

Is esophagogastroduodenoscopy essential prior to the elective surgical therapy of symptomatic cholelithiasis?

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ABSTRACT

Aim: To determine the co-incidence of gallstones with upper GI disease in patients who were candidate for elective cholecystectomy.

Background: Typical pain of gallstones frequently cause special pattern which can usually be distinguished from symptoms of other organic and functional diseases. But patient with cholelithiasis and atypical pattern of abdominal pain seems to bring about a challenging clinical problem to the surgeon.

Patients and methods: We designed a retrospective study to evaluate clinically and pathologically 360 patients whom were presented to Shohadaye Tajrish hospital with sonographic documented gallstones which were selected for elective cholecystectomy by the surgeon. They have also undergone esophagogastroduodenoscopy (EGD) before their cholecystectomy operation as a part of their routine preoperational evaluations, between April 2001 and March 2006. Endoscopic examination was performed for all treated patients 1 to 4 days before their operations.

Results: Among these 360 patients, 178 patients (49.4 %) experienced atypical abdominal pain, the other 182 patients (50.6 %) presented with typical abdominal pain. These two groups were comparable in sex and age. From those with typical pattern of pain, only one had positive findings in EGD (0.54 %) while among the 178 patients with atypical pain, 148 (83 %) had abnormal findings in EGD ($p < 0.001$). The surgery was postponed for patients with ulcer, and anti ulcer treatment was started. In 16 patients, the symptoms associated with colelithiasis subsided after healing of the ulcer. Of 178 patients with atypical pain, 11 cases (6 %) exhibited evidences of malignancy in their upper gastrointestinal (GI) pathology. Cholelithiasis in these two last patients was incidental finding, and a cholecystectomy was not performed.

Conclusion: Because of higher incidence of concurrent upper GI problems in patients with gallstones and atypical abdominal pain, esophagogastroduodenoscopy prior to elective cholecystectomy in this group of patients could be clinically helpful and also may be cost effective.

Keywords: Cholelithiasis, Esophagogastroduodenoscopy, Typical gallstone pain, Atypical gallstone pain, Upper GI problems.

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INTRODUCTION

The most considerable challenge in the assessment of patients with upper GI symptoms,

who are found to have gallstones, is whether the stones are the source of the symptoms (ie, gallstone disease) or are an incidental finding. Distinguishing between these two situations is crucial, because both gallstones and upper GI symptoms are common in the general population. These are not always related and therapeutic strategies may be different regarding

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to each of them. While cholecystectomy can be curative in those whose symptoms are related to gallstones, it exposes the rest to unnecessary risk, delays definitive treatment for the actual cause of symptoms, and incurs unnecessary expense.

Gallstone disease is one of the most common and costly of all digestive diseases. The third National Health and Nutrition Examination Survey estimated that 6.3 million men and 14.2 million women aged 20 to 74 in the United States had gallbladder disease (1). The risk factors identified for the gallstone diseases included: age, gender, pregnancy, estrogen replacement therapy, family history, obesity, rapid weight loss, diabetes mellitus, serum lipids, drugs, decreased physical activity.

Patients with gallstones can be divided into four groups based on their presentation. The first and the most common form of these, is patients with gallstones on imaging studies but without symptoms. Patients in this group exhibit different pattern of manifestations. In most cases, the type of symptoms experienced from gallstones is recurrent pain attacks, generated by the gallstones (biliary colic). Less commonly, the initial symptoms are due to one of the complications of gallstones (most commonly acute cholecystitis, acute biliary pancreatitis, acute cholangitis, or choledocholithiasis with extrahepatic cholestasis). The second group defined as typical biliary symptoms and gallstones on imaging studies. These typical symptoms are defined as a sudden onset rapidly increasing pain that commonly fires after a fatty meal (about one to two hours later) and usually does not occur during fasting. The discomfort 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. The frequency of recurrent attacks is variable ranging from years to hours (2). The pain is situated in the right upper quadrant or midepigastrium and may radiate to the right scapula (3, 4). The third category consists of the patients with gallstones on imaging studies and atypical symptoms and the fourth group is the

patients with typical biliary symptoms but without gallstones on imaging studies.

Treatments in the first and second groups are simple. The first group does not need any intervention while the second category should undergo elective cholecystectomy. In contrast, patients in the third and fourth groups are not straightforward in approach and must be individualized but the way of surgeon approach depends largely upon the possibility (based upon clinical features and diagnostic testing) that the patient's symptoms are related to the gallstones.

Here we designed a retrospective study to determine the coincidence of gallstones with upper GI disease, in 360 patients who were candidate for elective cholecystectomy and have had documented gallstones and also undergone preoperative EGD. We attempted to find out the extent of correlation that may exist between typical and atypical abdominal pain and the concurrence of upper GI problems.

PATIENTS and METHODS

This retrospective study was designed in department of surgery of Shohadaye Tajrish hospital to review the existing data around the patients with known gallstones, experienced typical or atypical gallstone symptoms which were chosen for elective cholecystectomy and also have had EGD as a part of their routine preoperational studies, between April 2001 and March 2006. All the data were extracted from file-keeping unit of Shohadaye Tajrish hospital and efforts were made to minimize information and recall bias. We defined clearly our selection criteria and all of our patients were selected from Shohadaye Tajrish hospital only to reduce probable selection bias. Because the proportion of the coincidence of atypical gallstone pain with upper GI problems was not clearly determined in the previous studies, we considered all of our patients who fulfilled our criteria, to be included in the study. The history of

chronic peptic ulcer disease, the type and location of the pain, the type of cholecystitis, the results from endoscopic evaluation of mucous membrane of the stomach and duodenum, and the results from histopathologic examination of mucous membrane's lesions were taken into consideration for each patient.

Inclusion criteria were documented gallstones with sonographic evaluations and symptomatic gallstones (typical or atypical abdominal pain) that were nominee for elective cholecystectomy and have undergone EGD prior to the operation. Gastroduodenoscopic examination was performed for both outpatients and inpatients in the clinical endoscopy laboratory 1 to 4 days before operation. The EGD examinations were performed in rotation by two gastroenterologists. For cases involving ulcer and inflammatory changes of gastric mucous membrane, the samples were taken for histopathologic examination. Where gastric polyps were found, they were removed with diathermic loop and histopathologically assessed. Planned cholecystectomy was postponed when there were gastric or duodenal ulcers, gastric polyps, or inflammatory changes of gastric mucous membrane until histopathologic results were obtained and ulcers healed. The decision for cholecystectomy was made by the surgeons. Clinical patterns of patient's pain and endoscopic and pathologic findings as well as related past medical histories were obtained from the patients files. The clinical patterns categorized in to typical and atypical abdominal pain. Typical pain was defined as recurrent sudden onset rapidly increasing pain that commonly fires after a fatty meal. The pain is situated in the right upper quadrant or midepigastric and may radiate to the right scapula. The discomfort progresses in less than an hour to a steady plateau that ranges from moderate to excruciating remaining constant for more than an hour, slowly declines over several hours. Atypical pain was defined as any epigastric abdominal discomfort that did not fill typical pain criteria. The

endoscopic findings subdivided the problem into four groups, normal, inflammation, ulcer, and others (include polyps, varices and etc.) while the pathological findings were defined as malignant and benign. Among the patients with typical abdominal pain, 54 (29.67%) were male and 128 (70.33%) were female, and among the atypical pain group, 46 (25.87%) were male and 132 (74.15%) were female. The average age of patients with typical and atypical abdominal pain was 52.63 and 56.75 years, respectively. Major differences between these two groups summarized in table 1. Age and sex of these two groups were similar, while other factors such as past medical history were not made similar at the beginning of study and they may act as a confounder. Some of other alarm symptom such as weight loss, back pain, loss of appetite, early satiety and upper GI bleeding were also considered. We also took into account the further therapeutic interventions that were done for each group.

Table 1- Primary differences between patients with typical and atypical abdominal pain.

	Abdominal pain	
	Typical	Atypical
Male/Female ratio	54/128	46/132
Average age (year)	52.63	56.75
History of dyslipidemia	74	61
Body mass index	32.09	31.66
Smoking	0	45
Drinking	1	43
Diabetes mellitus	0	32

To obtain information on the underlying incidence of Upper GI problems and the types of gallstone pain, we consider typical and atypical abdominal pain with endoscopic and pathologic findings using Z-test with 95 percent confidence interval. We calculated the odds ratio (OR) in each group. The prevalence of each finding was also considered.

RESULTS

Of 360 patients, 257 patients were female (71.4 %) and 103 were male (28.6 %). This result verifies the more prevalence of gallbladder disease in females. The average of body mass index in these patients was 31.41. From these 360 patients, 45 were smokers, 135 had dyslipidemia and 32 ones had diabetes mellitus. Chronic cholelithiasis was found in 297 cases (82.5%) and acute cholelithiasis in 63 cases (17.5%).

Retrospective study of these patients revealed that 182 patients (50.6 %) experienced typical pattern of gallstone pain, while 178 patients (49.4 %) came with atypical abdominal pain. All patients with typical abdominal pain had no others alarm symptoms whereas 72 of those with atypical pain (40.44 %) have had alarm symptoms such as weight loss, back pain, loss of appetite, early satiety and upper GI bleeding. From 182 patients with typical gallstone pain, only one had inflammation in endoscopic evaluations (0.54 %) and the rest had normal findings. The only abnormal EGD which was inflammation was seen in the patient who consumed alcohol. There were no positive pathologic findings in this group.

Among the patients with atypical pattern of pain, 148 (83.14 %) had abnormal findings in endoscopy: 95 (53.3 %) had evidence of inflammation, 40 (27%) patients had peptic ulcers (gastric erosions, gastric ulcer and duodenal ulcer) and 13 patients (7.3%) had other findings. Of 43 patients who drank alcohol and had atypical abdominal pain, 42 (97.7 %) had also abnormal EGD: 19 inflammation, 18 peptic ulcer and 5 others. Among 45 smoker patients 44 (97.8 %) had abnormal endoscopic findings: 23 inflammation, 19 peptic ulcer and 2 others. For 16 patients with gastric ulcer, the findings showed a macroscopic changes suggesting cancer. Histopathologic examinations showed the presence of cancer in the specimens collected from ulcers in 11 patients. The results of pathological study in the atypical abdominal pain group included 11 cases (6.17 %) of

malignancy (8 females with the average age of 71 years and 3 males with average age of 69.6). All patients with malignant pathological findings had abnormal EGD, and 10 of them had also alarm symptoms table 2. Histopatologic examination did not show the cancer or intensified dysplasia foci in the specimens collected from the polyps and mucous membrane with inflammation. In the all patients, the ulcers were healed before the planned operation. The polyps were removed with endoscopy before the operation. The therapeutic approach was changed in all the patients with malignant pathological findings. From those with abnormal findings in EGD, 58 took other medical treatments. In 16 patients, the symptoms associated with cholelithiasis subsided after healing of the ulcer. Cholelithiasis in these patients was asymptomatic, and cholecystectomy was not performed.

Table 2- Endoscopic and pathologic findings in patients with typical and atypical abdominal pain.

	Abdominal Pain	
	Typical	Atypical
No findings	181	30
Inflammation	1	95
Peptic ulcer disease	0	40
Other findings	0	13
Positive pathological findings	0	11

DISCUSSION

Patients presenting to their physician because of epigastric pains first of all undergo ultrasound examination of the abdominal cavity, especially when the pains are of a chronic nature and patients associate them with dietary indiscretion. Ultrasound examination is easily accessible, and the examination itself is relatively simple and cheap. When deposits are detected in the gallbladder, further diagnostics of other diseases that may produce similar disorders are discontinued. The patient with diagnosed cholelithiasis as alleged cause of pain is referred to

the surgical department for treatment (5). Some patients, however, despite successful surgery, still experience pain, as reported earlier. The cause of this pain often is peptic ulcer disease unrecognized before the operation and concomitant with cholecystolithiasis (5). The opportunity for detecting gastric cancer at an early stage is still another advantage of preoperative gastroduodenoscopy. It is especially important because inflammation of gastric mucous membrane sometimes may be the reason for the development of gastric cancer (6-8). We found cancer in the samples taken from the ulcers of only 11 patients, although 16 ulcers were macroscopically suspected. Among the patients with pathologic changes in the stomach or duodenum, 70% had not been treated previously for peptic ulcer disease, and had never undergone EGD performed. The reported disorders were not characteristic or intense despite a large ulcer found in the stomach or duodenum. Peptic ulcer disease may have not been recognized if routine EGD had not been performed. Patients with peptic ulcer disease who undergo cholecystectomy run the risk of such serious complications as bleeding and perforation of the ulcer attributable to perioperative stress. This is why patients with diagnosed ulcer should not undergo surgery, but should rather have anti-ulcer treatment. It is advisable to perform a control EGD after 3 to 6 weeks. Patients in whom ulcer has healed can be qualified for planned cholecystectomy. In 16 patients healing of the ulcer resulted in decreased symptoms that previously were associated with cholelithiasis. Finally, in these patients symptomless cholelithiasis was recognized and planned cholecystectomy was canceled. Lack of symptoms after earlier healing, absence of pain attacks, and the presence of single deposits in the gallbladder in these patients are advocated for such a procedure. Inflammation of gastric mucous was not considered a contraindication to surgery. When there were small inflammatory changes of

the gastric mucous membrane with single erosions, the surgery was performed as planned with H₂ blockers administered during the whole perioperative period (9, 10). It was remarked that 148 of 178 patients with atypical abdominal pain have shown abnormal endoscopy and 1 of 182 patients with typical abdominal pain have had also abnormal EGD. The odds of coincidence of atypical abdominal pain and abnormal EGD are 148 to 30, or 4.9, while the odds of concurrence of typical abdominal pain and abnormal EGD are only 1 to 181, or 0.00552. The odds ratio is thus 4.9/0.005, or 886, showing that atypical abdominal pain are much more likely to have some other GI problems beside their cholelithiasis that may be the source of patient's problems.

Some of the previous studies (11-14), recommended that preoperative EGD should be performed probably to distinguish between different sources of the pain and consequently appropriately approach to the patient problems. Some of them supposed that routine EGD before elective cholecystectomy should be carried out (13, 14), others assumed that preoperative EGD should be performed in the patients with atypical abdominal pain (2, 12). However there are studies which showed that EGD does not alter the outcomes significantly in patients with symptomatic gallstones and it is neither clinically useful nor cost effective (15, 16).

Based on our results, the source of the abdominal discomfort nearly in all the patients (99.46 %) with typical abdominal pain is gallstones and preoperative EGD does not alter the diagnosis and the post operative discomforts significantly. But in the case of the patients with atypical abdominal pain the diagnosis may considerably be influenced by preoperative EGD, up to 83.14% of these patients had abnormal endoscopic findings and 6.17% of them had malignant pathology ($p < 0.001$).

We designed a retrospective study to determine the plausible relation between typical and atypical

abdominal pain and preoperative EGD findings. We also took into account the upper GI pathological findings. We considered the patients that were appointed for cholecystectomy and had documented gallstones and EGD prior to their operation as a part of their preoperational evaluations.

We found that patients with atypical abdominal pain have higher chance to pass other problems beside their gallstones that may be the source of their discomforts (OR= 4.9). 83.14% of these patients in this study had abnormal endoscopic findings and 6.17% of them had malignant pathology.

In contrast, patients with typical abdominal pain have a very low likelihood to cover other upper GI problems (OR= 0.006). From patients with typical gallstone pain, only one had inflammation in endoscopic evaluations (0.54 %) and the others had normal findings. There were no pathologic findings in this group. On the other hand the diagnosis in this category of the patients is straightforward and does not need other paraclinical studies. Overall the chance of finding concurrence between cholelithiasis and upper GI problems, depends largely on the types of symptoms presentations, i.e. typical or atypical (OR= 8.86).

We recommend that preoperative EGD may be necessitated prior to elective cholecystectomy in patients with atypical abdominal pain.

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