Is Surgery Safe in Gallstone-Related Acute Diseases in Elderly Patients?

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ABSTRACT

Objective: To determine the safety of the surgical treatment of acute biliary pancreatitis and acute cholecystitis in elderly patients.

Study Design: Observational study.

Place and Duration of Study: Department of General Surgery, Elazig Training and Research Hospital, Elazig, Turkey, from January 2010 to July 2012.

Methodology: Records of 172 patients with acute complications of biliary calculi, aged over 65 years, were included. Patients were assessed for demographic information, hospitalisation diagnosis, leucocyte count, ASA classification, treatment type, conversion rates, length of hospital stay, morbidity and mortality. Statistical analyses were performed using the SPSS version 20.0.

Results: The sample included 128 females (74.4%) and 44 males (25.6%). Patients’ diagnoses included 135 (78.4%) acute cholecystitis and 37 (21.6%) acute pancreatitis. Medical treatment was offered to 113 patients (65.7%). Open cholecystectomy was directly performed in 17 patients (9.9%). Two patients (4.8%) were converted to an open cholecystectomy during surgery, while a laparoscopic cholecystectomy was performed successfully on 42 patients (24.4%). Those who underwent surgery were discharged as cured, except for minimal surgical complications.

Conclusion: Treatment choice in acute gallstone complications in the elderly depends on the patient’s general condition, severity of the disease, and ASA score. Early laparoscopic cholecystectomy is a good option in selected elderly patients with acute cholecystitis and non-severe acute biliary pancreatitis.


INTRODUCTION

Reportedly about 50% of women and 16% of men have gallbladder disease.1,2 Cholelithiasis is an important predisposing factor for the progress of acute cholecystitis; the incidence of this factor is 10 - 15% in the USA.3 Gallstone-related acute complications have been commonly observed in older people, a group that is becoming a greater proportion of the population whose rate of hospital admissions is increasing in developed countries. Symptoms that occur in the first 72 - 96 hours following the onset of a patient’s clinical signs are called early acute cholecystitis; and surgery performed in this time period is called early cholecystectomy. However, if despite medical support the clinical course is worsening or maintaining, at even 72 - 96 hours after initial admission, it is called late (delayed) or subacute cholecystitis; and surgery is performed in this time period is called delayed cholecystectomy. In addition to the clinical improvement provided by medical support, another purpose of treatment is to 'cool down' the patient in order to perform a cholecystectomy after 6 - 12 weeks, as long as the patient does not develop severe acute complications of cholelithiasis awaiting an interval cholecystectomy.4,5

Before the endoscopic and laparoscopic era, the classical procedure for acute cholecystitis was used to be an initial conservative treatment with antibiotics and subsequent elective cholecystectomy. In spite of technical and medical developments, the treatment of acute cholecystitis in elderly patients (50 - 70% of cases are acute) is a controversial topic. There is a risk of developing severe complications such as perforation (40 - 77% in severe cholecystitis) and an increasing incidence of morbidity and mortality (7 - 8% biliary sepsis and co-morbidity).6

Another acute gallstone-originated disease is acute biliary pancreatitis. This disease occurs due to temporary obstruction of or impaction at the ampulla of Vater by biliary calculi, stone or sludge. Obstruction can cause bile regurgitation into the pancreas through the common duct. Cholecystectomy is performed to treat acute biliary pancreatitis. Recently, as in the case of acute cholecystitis, surgeons have discussed the proper timing of surgery.4
The objective of this study was to determine the safety of the surgical treatment of acute biliary pancreatitis and acute cholecystitis in elderly patients.

**METHODOLOGY**

This observational analysis used the records of 400 consecutive patients treated for acute gallstone cholecystitis and acute biliary pancreatitis in the General Surgery Clinic of the Department of General Surgery, Elazig Training and Research Hospital, Elazig, Turkey, from January 2010 to July 2012. Patients who were over the age of 65 years, being treated for acute cholecystitis and acute biliary pancreatitis, diagnosed on the basis of the physical examination, laboratory tests and abdominal ultrasonography, were included. Computer records and charts were reviewed retrospectively for these patients. Variables included were patient's demographics, hospitalization diagnosis, white blood cell count, biochemical parameters, American Society of Anesthesiologists (ASA) classification, medical treatment or type of operation, conversion rates, length of hospital stay, and morbidity and mortality.

Patients aged 65 - 75 years were compared with those over 75 years of age regarding patient characteristics. Hemograms, biochemical parameters such as hepatic function tests, glucose, urea, creatinine, and electrolytes, and abdominal ultrasonography were evaluated in all patients before hospitalisation. Patients with high score on Ranson criteria, having acute pancreatitis at initial admission, were excluded. Oral intake was stopped, fluids were replaced, and antibiotherapy was given as medical treatment. The preoperative ASA classification for each patient was recorded. Patients whose clinical and laboratory status worsened over 72 hours underwent surgery. Patients who got better with medical treatment and were unwilling to undergo surgery were discharged from the hospital with the suggestion of subsequent surgery. Patients were discharged when solid food was well tolerated, and when they were afebrile and mobile with adequate pain control on oral analgesia. If a patient's ASA score was high (e.g., ASA4) after completion of medical treatment, he or she was discharged with medical advice. Laparoscopic cholecystectomy (LC) was performed using the standard four-port technique. Preoperative ERCP was performed when indicated by the ultrasonographic evidence of a dilated common duct or pancreatitis. Preoperative sphincterotomy and stone extraction were performed, if common duct stones were present. When LC could not be completed, it was converted to an open cholecystectomy. For patients who had previous upper abdominal surgery and/or low pulmonary capacity for pneumoperitoneum, and who were appropriate for epidural analgesia, open cholecystectomy was performed.

Statistical analysis was performed with the Statistical Package for the Social Sciences version 20.0 (SPSS, Chicago, IL, USA). A Shapiro-Wilk test was used to determine normality. The descriptive statistics that were used for the continuous variables were median, minimum, and maximum; the statistics that were used for the categorical variables were frequency and percentage. Comparisons between groups and univariate analyses were performed using non-parametric Kruskal-Wallis and Mann-Whitney U test. Categorical variables were compared using Pearson's chi-square test and Fischer-Freeman-Halton test. Correlations between variables were tested using Spearman correlation coefficients. A p-value of less than 0.05 was considered significant.

**RESULTS**

On admission, all patients presented with continuous pain, localized in the epigastric and/or right subcostal region, with nausea and/or vomiting. Hyperpyrexia was present in 5 (2.9%) patients, and clinically evident jaundice in 15 (8.7%) patients. Median age of the patients was 75 (65 - 90) years; there were 128 (74.4%) female patients and 44 (25.6%) males, yielding a male/female ratio of about 1/3. Diagnoses included 135 (78.4%) patients with acute cholecystitis and 37 (21.6%) with acute pancreatitis. Blood picture parameters included 97 (56.4%) patients with a mean white blood cell (leucocyte) count of 9.75 x 10^3 (2.2 - 30) per litre, and 90 (51%) patients with leukocytosis. In terms of treatment, 113 (65.7%) patients received only medical treatment, and an open cholecystectomy was performed on 17 (9.9%) patients. Two (4.8%) patients were converted to an open cholecystectomy during laparoscopic surgery, while LC was performed successfully for 42 (24.4%) patients. Those who underwent surgery were discharged as cured except for a few with minimal surgical complications. Nine (5.2%) patients were referred to an advanced medical center, 72 (41.9%) patients were discharged with clinical healing, 29 (16.9%) patients discharged themselves although treatment was incomplete, and 3 (1.7%) patients who were treated with medical support therapy died (Table I). ASA class was, ASA 2 in 114 (66.3%); ASA 3 in 49 (28.5%), and ASA 4 in 9 (5.2%).

The difference between the type of treatment and hospital stay was found to be statistically significant (p=0.022) between the dichotomized age groups. The hospital stay for open cholecystectomy patients was significantly longer than that for LC (Figure 1). When patients were divided into two age groups, 65 - 75 and over 75 years, comparison of treatment type showed a significant difference (p=0.030). Medical treatment and open cholecystectomy were performed more frequently for the 65 - 75 age group than for the group over 75.
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However, there was no statistically significant difference in ASA scores between these groups (p=0.061).

There was no significant correlation between age and hospital stay (r=0.043; p=0.577). A weak but significant positive correlation was found between age and leucocytosis (r=0.150; p=0.049), with the incidence of leucocytosis increasing with age. No significant correlation was seen between high levels of biochemical parameters and age (p=0.760).

DISCUSSION

Gallstone disease increases with age. It has been reported that biliary calculi are present in about 80% of people over 90 years of age. The growth in the elderly population and longer personal lifespan is the main cause of acute cholecystitis in older patients due to biliary calculi related to old age. Biliary lithiasis was detected in 13 - 50% of those over the age of 70 and in 38 - 53% over the age of 80 years. Older patients have a tendency to develop more complicated gallbladder disease. Acute cholecystitis is one of the most common surgical problems in developed countries. In this study, this condition was present in 94 (54.7%) patients who were 65 - 75 years old and in 78 (46.3%) patients aged over 75 years. This difference in the rate of acute cholecystitis could have been due to the smaller number of patients over age 75 years than in the other age groups. Similar to rates reported in the literature, more females than males presented with acute cholecystitis in this sample.

Two of three main symptoms or signs are necessary for a diagnosis of acute pancreatitis; these are characteristic abdominal pain, serum amylase and/or lipase ≥ 3 times the upper limit of normal and characteristic findings of acute pancreatitis on a CT scan. Both older age and obesity are risk factors for severity of acute pancreatitis. Ranson criteria are usually used to assess disease severity; those patients with high Ranson scores were excluded, indicating acute pancreatitis at initial admission.10

Endoscopic retrograde cholangio-pancreatography (ERCP) was performed on 5 (13%) patients with acute pancreatitis because common duct stones were detected on imaging methods such as ultrasonography, magnetic resonance cholangio-pancreterography (MRCP) and abdominal computed tomography (CT).

A weak but significant positive correlation was found between age and leucocytosis (r=0.150; p=0.049), with leucocytosis increasing with age. This shows that biliary inflammation has a greater influence of the immune response with age, thus this condition has increased complication risks such as perforation, organ failure and sepsis in elderly patients. However, no significant association was found between high levels of biochemical parameters and age (p=0.937).
Acute cholecystitis and acute biliary pancreatitis are life-threatening diseases in elderly patients. Patients who remain untreated or insufficiently treated can develop sepsis, peritonitis secondary to gallbladder perforation and cholecystoenteric fistulas, or they may die. Elderly patients, who often have cardiac or pulmonary comorbidities that are counterindicated for general anesthesia, are offered medical treatment. Cholecystectomy is the primary therapy for acute biliary stone diseases, but there is debate about the timing of surgery. Recently, more studies have reported that early LC is safe in elderly patients. Rial et al. have shown that early cholecystectomy in elderly patients is associated with lower complication rates and less cost. A surgical risk-benefit profile should be part of a patient's careful assessment. A high degree of surgical risk due to patients' concomitant diseases and impaired hemostasis and/or surgical difficulty because of inflammation require careful patient selection because of potentially adverse effects under general anesthesia. The advantages of an emergency or early approach include fewer surgical difficulties and prevention of a poor clinical course of the disease, as claimed by its supporters. Otherwise, advocates of delayed surgery report that it decreases morbidity and mortality. The management of acute cholecystitis is especially difficult in elderly patients who usually have concomitant diseases. The prevention of perioperative surgical or non-surgical complications, and maintaining the quality of life, are challenging issues for this group. Currently, the preferred treatment of acute cholecystitis is cholecystectomy at the initial admission. Morrow et al. have reported that many elderly patients with known gallstone disease were not offered surgical therapy until complications developed. This delay resulted not only in increased conversion to open procedures, but also in increased perioperative morbidity and prolonged hospital stay. According to Lyass, advanced age increased the postoperative morbidity and length of hospital stay after LC, although there were significant benefits in a laparoscopic approach (less postoperative pain, shorter hospital stay, faster mobilization) in elderly patients who often had associated cardiorespiratory diseases and capnoperitonum. Pneumoperitoneum provided with carbon dioxide may decrease cardiac output, and lead to hypercapnia, acidosis, peripheral vasoconstriction and increased catecholamines. At the present study, the hospital stay was lower for LC than for open cholecystectomy, which was expected (p=0.022). No significant correlation was detected between age and hospital stay (r=-0.043; p=0.577). The treatment type was chosen with attention to the general physiologic and health condition of the patient, the course of clinical acute disorders, ASA score, and wishes of the patient and his or her relatives. In this study, 135 (78.4) patients were diagnosed with acute cholecystitis and 36 (21.6%) with acute pancreatitis. One hundred and thirteen (65.7%) patients received medical treatment, 17 (9.9%) received open cholecystectomy, with 2 (4.6%) conversions, and 42 (24.4%) received a LC. In total, 59 (34.3%) patients were discharged from hospital after successful surgery. There were no surgical mortalities but 3 (1.7%) patients died during their course of medical treatment. These results suggest that carefully selected patients were provided with successful treatment, and that even conservative medical treatment can lead to death in at-risk elderly patients. Patients who have comorbidities should be treated carefully with fluid replacement and close follow-up. Another important group in this study was 29 (16.9%) noncompliant patients. They did not agree any type of treatment and left the hospital. Although they had appropriate ASA scores for general anesthesia, many patients did not undergo surgery because some of them were unwilling and other patients were subacute cholecystitis. These patients received medical treatment. Majority of medical treatment group consist of these patients. Reasons of subacute cholecystitis were usually delayed admission in emergency department or delayed accurate diagnosis due to technical failure. Surgeon did not prefer cholecystectomy in subacute cholecystitis depending on surgical difficulties. Subacute cholecystectomy is more risky and its operating time is longer than early acute cholecystectomy and elective cholecystectomy due to anatomical complexity and increased biliary tract injury. ASA scores are important in the decision to operate; usually selected those with ASA scores of 3 and lower for surgery. When there was a clinical necessity the surgical option was used, especially for patients with co-morbid pulmonary disorders for whom the anesthesiologist preferred epidural anesthesia. Open cholecystectomy was performed on 6 patients. Yi et al. reported on a study that assessed the ASA scores of elderly people with acute cholecystitis, and recommended LC. At the present study, the difference in treatment type between the 65 - 75 years age group and those over 75 years of age was stastically significant (p=0.030). LC was more frequently performed in the younger group. We preferred early LC in these patients because younger group had better physiological condition but there was no stastically significance between ASA scores in two groups (p=0.057). Careful patient selection is important for LC in elderly patients; this is still not fully supported, as these patients often have comorbid conditions, and can experience adverse effects of the procedure on postoperative outcome. Surgical complication rates were low in this study; postoperative acute pancreatitis developed in only
3 patients with acute cholecystitis. Biliary leakage was detected in 2 patients who were treated with ERCP; sphincterotomy and a biliary stent, and a mild hemorrhage were present in one patient, and a trochar site infection was seen in 2 patients.

Studies in the literature suggest higher mortality rates for the treatment of acute cholecystitis in elderly patients. Reiss and Deutsch reported that for patients over age 70, the mortality rate is 2 - 8%; for patients over age 80 years, it is 11.4%. This study did not include the surgical mortality on the contrary but 3 (1.7%) patients died during their course of medical treatment. The authors consider that acute biliary diseases can be fatal for the elderly in any condition. According to the clinical observation, elderly patients usually hesitate and fear from surgery whereas the authors suggest elective cholecystectomy with a proper general or epidural anesthesia for elderly patients who have mild symptomatic gallstones. Priority: Elderly patients should be encouraged for elective cholecystectomy.

CONCLUSION

Treatment choice in acute biliary diseases in the elderly depends on the patient’s general condition, severity of the disease, and ASA score. Careful preoperative assessment and patient selection, experienced surgeons, and better postoperative care are necessary for successful treatment. Early LC is a safe and good option in selected elderly patients with acute biliary cholecystitis and not a severe biliary pancreatitis. Open cholecystectomy with epidural anesthesia is an alternate appropriate procedure for these patients. This method can prevent unnecessary re-admission for recurrent acute episodes and can be provided with a lower surgical risk, lower price and leeway in the emergency room.

REFERENCES

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