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Outcome of elderly patients after acute biliary pancreatitis

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Abstract

Background and aim: The data regarding the differences in outcome after acute biliary pancreatitis in elderly patients are scarce. This study aims to evaluate the outcome and radiological presentation in patients over 70 years after acute biliary pancreatitis.

Methods: Between January 2006 and December 2012, a retrospective analysis was performed on all consecutive patients with acute biliary pancreatitis admitted to the university hospital (CHUV) in Lausanne (Switzerland). Patients were divided into 2 groups: >70 years (elderly group) and <70 years (control group). The severity of patients' comorbidities was assessed according to the Charlson score. Data analysed included clinical (Atlanta classification) and radiological severity (Baltazar score, computed tomography severity index) of the acute pancreatitis.

Results: A total of 214 patients (n=77 elderly group, n=137 control group) were included. The elderly group had a mean age of 80 years (control group 45 years, p<0.001). The elderly had a higher Charlson score at admission (p<0.001). According to the Atlanta classification, there was no difference in the clinical severity of the pancreatitis between young and elderly patients, and the majority had a mild acute pancreatitis (66% vs. 64%, p=0.857). The elderly required more ERCP (39% vs. 20%, p=0.004) and percutaneous/endoscopic drainage of infected collection (12% vs. 4%, p=0.039). The rate of portal vein thrombosis was higher in the elderly (10% vs. 2%, p=0.005). The elderly had a longer hospital stay (10 vs. 7 days, p<0.001), while the ICU length of stay was similar in both groups. The 90-day mortality was similar in both groups.

Conclusions: Despite higher comorbidities at admission, elderly patients have similar clinical severity and mortality as young patients after acute biliary pancreatitis. However, the natural history of the disease seems different in the elderly with higher rates of infected collections requiring invasive procedures, and a higher rate of portal vein thrombosis.

Keywords: acute biliary pancreatitis, elderly, outcome.

Introduction

Acute pancreatitis (AP) is a common cause of surgical admission. The incidence varies in different parts of the world between 4.8 / 100'000 and 24.2 / 100'000[1] with an overall mortality risk of 4 to 10%.[2] The most common cause of acute pancreatitis is biliary and alcohol-related pancreatitis (incidence of 35 – 40% for both). Interestingly, the first criterion for poor prognosis in the Ranson score, which assessed the severity of the acute episode of pancreatitis early at admission, is being aged above 55 years. Different studies addressing the relation between age and prognosis of acute pancreatitis have found conflicting results and none of them focused on biliary pancreatitis.[3,4,5,6,7]

This present study aimed to evaluate the clinical severity, radiological presentation, and outcome of acute biliary pancreatitis in patients aged over 70 years compared to patients below 70.

Methods

Between January 2006 and December 2012, a retrospective analysis was performed on all consecutive patients with acute biliary pancreatitis admitted or transferred secondarily to the university hospital (CHUV) in Lausanne (Switzerland). After approval by the local ethic committee, the

medical records (including radiology reports) of all consecutive adult patients (>18 years of age) treated at the CHUV with the diagnosis of acute pancreatitis were reviewed. Patients with asymptomatic biological pancreatitis were excluded. Patients were categorised into 2 groups for the analysis: older than 70 years (study group) and younger than 70 years (control group).

Collected data included age at the time of first episode of acute biliary pancreatitis, gender, recurrent episodes of acute biliary pancreatitis during the study period, and previous episode(s) of acute biliary pancreatitis before the study period. Patients' comorbidities were also collected, including arterial hypertension, obesity (defined as a BMI > 30 kg/m2), diabetes, hypercholesterolemia, hypertriglyceridemia, ischemic heart disease, chronic obstructive pulmonary disease and chronic renal failure. The Charlson comorbidity index was calculated for every patient.[8] Timing between the acute episode of pancreatitis and cholecystectomy was calculated for each patient. Post-cholecystectomy complications were also collected and classified according to the Clavien classification.[9] In-hospital mortality at 90-day and ICU stay were included in the analysis. Patients discharge destination (home or nursing home) was collected.

Severity of acute pancreatitis was defined according to the revised Atlanta criteria. This classification defines 3 types of pancreatitis: severe acute pancreatitis as an organ failure lasting more than 48 hours, moderate acute pancreatitis as an organ failure lasting less than 48 hours and mild pancreatitis as no organ failure.[10]Local complications such as pseudocyst, portal venous system thrombosis, pleural effusion, septic shock and intra-abdominal pseudoaneurysmal bleeding were analysed. The different treatments performed were assessed, including: antibiotics, ERCP, percutaneous drainage or transgastric drainage of intra-abdominal infected collections and laparotomy for pancreatic necrosectomy.

All abdominal CT scans were reviewed by two radiologists to confirm the Balthazar grade[11] and the CTSI (Computed tomography severity index). Areas of pancreatic parenchyma, which were not enhanced on enhanced contrast CT, were considered to be necrosis.[10]

Statistics

Descriptive statistics for categorical variables were reported as numbers and percentages, while continuous variables were reported as medians and interquartile ranges or means and standard deviations as appropriate. The Student *t* test or the Mann-Whitney U test were used to compare continuous

variables when appropriate. Fisher's exact test or Chi-Square test for trends were used for the comparison of categorical variables when appropriate. A *p* value ≤0.05 was considered statistically significant. All statistical analyses were two-sided and performed using SPSS 22.0 software (SPSS Inc., Chicago, IL).

Results

General characteristics

During the study period, a total of 483 patients were hospitalised for acute pancreatitis. The aetiologies were alcohol-related in 115 patients (21%), biliary in 219 patients (45%) and others in 207 patients (34%).
Ultimately, 214 patients (aged 18 - 99 years) with acute biliary pancreatitis were included in the analysis. Seventy-seven patients were over 70 years (study group) and 137 were less than 70 years (control group).

The general characteristics of patients are displayed in Table 1. The study group had a mean age of 80 years, and the control group a mean age of 45 years. The study group was composed of 26 (34%) men and 51 (66%) women, compared to 56 (41%) men and 81 (59%) women in the control group.

There was no significant difference in the number of acute episodes of pancreatitis before admission and history of cholecystectomy between the two groups.

Table 1.

N (%)	≥70 years N = 77	< 70 years N = 137	p value
Age, years (SD)	80 (7)	45 (14)	< 0.001
Sex ratio, M:F	26 : 51	56 : 81	0.38
Previous pancreatitis (%)	3 (4)	8 (6)	0.750
Previous cholecystectomy (%)	10 (13)	14 (10)	0.652

Comorbidity

The multiple comorbidities are presented in Table 2. The elderly had a significantly higher Charlson comorbidity score (P < 0.001).

Hypertension, diabetes, ischemic heart disease, and chronic obstructive pulmonary disease were significantly more frequent in the elderly group. Chronic renal disease had a higher incidence in the elderly.

Table 2.

N (%)	≥70 years N = 77	< 70 years N = 137	p value
Charlson score, median (IQR)	1 (0-3)	0 (0-0)	< 0.001
Hypertension (%)	48 (62)	34 (25)	< 0.001
Obesity (%)	8 (10)	12 (9)	0.807
Diabetes (%)	20 (26)	16 (12)	0.012
Hypercholesterolemia (%)	14 (18)	18 (13)	0.325
Hypertriglyceridemia (%)	4 (5)	5 (4)	0.725
Ischemic heart disease (%)	21 (27)	7 (5)	< 0.001
Chronic obstructive pulmonary disease (%)	6 (8)	2 (1)	0.027
Chronic renal disease (%)	20 (26)	3 (2)	< 0.001

Clinical and radiological severity

Young patients had a higher rate of Balthazar E score on the CT scan 48 hours after admission (N = 27 (29%) vs. N = 9 (12%), p = 0.043).

The Balthazar score for both groups is depicted in table 3.

Table 3.

N (%)	≥70 years N = 77	< 70 years N = 137
Balthazar A (%)	13 (17)	18 (13)
Balthazar B (%)	7 (9)	9 (7)
Balthazar C (%)	17 (22)	26 (19)
Balthazar D (%)	4 (5)	19 (14)
Balthazar E (%)	9 (12)	27 (29)
Balthazar unknown (%)	27 (35)	38 (28)

P value (Balthazar) = 0.043

As shown in Table 4, the computed tomography severity index was similar between the two groups.

Table 4. CTSI distribution between young and elderly patients.

N (%)	≥70 years (N = 77)	< 70 years (N = 137)
Mild (0-3)	28	54
Moderate (4-6)	4	33
Severe (7-10)	4	3
Unknown	41	47

P value (CTSI) = 0.730

According to the Atlanta score, the clinical severity of the pancreatitis was similar in young and elderly patients with a majority of mild acute

pancreatitis in both groups (N = 88 (64%) vs. N = 51 (66%)).

Table 5. The Atlanta score distribution.

N (%)	**≥70 years (N = 77)**	**< 70 years (N = 137)**
Mild acute pancreatitis -no organ failure -no local/systemic complications	51 (66)	88 (64)
Moderately severe acute pancreatitis -transient organ failure (<48h) -local or systemic complications	21 (27)	46 (34)
Severe pancreatitis -persistent organ failure (>48h)	4 (5)	2 (1)

P value (Atlanta) = 0.857

Complications

As shown in Table 6, a higher rate of portal vein thrombosis was observed in the elderly. There was a trend towards a higher rate of pseudocysts in the elderly (N = 9 (12%) vs. N = 6 (4%), p = 0.054). Haemorrhagic complications such as pseudoaneurysmal bleeding and the rate of septic shock were similar in both groups.

Table 6.

N (%)	≥70 years N = 77	< 70 years N = 137	p value
Pseudocyst (%)	9 (12)	6 (4)	0.054
Portal venous system thrombosis (%)	8 (10)	3 (2)	0.005
Pseudoaneurysmal bleeding (%)	0 (0)	2 (1)	0.537
Pleural effusion (%)	19 (25)	30 (22)	0.735
Septic shock (%)	4 (5)	2 (1)	0.191

Treatment

Elderly patients required more ERCP (N = 30 (39%) vs. N = 28 (20%), p = 0.004) and drainage of infected intra-abdominal collections (N = 9 (12%) vs. N = 5 (4%), p = 0.039) than the younger. No statistically significant differences were observed for the administration of antibiotics, or the need for surgical necrosectomy.

Table 7.

N (%)	≥70 years N = 77	< 70 years N = 137	p value
Antibiotherapy (%)	19 (24)	30 (22)	0.735
ERCP (%)	30 (39)	28 (20)	0.004
Percutaneous/endoscopic drainage (%)	9 (12)	5 (4)	0.039
Surgical necrosectomy (%)	2 (3)	3 (2)	1.000

Outcome

The outcome of the two groups is shown in table 8. In comparison to the young, elderly patients had a longer hospital length of stay (median 10 vs. 7 days). After hospital discharge, 133 (97%) young patients went home, while 55 (71%) of the elderly were admitted to nursing homes. No significant difference was found for the length of stay in the intensive care unit or for the in-hospital 90-day mortality.

Thirty-seven (48%) elderly patients in comparison to 109 (89%) young patients underwent elective laparoscopic cholecystectomy after acute biliary pancreatitis. No difference was noted between the groups for the time between acute biliary pancreatitis being diagnosed and surgery (Table 8). Post-cholecystectomy complications rate was similar between the 2 groups (2 patients with grade 1 and 2 in the elderly and 3 patients with grade 1, 3a, and 3b in the young according to the Clavien classification).

Table 8.

N (%)	**≥70 years N = 77**	**< 70 years N = 137**	**p value**
Hospital length of stay, median (IQR)	10 (7-15)	7 (5-11)	<0.001
ICU length of stay, median (IQR)	7 (5-20)	8 (3-11)	0.650
In-hospital 90-day mortality (%)	3 (4)	1 (1)	0.134
Discharged home (%)	55 (71)	133 (97)	<0.001
Cholecystectomy (CCK) following pancreatitis (%)	37 (48)	109 (89)	<0.001

Time pancreatitis to CCK, median (IQR)	13 (7-61)	31 (6-80)	0.713
Post CCK complications (%)	2 (3)	3 (2)	1.000
Recurrence of ABP during time of study (%)	13 (17)	21 (15)	0.846

Discussion

To our knowledge, this is the first study assessing the impact of age in acute biliary pancreatitis. The results of this study suggest that clinical severity of acute biliary pancreatitis is similar between patients below or over 70 years old. However, elderly patients require more invasive intervention to treat infected intra-abdominal collections, and present a higher rate of portal vein thrombosis.

Despite multiple comorbidities and a higher Charlson index in the elderly group, age did not affect the mortality rate or the severity of acute biliary pancreatitis. These results are supported by the data from previous studies. One study showed that only 6% of patients older than 65 years develop severe acute pancreatitis[12], while others found no link between age and the mortality risk of pancreatitis.[3] In addition, only a minority of elderly patients required ICU admission for persistent organ failure (>48 hours), confirming that the risk of ICU admission after acute pancreatitis is related to the number of comorbidities rather than to the age.[13]

This study shows that the course of acute biliary pancreatitis seems to be different between young and elderly patients. Elderly had a significant higher rate of portal vein thrombosis and a trend towards higher rate of pseudocysts. According to a recent systematic review, the prevalence of portal vein thrombosis in acute pancreatitis is 6%.[14] One study showed that the risk of extrahepatic portal vein thrombosis was increased in patients with pseudocysts.[15] Since there was a trend towards higher rate of pseudocyst in elderly, a relation to a higher rate of portal vein thrombosis in this group may be hypothesized. In addition, elderly patients had more invasive procedures like percutaneous or endoscopic transgastric drainage to treat intra-abdominal infected collections. This more invasive approach probably results from the higher susceptibility of elderly for infection, and hence a lower threshold to initiate invasive treatment of infected intra-abdominal collections in this group.

Laparoscopic cholecystectomy remains the gold standard treatment to prevent recurrent episodes of acute biliary pancreatitis. Our study showed that this procedure is safe in elderly patients with similar timing between surgery and the acute pancreatitis compared to the young.[16] On the other hand, more ERCP were performed in the elderly during their hospital stay due to a higher rate of obstructed cholangitis. According to a recent study including patients older than 65 years with acute biliary pancreatitis and acute

cholangitis, 25% of elderly patients presented relapsed biliary complications after discharge.[17] ERCP with sphincterotomy should then be considered in elderly patients when cholecystectomy is postponed lately or contra-indicated.

To conclude, the results of this study suggest that the clinical outcome of acute biliary pancreatitis is similar between young and elderly patients over 70 years. However, elderly patients developed more portal vein thrombosis and required more invasive procedure to treat infected intra-abdominal collections despite similar clinical severity index of the pancreatitis. Although these results need further investigation, future clinical scoring system should integrate those data to predict the outcome of elderly patients after acute biliary pancreatitis.

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