



Comparative Study on the Outcomes, Safety and Complications of ERCP in Elderly Patients: A Single Center Retrospective Study

Abstract

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Significance: Endoscopic retrograde cholangiopancreatography (ERCP) has been a very useful diagnostic and therapeutic procedure in patients suffering from pancreaticobiliary disease. This has been increasingly seen among elderly Filipino patients. Because of significant co-morbidities accompanying advancing age, the elderly may be at greater risk of developing complications related to ERCP. This study aims to evaluate the outcomes, safety and complications associated with ERCP performed in the elderly patients 80 years old and above compared with young adult group.

Methodology: A retrospective analysis of patients aged more than 80 years and young adults aged 18 – 35 years old referred for ERCP at Digestive Endoscopy Unit, Chinese General Hospital and Medical Center between January 2008 to June 2019, were reviewed from endoscopy database and medical records. The demographic profile, co-morbidities, indications, ERCP findings/interventions, outcomes, ERCP and medical-related complications were analyzed.

Results: Indications for ERCP were comparable in young and elderly groups. Underlying co-morbidities were common in elderly. The overall success rate was 90% in elderly group, whereas 96% in young adults. Most common cause of failed ERCP was due to failure of cannulation secondary to pancreatic head mass in elderly while a floppy papilla is a common cause of failed cannulation in the young adult group. Peri-procedural complications were similar in both age groups. Most common early ERCP-related complication was pancreatitis which was comparable in both age groups (both at 1.1%). Early and late complications in elderly were primarily due to other underlying medical conditions like coronary artery disease and pneumonia.

Conclusion: ERCP-related complications were comparable between age groups. The study therefore conclude that ERCP for various indications is generally safe in elderly patients.

Keywords: Endoscopic Retrograde Cholangiopancreatography Safety, Outcomes of ERCP in Elderly

Introduction

The disorders affecting the gall bladder and biliary ducts, particularly, choledocholithiasis, occur commonly in the elderly. While the prevalence of biliary disorders in patients less than 30 years old is low, it sharply increases in prevalence among the elderly who are more than 80 years old¹. There has been little local data in this population. Referring physicians, and patients and their relatives, are concerned if endoscopic retrograde cholangiopancreatography (ERCP) is a doable and safe procedure for patients at this advanced age.

Although ERCP has been confirmed as a widely used technique for the diagnosis and management of biliary obstruction, its safety and efficacy in the elderly have been questioned. Among reports involving ERCP in elderly patients, some found the procedure to be of high diagnostic value and achieved a 92% clearance of common bile duct stones following this therapeutic procedure. Some researchers believe that the post-ERCP mortality and complications are mainly due to the type of sedation, the severity of illness, or underlying malignancies. In addition, other studies have shown that the complications following ERCP were similar between the young patients and the elderly. Therefore, while doing ERCP in the elderly leads to higher anticipated complications, its outcome can be acceptable and biliary cannulation and treatment can be successfully achieved in advanced ages.²

General Objective

- To evaluate the safety, complications and outcomes of ERCP in patients aged 80 years or older compared with the young adult patients, 18 – 35 years old in a large sample of population in our institution.

Methodology

Study Design

This study is a cross sectional study.

Study Subjects and Procedure

All patients aged 18 to 35 years and 80 years and older referred for ERCP at Gastroenterology and Digestive Endoscopy Unit, Chinese General Hospital and Medical Center for various indications January 2008 to June 2019, were identified and retrospectively reviewed from endoscopy database registry and

In a recent study done by Yang, et. al., it was shown that ERCP is a safe and effective intervention in patients 80 years old and older despite these patients having higher rates of concomitant chronic diseases and use of antithrombotic drugs.³ While most studies to date have focused on the short-term complications of ERCP in the elderly, there is relatively little published data examining long-term outcomes in these patients. Current available evidence show that complete treatment of biliary lithiasis may affect the overall survival of the elderly who require ERCP.⁴

There was a study done in the Philippines about the safety and outcomes of ERCP in the elderly. It included more than 2,000 patients and showed that ERCP is safe in the elderly and, was not associated with increased risk and complications as opposed to the notions of referring physicians, patients and their relatives. Mortality is usually related to the severity of illness and underlying co-morbidities rather than the ERCP procedure related events⁵.

In this study, the authors would like to follow up on the previous study done in the same institution by including more data from the recent years. Data of elderly patients as defined by age more than 80 years old were analyzed and compared to the young adults age group defined as age 18 – 35 years old. ⁶

Specific Objective

- To determine the baseline characteristics of elderly patients who underwent ERCP.
- To determine the different indications of elderly patients who underwent ERCP at Chinese General Hospital and Medical Center on January, 2008 – June, 2019.

review of medical records. Patients who have incomplete or lost records were not included in the study.

Patients referred for ERCP were routinely assessed by a member of the Gastroenterology Unit to determine the appropriateness

of the indications. Patients or family members were informed of the indications and the risk associated with the intended procedures. Consent was obtained from patients, or family members if patients were unable to give written consents. All patients were evaluated prior to receiving anesthesia. The procedures were conducted in the Xray Department fluoroscopy room with sedation administered by the anesthesiologist.

All procedures were performed by experienced gastroenterologists (consultants who underwent special training in ERCP locally or internationally and was able to do ERCP for at least 1 year) in the Endoscopy Unit. For patients undergoing stone extraction, endoscopic sphincterotomy was performed unless there were contraindications (coagulopathy, thrombocytopenia or anti-platelet agents). Accessories were used as appropriated for the complete extraction of stones (mechanical lithotripters for large stones, baskets and balloon extraction catheters). Balloon catheters were also used to document stone clearance in an occlusion cholangiogram. For patients who had incomplete clearances of CBD stones or had strictures (either benign or malignant), biliary drainage were achieved by stent placements under fluoroscopic guidance. Plastic stents were inserted using the stent delivery accessory. The length can be variable depending on the level of obstruction. Patients with malignant strictures who were expected to survive beyond three months were offered placement of self-expandable metal stent. Otherwise, plastic stents were used.

Routine monitoring of pulse, blood pressure and saturation were performed before, during and after the procedure. Blood pressure was monitored at 15 minutes intervals during procedures and after procedures until patients left the Endoscopy Unit Recovery Room. Pulse and saturation monitoring were likewise monitored continuously during the procedures and then at fifteen minutes intervals after procedures in the recovery area. Any adverse events occurring during procedures were addressed immediately by the performing endoscopist.

Patients were monitored closely for the first few hours post-procedure and/or during the duration of the in-patient stay. Any adverse events deemed to be related to the procedures were reported to the gastroenterology team. Post-discharge, all patients were followed-up in the gastroenterology outpatient clinic. All patients who had gallstone disease and were deemed fit for cholecystectomy surgery, were referred to the surgical department.

Patient demographics, indications and blood examinations (serum alkaline phosphatase, serum bilirubin, liver function tests, serum amylase and bleeding parameters) and imaging findings were recorder. The ERCP findings, interventions done, sedation used were determined. The outcomes, peri-

procedural and post-ERCP related and medical complications including mortality events were also noted. Patients were followed up from the time of hospital discharge until 30 days post-ERCP procedure. These data were compared between the two groups.

Pancreatitis induced by ERCP was defined as a combination of new abdominal pain or a pain that worsened after the procedure and a high amylase concentration in the serum. This concentration had to be two or more times higher than the upper limit. Hemorrhagic event was considered to be significant only if patient develops melena or hematemesis. Significant bleeding was associated with a decrease of at least 2g/dl in the hemoglobin concentration or the necessity of a red blood cell transfusion, while excluding other causes of anemia. Perforation was defined as an interruption of intestinal continuity secondary to the procedure and diagnosed with retroperitoneal radiological images or images obtained through the intestinal tract using any radiological technique. Respiratory depression was defined as the sustained low levels of blood oxygen saturation and requirement of support with positive oxygen pressure. This was documented by the anesthesiologist.

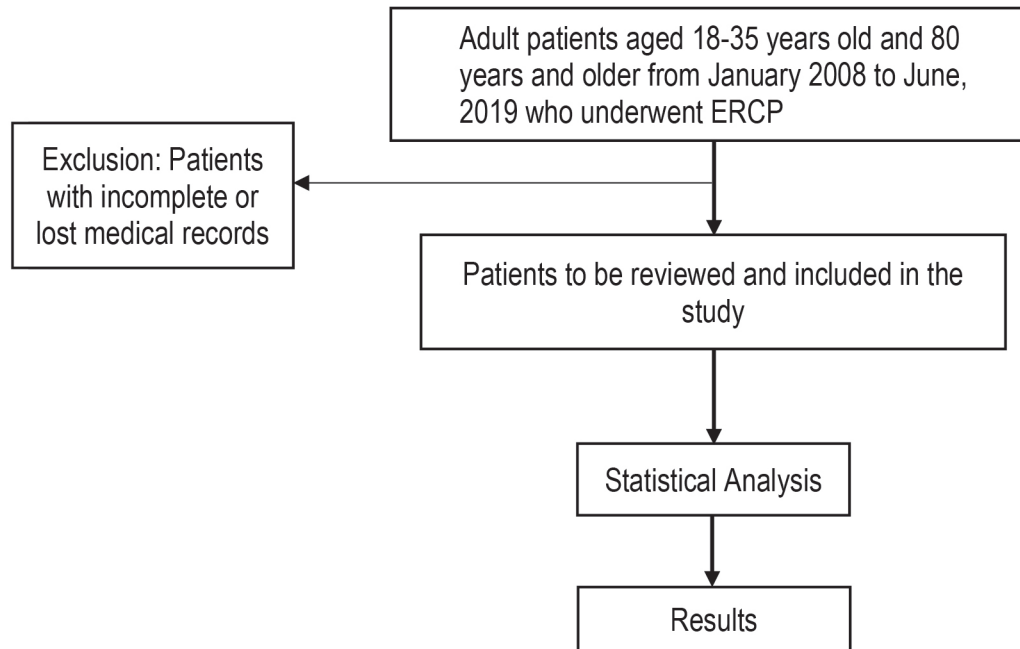


Figure 1. Study flow diagram

Operational Definition of Variables

- ERCP- Endoscopic Retrograde Cholangiopancreatography
- Elderly patient: Patients Aged 80 years old and above

Outcome

The study endpoint was the overall success rates of ERCP in the elderly, and the clinical outcome post ERCP in the elderly patients including complications.

Statistical Analysis:

Results was expressed as the mean standard deviation (SD) for quantitative variables and percentages for categorical variables. Categorical variables between the variables was compared using χ^2 square test or Fisher's exact test. Continuous variables was compared by independent samples t-test for variables with normal distributions and Mann-Whitney test for variables with non-normal distributions. P values of 0.05 or less was considered statistically significant. All the statistical analyses will be performed using SPSS version 16.0.

Results

A total of 1060 patients were included, 25% were above 80 years old (with average age of 85) while the remaining 75% were from 18 to 35 years old. Gender distribution is the same for both group as majority are female. Comorbidities were significantly more prevalent in patients above 80 years old, specifically for hypertension (60.8%), diabetes (50.2%), pulmonary disorders (35.5%), cardiovascular disorders (37%), cerebrovascular disease (11.3%), renal (16.2%) and liver disease (3.4%). Demographic and clinical characteristics of patients are summarized in Table 1.

Table 2 describes the indications of ERCP. Abdominal pain with jaundice was significantly higher among the younger group (59.6%). On the other hand, ampullary thickness (18.9%), pancreatic head mass (18.5%), hilar mass (6.4%) and biliary leak (13.2%) was significantly higher among patients above 80 years old.

Table 3 summarizes the baseline laboratory results showing that liver function tests and amylase were higher among patients 18 to 35 years old. On the other hand, prolonged bleeding parameters is significantly higher among above 80 years old (37.4%).

Table 4 describes the sedatives used. Most commonly used for patients above 80 years old was propofol (69.4%), propofol+sevoflurane (6.8%) and sevoflurane (2.6%). In the younger group, sedation was mainly combination meperidine and midazolam (52.8%).

Table 5 shows significant difference in terms of the interventions done during ERCP, specifically, younger groups underwent significantly higher sphincterotomy + stone basket extraction (63.5%), while patients above 80 years old have significantly higher sphincterotomy + balloon dilatation + stone Extraction (17.4%), sphincterotomy + stent Insertion (23.0%), double pig-tail stent insertion (4.5%), stent replacement (5.7%) and stent removal (5.3%).

Table 6 shows significant difference between the two groups in terms of ERCP findings, particularly, the younger age group had significantly higher choledocholithiasis (82.8%), while patients above 80 years old has significantly higher pancreatic head mass (14.7%), ampullary mass (10.2%), common hepatic duct Stricture (5.7%), paravaterian diverticulum (7.5%) and duodenal diverticulum (1.9%).

In terms of outcomes, Table 7 shows that percentage of success is significantly higher for younger age group (96.5%) as compared to 90.6% among patients above 80 years old. Failure of CBD Cannulation, specifically pancreatic head mass is also significantly more prevalent among above 80 years old patients (4.5%) as well as the stent migration (0.8%).

Table 8.1 shows that the most common pre-procedural vital signs complication is tachycardia (5.7%) followed by bradycardia (5.3%) while only 1.1% and 0.8% developed hypotension during the early and late stage respectively.

Complications related to ERCP is also present where 1.5% experience bleeding during pre-procedural stage while 1.1% has pancreatitis during early stage and no complications during the late stage. Medical related complications is also present, where most common is accurate renal failure (1.5%) during pre-procedural while pneumonia is most common during early (3%) and late stage (1.5%). Death due to acute myocardial event (1.1%), due to severe sepsis secondary to pneumonia (0.8%) and due to renal failure on RRT (0.4%) happened during the late stage.

Table 8.2 shows that the most common complications related to vital signs among 18-35 years old during pre-procedural is bradycardia (3.1%) while hypertension (0.9%) and still bradycardia (0.9%) during early stages. During the late stage, presence of hypertension (0.4%) and hypotension (0.4%) turns out to be the most common. Complications related to ERCP is also present where 1.9% of them has cholangitis while 1.6% experience bleeding during the pre-procedural stage. During the early and late stage only pancreatitis and cholangitis is present among the small percentage of patients. Furthermore, accurate renal failure is present to 3 patients (0.4%) during the pre-procedural stage while pneumonia is most common during the early and late stage of follow up, where 1% and 0.8% of patients have it. There is no mortality among younger age group across the three different stage of follow up .

Table 1. Demographics and Baseline Characteristics

	Group A (>80 YEARS OLD)	Group B (18 – 35 YEARS OLD)	p value
Total Number of Patients (4,115)	265	795	
Mean Age (yr)	84.98	28.69	
Gender			
Male	87 (32.8)	300 (37.7)	0.1511 ^{ns}
Female	178 (67.2)	495 (62.2)	
Co-Morbidities			
Hypertension	161 (60.8)	72 (9.1)	<0.0001*
Diabetes	133 (50.2)	14 (1.8)	<0.0001*
Pulmonary (COPD, Pneumonia, Asthma)	94 (35.5)	38 (4.8)	<0.0001*
Cardiovascular disorder (post-MI, CAD, Arrhythmia)	98 (37)	6 (0.8)	<0.0001*
Cerebrovascular disease (post-CVA Infarct/Bleed)	30 (11.3)	0 (0)	<0.0001*
Renal disease (Chronic Renal Insufficiency, PCKD)	43 (16.2)	10 (1.3)	<0.0001*
Liver Disease (Cirrhosis, Hepatitis B)	9 (3.4)	6 (0.8)	0.0022*

*significant, ns not significant
Chi Square for Categorical data, Student t test for Age

Table 2. Patient hepatobiliary clinical data and diagnosis for ERCP

	Group A (>80 YEARS OLD)	Group B (18 – 35 YEARS OLD)	p value
Jaundice only	198 (74.7)	547 (68.8)	0.0689 ^{ns}
Cholangitis	152 (57.4)	421 (53)	0.2134 ^{ns}
Abdominal pain + Jaundice	134 (50.6)	474 (59.6)	0.0103*
Abnormal Imaging Findings: (UTZ, , CT Scan, MRI w/MRCP)			
• Dilated CBD	156 (58.9)	461 (58)	0.7971 ^{ns}
• Cholelithiasis	140 (52.8)	409 (51.4)	0.6930 ^{ns}
• Ampullary Thickening/mass	50 (18.9)	16 (2)	<0.0001*
• Pancreatic Head Mass	49 (18.5)	9 (1.1)	<0.0001*
• Hilar Mass	17 (6.4)	5 (0.6)	<0.0001*
• Biliary Leak	35 (13.2)	26 (3.3)	<0.0001*

*significant, ns not significant
Chi Square Test

Table 3. Abnormal Laboratory Results

	Group A (>80 YEARS OLD)	Group B (18 – 35 YEARS OLD)	p value
Elevated Alkaline Phosphatase	206 (77.7)	635 (79.9)	0.4438 ^{ns}
Elevated Bilirubins (B2 > B1)	203 (76.6)	604 (76)	0.8427 ^{ns}
Elevated Liver Function Tests (>2-3x ULN)	145 (54.7)	527 (66.3)	0.0007*
Prolonged Bleeding Parameters	99 (37.4)	138 (17.4)	<0.0001*
Elevated Amylase	20 (7.5)	134 (16.9)	0.0002*

*significant, ns not significant
Chi Square Test

Table 4. Anesthetic medications used in ERCP

	Group A (>80 YEARS OLD)	Group B (18 – 35 YEARS OLD)	p value
Propofol	184 (69.4)	333 (41.9)	<0.0001*
Meperidine + Midazolam	51 (19.2)	420 (52.8)	<0.0001*
Propofol + Sevoflurane	18 (6.8)	6 (0.8)	<0.0001*
Sevoflurane	7 (2.6)	4 (0.5)	0.0033*
Propofol + Midazolam	5 (1.9)	32 (4)	0.1062 ^{ns}

Table 5. Interventions done during ERCP

	Group A (>80 YEARS OLD)	Group B (18 – 35 YEARS OLD)	p value
Sphincterotomy + Stone Basket Extraction	61 (23)	505 (63.5)	<0.0001*
Sphincterotomy + Balloon Dilatation + Stone Extraction	46 (17.4)	43 (5.4)	<0.0002*
Sphincterotomy + Stent Insertion + Balloon Dilatation	17 (6.4)	34 (4.3)	0.1673 ^{ns}
Sphincterotomy + Stone Extraction (Basket + Balloon)	23 (8.7)	64 (8.1)	0.7586 ^{ns}
Sphincterotomy + Stent Insertion	61 (23)	95 (11.9)	<0.0001*
Double pig-tail stent Insertion	12 (4.5)	2 (0.3)	<0.0001*
Mechanical Lithotripsy	7 (2.6)	10 (1.3)	0.1474 ^{ns}
Stent Replacement	15 (5.7)	3 (0.4)	<0.0001*
Stent Removal	14 (5.3)	5 (0.6)	<0.0001*
No Intervention (Cholangiogram/ Pancreatogram Findings showed no CBD stone, no strictures)	9 (3.4)	34 (4.3)	0.5212 ^{ns}
Duration Time (mean)(SD)	41.3 (29.1)	33.9 (26.5)	0.0510 ^{ns}

*significant, ns not significant
Chi Square Test, Student t test for Duration Time

Table 6. ERCP Findings/Final Diagnosis

	Group A	Group B	p value
	(>80 YEARS OLD)	(18 – 35 YEARS OLD)	
Choledocholithiasis	183 (69.1)	658 (82.8)	<0.0001*
Malignant Biliary Stenosis			
- Pancreatic Head Mass	39 (14.7)	9 (1.1)	<0.0001*
- Ampullary Mass	27 (10.2)	8 (1)	<0.0001*
- Common Hepatic Duct Stricture (Cholangiocarcinoma)	15 (5.7)	4 (0.5)	<0.0001*
Benign Biliary Stenosis			
- Postoperative Injury secondary to Cholecystectomy	6 (2.3)	39 (4.9)	0.0693 ^{ns}
- Cystic duct stone (Mirizzi's syndrome)	10 (3.8)	22 (2.8)	0.4125 ^{ns}
- Choledochal cyst	4 (1.5)	19 (2.4)	0.3846 ^{ns}
Paravaterian Diverticulum	20 (7.5)	15 (1.9)	<0.0001*
Dilated CBD with Absence of stones/ strictures	4 (1.5)	19 (2.4)	0.3846 ^{ns}
Duodenal Diverticulum	5 (1.9)	2 (0.3)	0.0068*

Table 7. Outcomes of ERCP

	Group A	Group B	p value
	(>80 YEARS OLD)	(18 – 35 YEARS OLD)	
Successful	240 (90.6)	767 (96.5)	<0.0001*
Failed	25 (9.4)	28 (3.5)	<0.0001*
Failure of CBD Cannulation:			
• Displaced ampullary orifice due to ampullary Mass	4 (1.5)	5 (0.6)	0.1609 ^{ns}
• Pancreatic Head Mass	12 (4.5)	3 (0.4)	<0.0001*
• Duodenal Stenosis/CBD Stricture	3 (1.1)	6 (0.8)	0.6499 ^{ns}
• Paravaterian Diverticulum	2 (0.8)	4 (0.5)	0.5761 ^{ns}
• Common Hepatic Duct/Hilar Stricture	3 (1.1)	1 (0.1)	0.0170*
• Suboptimal position of duodenoscope for CBD cannulation	3 (1.1)	2 (0.3)	0.1100 ^{ns}
• Floppy papilla	0 (0)	7 (0.9)	0.1214 ^{ns}
• Stent Migration	2 (0.8)	0 (0)	0.0116*

*significant, ns not significant
Chi Square Test*

Table 8.1 ERCP Complications Among >80 years old patients

Complications	PATIENT (>80 YEARS OLD)		
	Peri-procedural	Early (1 st – 15 th day post- ERCP)	Late (16 nd – 30 th day post-ERCP)
Vital signs			
<input type="checkbox"/> Hypotension: (BP 80/50mmHg)	11 (4.2)	3 (1.1)	2 (0.8)
<input type="checkbox"/> Hypertension: (BP > 160/90mmHg)	8 (3)	2 (0.8)	0 (0)
<input type="checkbox"/> Bradycardia: (HR 54 – 58 bpm)	14 (5.3)	2 (0.8)	0 (0)
<input type="checkbox"/> Tachycardia: (HR 100 – 106 bpm)	15 (5.7)	0 (0)	0 (0)
<input type="checkbox"/> O2 Desaturation: (O2 sat 85-89%)	10 (3.8)	2 (0.8)	1 (0.4)
ERCP- Related:			
<input type="checkbox"/> Pancreatitis	3 (1.1)	3 (1.1)	0 (0)
<input type="checkbox"/> Bleeding	4 (1.5)	0 (0)	0 (0)
<input type="checkbox"/> Perforation	0 (0)	0 (0)	0 (0)
<input type="checkbox"/> Cholangitis	3 (1.1)	1 (0.4)	0 (0)
Medical-Related:			
<input type="checkbox"/> Pneumonia	0 (0)	8 (3)	4 (1.5)
<input type="checkbox"/> Acute Renal Failure	4 (1.5)	3 (1.1)	3 (1.1)
<input type="checkbox"/> Sepsis	0 (0)	4 (1.5)	3 (1.1)
Death			
<input type="checkbox"/> Severe Sepsis secondary to Pneumonia	0 (0)	0 (0)	2 (0.8)
<input type="checkbox"/> Renal Failure on RRT	0 (0)	0 (0)	1 (0.4)
<input type="checkbox"/> Acute Myocardial Event	0 (0)	0 (0)	3 (1.1)

Table 8.2 ERCP Complications Among 18-35 years old patients

Complications	PATIENT 18-35 YEARS OLD)		
	Peri-procedural	Early (1 st – 15 th day post- ERCP)	Late (16 nd – 30 th day post-ERCP)
Vital signs			
<input type="checkbox"/> Hypotension: (BP 80/50mmHg)	15 (1.9)	4 (0.5)	3 (0.4)
<input type="checkbox"/> Hypertension:	12 (1.5)	7 (0.9)	3 (0.4)

(BP > 160/90mmHg)			
<input type="checkbox"/> Bradycardia: (HR 54 – 58 bpm)	19 (2.4)	7 (0.9)	0 (0)
<input type="checkbox"/> Tachycardia: (HR 100 – 106 bpm)	25 (3.1)	8 (1)	0 (0)
<input type="checkbox"/> O2 Desaturation: (O2 sat 85-89%)	15 (1.9)	6 (0.8)	2 (0.3)
ERCP- Related:			
<input type="checkbox"/> Pancreatitis	8 (1)	6 (0.8)	2 (0.3)
<input type="checkbox"/> Bleeding	13 (1.6)	0 (0)	0 (0)
<input type="checkbox"/> Perforation	0 (0)	0 (0)	0 (0)
<input type="checkbox"/> Cholangitis	15 (1.9)	4 (0.5)	2 (0.3)
Medical-Related:			
<input type="checkbox"/> Pneumonia	0 (0)	8 (1)	6 (0.8)
<input type="checkbox"/> Acute Renal Failure	3 (0.4)	4 (0.5)	0 (0)
<input type="checkbox"/> Sepsis	0 (0)	7 (0.9)	2 (0.3)
Death			
<input type="checkbox"/> Severe Sepsis secondary to Pneumonia	0 (0)	0 (0)	0 (0)
<input type="checkbox"/> Renal Failure on RRT	0 (0)	0 (0)	0 (0)
<input type="checkbox"/> Acute Myocardial Event	0 (0)	0 (0)	0 (0)

Discussion

The study had some important findings that are comparable with other recent studies. The classical presentations for common bile duct stones of abdominal pain, with or without jaundice and Charcot's triad occurred in less than half of the patients, whereas painless jaundice and a non-specific presentation occurred in 68% of elderly patients versus 74% of younger patients, supporting the view that the presentation of gallstones is often atypical in elderly patients. The most common co-morbidity present in the elderly was hypertension. In the elderly population, Charcot's triad may not be fulfilled with patients being afebrile. Elderly patients are usually immunocompromised hence they are unable to mount a robust immune response which is represented by fever episodes at times. It is very difficult to fulfill the triad in this population. In a study by Rahman, et. al. , Charcot's triad was present in only 15.6% of young and 18.8% of older patients.⁷ Hence in this study, we have included patient with the diagnosis of cholangitis who are unable to fulfill the triad but were highly suspected to have cholangitis and were able to improve after biliary drainage.

A common indication for ERCP in the elderly seen in this study was bile leak which was significantly higher than in the young

population. This is because the elderly population have more severe bile stone disease especially cholecystitis (gangrene formation, gallbladder perforation, emphysema). Because this being more commonly diagnosed, cholecystectomy has become more common in the elderly and thus indirectly increasing bile duct injuries. Most surgeons opt for laparoscopic cholecystectomy especially in elderly patients with comorbidities with its faster surgery time, rapid recovery and shorter hospital stay. Although laparoscopic cholecystectomy has a higher frequency of bile duct lesions (3 to 6 in 1000 cases) than an open approach.⁸ With this, bile leaks has become more common in the elderly population

Furthermore, regarding laboratory indices, the mean level of serum alkaline phosphatase was slightly higher in the elderly. It has been clear that the classical presentations for CBD obstructions due to biliary stone including abdominal pain, with or without jaundice, occurred in more than half of the elderly patients. In our study, the overall success rate for ERCP was 90% in the elderly group, versus 96% in the young patients group. Failure of cannulation due to pancreatic head mass in elderly group is present in 5% versus 0.4% young adult group. These findings were statistically significant at (P=0.001).

Post-ERCP procedure complications were similarly observed in both elderly and young adult patients undergoing ERCP. In the study, most of the ERCP-related complications were minor and none of them resulted in death. The most common minor post-ERCP complications include minor events such as tachycardia, desaturation, transient hypotension, self-limiting bleeding, extravasations, and mild pancreatitis. In the general population, the most common ERCP-related complication is pancreatitis which was noted to be comparable on both age groups. This result has been also reported by other previous studies like the study of Alizadeh, et.al. In the last decade, great efforts have been exerted toward the prevention of this complication. Points of emphasis have included technical measures, pharmacological prophylaxis, and patient selection. It seems that the role of patient factors such as age and prior history of post-ERCP pancreatitis as well as technical factors such as number of minor papilla sphincterotomy and operator experience as the determining high risk predictors for post-ERCP pancreatitis is emphasized.²

Major or significant ERCP-related events, which are those that could cause significant morbidity and mortality, were uncommon in our study. Of the mortality cases, deaths secondary to acute myocardial event and sepsis secondary to pneumonia were reported as late non-ERCP related deaths. The mortality has been shown to be often related to severity of illness and underlying co-morbidities. Our study showed that abnormal renal function, acute myocardial event and

Conclusion

In contrast to the usual notion among physicians and relatives of elderly patients, who refuse ERCP, thinking that the procedure would entail more risks and complications in this age group, our study showed that ERCP is safe in the elderly population. The minor ERCP-related complications are usually transient and self-limiting which was comparable with young adult age group. The mortality is usually related to the severity of illness and underlying co-morbidities rather than the ERCP procedure related events. Hence, ERCP should be considered when indicated even in the elderly population as this may be life-saving and with comparable risks and complications as with young adult population.

underlying pulmonary infections and malignancy were significant predictors for death within one month of ERCP. In addition, those patients who died within one month were given significantly less conscious sedations. These factors probably reflected the severity of the underlying condition of our patients.

Chong et. al. demonstrated almost similar indications with our study but different frequencies such as cholangitis (51.4%), choledocholithiasis (19.4%) and blocked stents (14.6 %). Malignancies represented only 5.6% while in our study it represented about 20.6%. This study also noted that the mortalities of elderly patients who underwent ERCP were related to their comorbidities and underlying malignancies and not with the ERCP procedure itself.² In similar studies in Taiwan, Iran and Korea, similar findings were also observed. 2,9,10 In relation to this study, ERCP has been proven to be safe in elderly Filipino patients with noted very low complication rates and high success rates which is at par with other countries. A highly trained endoscopist, a competent support staff, and a specialized referral center are key to a greater success in elderly patient safety and an improved outcome when undergoing ERCP.

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