	Patients had Abnormal Endoscopic Findings
Present study	28	0 (0%)	22	18 (81.8%)	50	18 (36%)
Mozafar study,[10] 2010	182	1 (0.5)	178	148 (83.1%)	360	149 (41.4)
Karmacharya study,[9] 2013	53	0 (0%)	43	43 (100%)	96	43 (44.8%)
Singh S. et al,[16] 2013	41	14 (34%)	59	25 (42.4%)	100	39 (39%)
Kolla V. et al,[11] 2016	98	51 (52%)	118	84 (71.1%)	216	135 (62.5%)
Sasoda study,[17] 2005	-	-	-	-	2800	1187 (42.4%)
Schwenk et al[18]	-	-	-	-	1143	545 (47.7%)

Table 4. Association between Symptomatology with Upper Gastrointestinal Endoscopy in Various Studies

Study	No. of Pt. had Findings	Gastritis	Duodenitis	Oesophagitis	Gastric Ulcer	Duodenal Ulcer
Present study	18	13 (72.2%)	5 (27.8%)	4 (22.2%)	2 (11.1%)	-
Karmachara study,[9] 2013	43	30 (69.8%)	7 (16.3%)	4 (9.3%)	2 (4.6%)	-
Chandio et al,[6] 2018	252	88 (35%)	-	22 (8.7%)	49 (19.4%)	39 (15.5%)
Gupta P et al,[19] 2016	40	27 (67.5%)	-	7 (17.5%)	6 (15%)	-
Singh S et al,[16]2013	39	23 (58.97%)	8 (20.5%)	8 (7.7%)	-	-
Narayan H et al,[20] 2019	67	23 (34.3%)	12 (17.9%)	3 (4.4%)	9 (13.4%)	-
Kolla V et al,[11] 2016	135	78 (57.8%)	28 (20.7%)	18 (13.3)%	4 (2.9%)	3 (2.2)%

Table 5. Distribution of Endoscopic Findings in Various Studies

CONCLUSIONS

Routine use of preoperative endoscopy prior to surgical management may help in identifying potentially treatable medical conditions and prevent unnecessary cholecystectomies.

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