The Role of Upper Gastrointestinal Endoscopy in Prevention of Post-Cholecystectomy Pain Prior to Elective Surgical Therapy of Chronic Cholecystitis

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Abstract

Introduction: Many upper G.I.T pathologies associated with cholecystitis such as gastritis, peptic ulcer & hiatus hernia causes of persistence of upper abdominal discomfort, dyspepsia & heartburn post cholecystectomy, so preoperative evaluation of upper GI by endoscopy may detect other co-morbidities that causes the same symptomatology in post cholecystectomy patients.

Aim of this Study: To determine the co-incidence of gallstones with upper GI problems in patients who were candidate for elective cholecystectomy and its treatment role in decreasing post cholecystectomy pain.

Patients and Methods: This is a cross sectional descriptive study that was conducted on on 92 cases of both sexes and any age, diagnosed ultra-sonographically to have chronic calcular cholecystitis, who subjected to pre-operative evaluation including upper GI endoscopy.

Results: Endoscopic study showed that 77.2% of the cases experienced upper GIT abnormalities as: Gastritis, esophagitis, gastro-esophageal reflux disease, peptic ulcer (gastric or duodenal) Normal GI endoscope was estimated among only 21 patients (22.8%).

Conclusion: The use of esophagogastroduodenoscopy in patients with chronic calcular cholecystitis (pre-operatively) prior to elective cholecystectomy could be clinically helpful and also may be cost effective in prevention of post cholecystectomy syndrome.

Key Words: Upper — Endoscopy— Gastrointestinal — Chronic — Cholecystitis.

Introduction

CHOLECYSTITIS is defined as inflammation of the gallbladder that occurs most commonly because of an obstruction of the cystic duct from cholelithiasis. Ninety percent of cases involve stones in the cystic duct (i.e., calculous cholecystitis), with the other 10% of cases representing acalculous cholecystitis [ii]. Risk factors for cholecystitis mirror those for cholelithiasis and include increasing age, female sex, certain ethnic groups, obesity or rapid weight loss, drugs, and pregnancy.

Gallstone disease is one of the most common and most 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 [2], at an annual cost of $6.2 billion [3]. A subset of these patients will also have choledocholithiasis, including 5% to 10% of those undergoing laparoscopic cholecystectomy for symptomatic cholelithiasis [4] and 18% to 33% of patients with acute biliary pancreatitis [5]. The effect of pancreatico-biliary reflux (PBR) as a co-factor in the process of chronic cholecystitis, as the incidence of Occult PBR in patients operated upon for chronic calcular cholecystitis was 94.1% [6].

Cholecystectomy for either recurrent biliary colic or acute cholecystitis is one of the most common major surgical procedure performed by general surgeons, resulting in approximately 500,000 operations annually [7]. Cholecystectomy proved successful in treating the patients of biliary colic and cholecystitis in 80-95% of patients with stones. When stones were not present, the persistence of symptoms was as high as 40% [8].

Post-cholecystectomy syndrome (PCS) consists of a group of abdominal symptoms that recur and/or persist after cholecystectomy [9,10]. It is defined
as early if occurring in the post-operative period and late if it manifests after months or years. Although this term is used widely, it is not completely accurate, as it includes a large number of disorders, both biliary and extra-biliary in origin, that may be unrelated to cholecystectomy [9,10].

It has been reported that, 50% of these patients suffer from organic pancreatico-biliary and/or gastrointestinal disorders, whereas the remaining patients are affected by psychosomatic or extra-intestinal diseases. Moreover, in 5% of patients who undergo laparoscopic cholecystectomy, the reason for chronic abdominal pain remains unknown.

Diaphragmatic hernia, hiatal hernia, achalasia, bile gastritis, peptic ulcer disease & gastric cancers as well as complications of cholecystectomy surgery are of the most common causes of post cholecystectomy syndrome [11].

To identify the cause of right upper quadrant (RUQ) pain, esophagogastroduodenoscopy (EGD) is important to identify the diseases of upper gastrointestinal tract. As it evaluates the mucosa for signs of disease from the esophagus through the duodenum & allows direct visualization of the ampulla of Vater [12].

Persistence of original complaints of post cholecystectomy patients is due to deficient preoperative evaluation of other co-morbidities that causes the same symptomatology. Many upper G.I.T pathologies associated with cholecystitis such as gastritis, peptic ulcer & hiatus hernia causes of persistence of upper abdominal discomfort, dyspepsia & heartburn in post cholecystectomy patients [13].

Therefore, this study aims to detection of presence of associated co-pathologies in patients diagnosed as chronic cholecystitis by performing upper G.I.T. Endoscopy pre & post operatively to decrease the number of unnecessary surgeries with resultant morbidities from surgery & to establish a plan of management which one of the most common problems that faces the current surgical practice is the aims to complete cure of all patients.

**Subjects and Methods**

This is a cross section descriptive study that was conducted on patients admitted to general surgery department, Ismailia General Hospital and Ismailia University Hospital during 2010 for cholecystectomy operation, presented with chronic calculous cholecystitis, both sexes and any age.

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. Gastroendoscopic examination was performed for both outpatients and inpatients in the clinical endoscopy unit prior to the operation.

Exclusion criteria were; any patients with, any associated form of severe chronic illness as (Diabetes mellitus, hypertension, chronic renal failure, etc...) to reduce complications of intervention, and patients presented with acute calculous cholecystitis.

All patients were subjected to pre-operative evaluation including: 1- History and clinical examination, 2- Laboratory investigations including; Complete blood count, Coagulation profile, random blood sugar, S-creatinine), ALT, AST, serum albumin, urea breath test 3- Upper GIT-endoscopy study, 4- Abdominal ultra-sound study. Post-operative follow-up to two months later to assess any upper abdominal symptoms.

Elective cholecystectomy was postponed when there were gastric or duodenal ulcers, gastric polyps, or inflammatory changes of gastric mucous membrane until ulcers healed.

**Results**

The study was carried out on 92 cases diagnosed ultra-sonographically to have chronic calculous cholecystitis with mean age 37.5 years and standard deviation ±5.6 those cases were subjected to upper GIT endoscopy before undergoing cholecystectomy. Table 1 shows that the studied patients were in age group ranging from 26 to 56 years old with mean age 37.5 ±5.7 years old. That most of the studied patients were females 58 cases (63%) and only 11 cases (37%) were males, 52 cases (49%) has evidence of H-pylori infection detected by urea breath test.

Table (2) shows that the most of patients 77.2%, having upper GIT pathologies associated with chronic cholecystitis, the findings by GI endoscopy was gastritis 28.3%, Gastro-esophageal reflux (20.7%), esophagitis 17.4%, gastric ulcers 4.3%, duodenal ulcers 6.5%. Normal GI endoscopy was estimated among only five patients (22.8%).
this study only 8 cases suffered from post cholecystectomy pain (recurrence of cases, the remainders did not experiences any sort of pain, 2 months after cholecystectomy as shown in (Table 3).

Table (1): Characteristics of the study sample (n=92).

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Freq.</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender: Male</td>
<td>34</td>
<td>37</td>
</tr>
<tr>
<td>Female</td>
<td>58</td>
<td>63</td>
</tr>
<tr>
<td>Age/years±SD</td>
<td>37.5± (5.7)</td>
<td></td>
</tr>
<tr>
<td>Residence: Urban</td>
<td>52</td>
<td>57</td>
</tr>
<tr>
<td>Rural</td>
<td>40</td>
<td>43</td>
</tr>
<tr>
<td>BMI</td>
<td>30.2</td>
<td></td>
</tr>
<tr>
<td>H pylori infection: Yes</td>
<td>32</td>
<td>35</td>
</tr>
<tr>
<td>No</td>
<td>60</td>
<td>65</td>
</tr>
<tr>
<td>Dyslipidemia: Yes</td>
<td>45</td>
<td>49</td>
</tr>
<tr>
<td>No</td>
<td>47</td>
<td>51</td>
</tr>
</tbody>
</table>

Table (2): Upper GI endoscopy findings among the studied patients (n=92).

<table>
<thead>
<tr>
<th>GI endoscopy finding</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gastritis (simple acute gastritis)</td>
<td>26</td>
<td>28.3</td>
</tr>
<tr>
<td>Esophagitis</td>
<td>16</td>
<td>17.4</td>
</tr>
<tr>
<td>GERD</td>
<td>19</td>
<td>20.7</td>
</tr>
<tr>
<td>Gastric ulcer</td>
<td>4</td>
<td>4.3</td>
</tr>
<tr>
<td>Duodenal ulcer</td>
<td>6</td>
<td>6.5</td>
</tr>
<tr>
<td>No pathology detected</td>
<td>21</td>
<td>22.8</td>
</tr>
</tbody>
</table>

Table (3): Occurrence of post cholecystectomy pain.

<table>
<thead>
<tr>
<th>Post cholecystectomy pain</th>
<th>Number (n)</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>8</td>
<td>8.7</td>
</tr>
<tr>
<td>No</td>
<td>84</td>
<td>91.3</td>
</tr>
<tr>
<td>Total</td>
<td>92</td>
<td>100</td>
</tr>
</tbody>
</table>

Fig. (1): Occurrence of post cholecystectomy pain.

Discussion

Post-cholecystectomy syndrome or post-operative symptoms which are presented before operation (cholecystectomy) include abdominal pain jaundice, dyspepsia, increased defecating time, dislike of fatty foods, The causes of this syndrome are still obscure: Some are related to disease of biliary tract, whereas others are not, in recent years, endoscopy has been widely applied in the diagnosis and treatment of digestive tract diseases. This study aimed to assess the value of upper GIT endoscopy in the diagnosis and prevention of post cholecystectomy syndrome.

The etiology of post cholecystectomy syndrome includes biliary causes and extra-biliary lesions, Biliary disease are characterized by bile duct stones, inflammatory strictures of the papilla and lesions of cystic duct stump. And extra-cholangeal conditions commonly comprise reflux esophagitis, digestive ulcers and pancreatitis so it is essential to check related organs for the cause of PCS, with the suspicion of lesion in the esophagus, stomach or duodenum double contrast barium meal and upper GIT endoscopy should be performed [14].

In this study age groups ranged from 26-57 years with mean age 37.5 years, most of the studied group was females (63%). This result verifies the more prevalence of gallbladder disease in females. this is similar to most worldwide studies that states that the majority of patients with chronic calculary-cholecystitis are females in middle age [15]. The average of body mass index in these patients was 30.2. From these 92 patients, 45 were had dyslipidemia and 32 ones had positive urea breath test.

This finding is consistent with the study of Amieva et al. [16], which suggests that H pylori participate in and aggravate cholecystitis, destruction of epithelial cells of the gallbladder and atrophy of the gallbladder. Taken together, Dong’s study et al. [17] indicates that H pylori infection in the gallbladder may be one of the etiological factors leading to cholecystitis.

In this study 92 cases were prepared to elective open or laparoscopic cholecystectomy had been subjected to upper gastrointestinal tract endoscopic study and the result was that 77.2% of the cases experienced upper GIT abnormalities as: Gastritis, Esophagitis, gastro-esophageal reflux disease, peptic ulcer (gastric or duodenal).

In a similar study by Mohamad Mozafar and his colleague’s et al. [18], they found that, among the 178 patients with atypical pain, 148 (83%) had
abnormal findings in EGD. They concluded that, 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.

In other study by [19] Upper GIT endoscopy was performed in 371 patients of whom 341 patients (91.9%) were diagnosed etiologically for having upper GIT pathologies associated with chronic cholecystitis which lead eventually to development of post cholecystectomy syndrome in these cases.

Also in other study in Germany [20], 263 patients complained of abdominal pain post cholecystectomy operation and had undergone upper GIT endoscopic study revealed Gastro-osophageal reflux and 43 patients due to peptic ulcer disease either duodenal or gastric ulcers. 65 patients were diagnosed by abdominal ultra sound to have biliary causes as common bile duct stones.

This indicates that the most common pathology associated with chronic cholecystitis in the western world is gastro-esophageal reflux disease while in this study the most common associated pathology was also gastro-esophageal reflux disease followed by esophagitis and then gastritis.

Useful information was obtained in 77.2 per cent of the patients by upper GIT endoscopy either by demonstration of a pathological lesion. The diagnostic yield is high, especially in a group of patients in whom intravenous cholangiography and barium studies had failed to yield information. Among the patients with pathologic changes in the stomach or duodenum, 10.8% of patients had a peptic ulcer disease, and had never undergone EGD performed. The reported disorders were not characteristic or intense despite an 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, so we suggest that upper GIT endoscopy should not only be a routine prior selective cholecystectomy but also the first line of investigation in the patient with post cholecystectomy symptoms.

Also in other studies in Glasgow, endoscopy allows visualization of the stomach and duodenum and of surgical stomas, and in addition, retrograde pancreatography, which is not obtainable by Trans-hepatic methods. For these reasons, we choose to employ upper GIT endoscopy as the first investigation in patients in whom Abdominal U/S study has not given satisfying results. The results have certainly justified this approach [21].

In the studied population most of the patients had open cholecystectomy this due to the economical conditions and the high costs of the laparoscope which results in the increase of number of open cholecystectomy, also the use of the upper GIT endoscope before the operation, resulted in performing anterior gastric vagotomy in one case in which peptic ulcer was discovered before the operation by the endoscope.

In one study, at initial surgical follow-up, 19 of 141 (13.4%) patients said they had persistent symptoms. However, when subsequent visits were analyzed, 61 of 141 (43.3%) patients with persistent or recurrent symptoms saw their primary care provider. These symptoms were epigastric or right upper quadrant pain in 43 patients or 30% of those undergoing cholecystectomy [22], while In this study only 8 cases suffered from post cholecystectomy pain (recurrence of cases) so the use of pre-operative upper GIT endoscopy decreased the frequency of post cholecystectomy syndrome and so it proves the importance of upper GIT endoscopy in prevention of post cholecystectomy syndrome, however this conclusion is limited as only two months follow-up was done for the cases and longer periods of follow-up are needed.

References


