Early results of conservative and surgical approach in Endoscopic Retrograde Cholangiopancreatography (ERCP) Perforations

Single center experience

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Early results of conservative and surgical approach in Endoscopic Retrograde Cholangiopancreatography (ERCP) Perforations. Single center experience.

INTRODUCTION: *Endoscopic retrograde cholangiopancreatography (ERCP) ± endoscopic sphincterotomy, and after perforation (ERCP-P), which is a common method used for the diagnosis in the past and treatment today in hepatopancreatobiliary cases, is a rare complication with high mortality. While surgery has been at the forefront in perforations after ERCP in previous years, conservative treatment is widely accepted today, except for some special conditions. The aim of this study was to determine the incidence of ERCP-P in a hepatobiliary center, the outcome of the treatment modalities applied, and the risk factors for mortality due to perforations.*
MATERIALS AND METHODS: *Patients hospitalized in our clinic with the diagnosis of ERCP-P were retrospectively analyzed. Age, gender, ERCP indication, method of treatment applied, time between ERCP-P diagnosis and treatment, injury class, length of stay (LOS) and early results of the patients were examined.*
RESULTS: *45 patients were hospitalized in our clinic upon the development of ERCP-P between the years of 2006 and 2022. 37 of these patients underwent conservative and 8 patients underwent surgical treatment. When the perforation types were examined, Stapfer Type 1 was found in 4 patients, Type II in 6 patients, Type III in 3 patients and Type IV ERCP-P in 32 patients (71.1%). LOS was longer in the surgical group than in the conservative treatment group (p=0.040). Mortality was observed in 15.56% of patients. 57.1% of these patients were in the surgical group. In the multivariate analysis, the time between diagnosis and treatment of ERCP-P, which is the only factor affecting mortality, was found. The risk of death was found to be 30.61 times higher in patients with a time elapsed between ERCP-P diagnosis and treatment exceeding 24 hours compared to patients with a time elapsed ≤24 hours (p=0.030).*
DISCUSSION: *In our study, it was observed that the prognosis of the patients in the surgical group was poor and the length of stay was significantly longer. At the same time, the only effective factor on mortality is the time between ERCP-P diagnosis and treatment.*

KEY WORDS: Endoscopic Retrograde Cholangiography, Perforation, R Factors

Introduction

Endoscopic retrograde cholangiopancreatography (ERCP) ± endoscopic sphincterotomy (ES) was widely used for diagnosing pancreatobiliary cases. Currently, it is generally for treatment. Although ERCP is usually a safe procedure, complications such as perforation, bleeding, cholangitis, and pancreatitis may occur. The frequency of complications associated with this invasive procedure varies between 0.08-10%, and the mortality rate is between 0.5-1.5% [1]. The most critical ERCP complications are ERCP-related perforations (ERCP-P). ERCP-P is a rare condition with severe morbidity and mortality. Although the incidence in the series is less than 1%, the mortality rate in ERCP complications may increase to 25% in some series [2,3]. There is no clear consensus on the optimal treatment method in ERCP-P. Whether to prefer conservative or surgical approaches is not deter-

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mined. Although early surgical treatment has often been advocated in the past, the conservative treatment also resulted in good outcomes. At the same time, another parameter that may be important in the prognosis is the timing of surgery. Recommended treatment schemes play a crucial role in ERCP-P management according to early diagnosis, type of injury and classifications. However, due to the low number of ERCP-P cases and heterogeneous patient groups, it remains unclear for which patients the conservative approach is better and for which patient surgery is the priority. This study aimed to determine the incidence of ERCP-P in a hepatobiliary center, the outcome of the treatment modalities applied, and the risk factors for mortality due to perforations.

Materials and Methods

Patients admitted to the General Surgery Clinic of BUUTF between 2006 and 2022 with a diagnosis of ERCP-P were retrospectively examined. The study was approved by the Ethics Committee of the our institution The study observed the following characteristics and conditions of the patients: age, sex, ERCP indication, clinical findings, diagnostic methods, the time between ERCP-P diagnosis and treatment, injury grade, treatment method, length of hospital stay (LOS), and early results. Patients suspected of ERCP-P underwent abdominal x-ray, chest radiography, and oral-intravenous (IV) contrast-enhanced abdominopelvic computerized tomography (CT).
ERCP-P was classification was according to the Stapfer as: far from the papilla (type I, duodenal lateral or medial wall), periampullary (type II), distal bile duct level (type III, related to guidewire or basket instrument) or retroperitoneal air alone (type IV) (Table I) [4].

TABLE I - *Stapfer classification of endoscopic retrograde cholangiopancreatography-related perforations (4)*

I	Lateral or medial wall duodenal perforation
II	Perivaterian perforation
III	Distal bile duct injuries related to guidewire-basket instrumentation
IV	Retroperitoneal air alone

There are two groups of patients: conservative treatment (Group A) and surgical treatment (Group B). The surgical operation in the first examination was in the following patients: the ones with extravasation of orally given contrast agent or intraabdominal free air on CT together with peritonitis findings; the ones who progressed in clinical and laboratory findings during conservative treatment (Fig. 1 a-b). All other patients had conservative treatment (Fig. 2). Oral intake was discontinued in patients undergoing conservative treatment. Then, there were nasogastric decompression, intravenous fluid resuscitation, broad-spectrum antibiotics, including gram-negative bacteria and anaerobes, daily leukocyte-CRP follow-up, and physical examination follow-up.

Statistical Analysis

The Shapiro-Wilk test was used to test whether the numerical data fit a normal distribution. Numerical variables with normal distributions are summarized as the mean±standard deviation, and those without normal distributions are presented as the median (minimum-max-

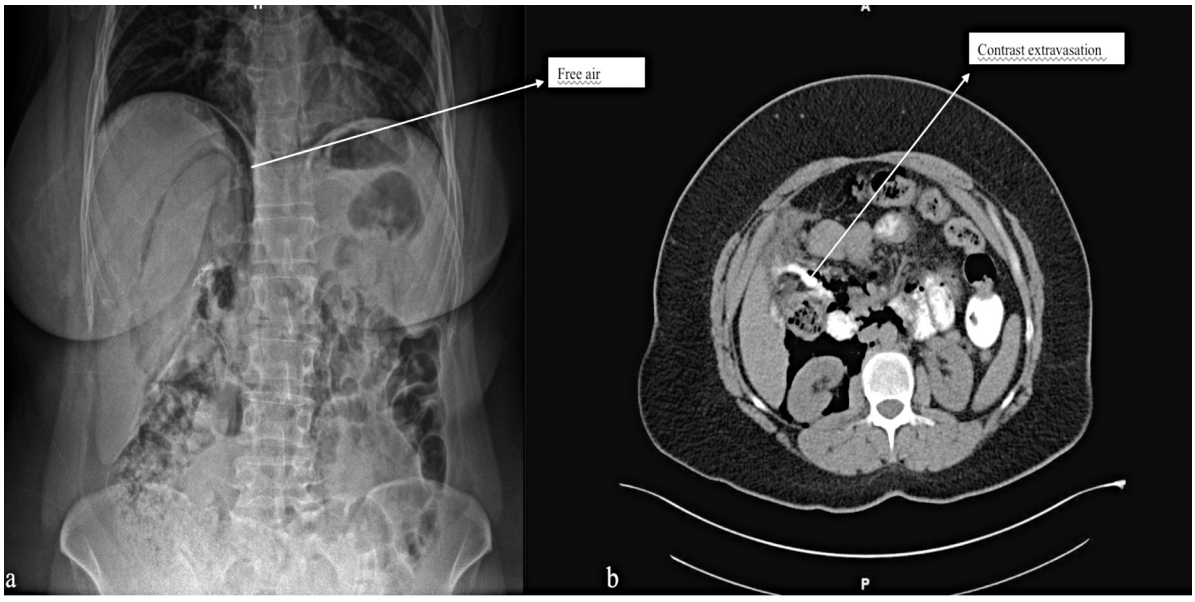

Fig. 1: A) Free air in a standing flat abdominal x-ray taken in the patient with peritonitis findings after ERCP; B) In the same patient's oral contrast-enhanced abdominopelvic CT, both around the duodenum free-air images and extravasation of oral contrast agent.

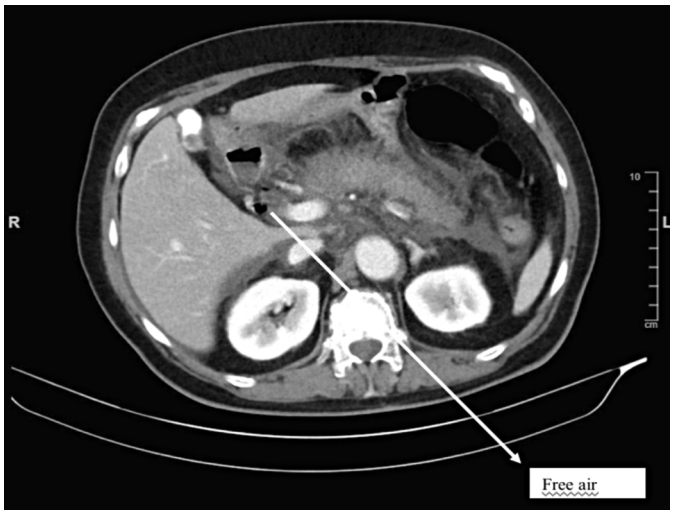

Fig. 2: Free air around the duodenum on the oral IV contrast-enhanced abdominopelvic CT, obtained after the perforation diagnosis following the abdominal pain complaints of the post-ERCP patient.

imum) values. The Mann-Whitney U-test was used to compare numerical variables between two independent groups. Categorical variables were given with number and percentage values. Fisher's exact chi-square and Fisher-Freeman-Halton tests compared categorical variables between groups. Binary multivariate logistic regression analysis determined the risk factors for mortality. Statistical analyses were performed in the IBM SPSS Statistics 23.0 package program.

Results

A total of 6629 patients had ERCP in the Gastroenterology Department between 2006 and 2022 in our faculty. Forty-five (0.68%) of these patients were transferred to our clinic upon the development of ERCP-P. The mean age of the patients hospitalized for ERCP-P was 56.84±16.23 years. Of these patients, 15 (33.33%) were male, and 30 (66.67%) were female. The most widespread indication in patients with ERCP-P was choledochal stones (n=38, 84.44%).

Five patients (11.11%) underwent ERCP due to malignancy-related jaundice, and two patients (4.44%) underwent ERCP due to biliary stricture. All patients had abdominal pain and leukocytosis. The incidence of comorbid pathology was 68.9% (in 31 cases), which was similar between the groups (p=1.000), and it was present in 25 (67.56%) cases in the conservative group and 6 (75%) cases in the surgical group. There was no statistically significant difference between Group A and Group B in age, sex, etiology, or comorbid pathologies. As a result of the oral and IV contrast-enhanced CT evaluation of all patients, free air was present in 33 (73.33%) patients.

Five of these patients also had extravasation of the orally administered contrast agent. There were 3 (6.67%) patients with no free air detection and only oral contrast extravasation. Nine (20%) patients had loculated fluid collections. In perforation types, Stapfer Type 1 was present in 4 patients, Type II in 6 patients, Type

TABLE II - *Demographic and clinical characteristics of patients who have ERCP-related perforation*

Variables	Totaln=45	Group A (Conservative treatment) n=37	Group B (Surgical treatment)n=8	p-değeri
Age (years)	56.84±16.23*	61(26-80)***	51 (31-97)***	0.850
Female **	30 (66.67)	26 (70.27)	4 (50)	0.410
Etiology **				
CBD stone	38 (84.44)	30 (81.08)	8 (100)	0.707
Periampullary carcinoma	5 (11.11)	5 (13.51)	0	
Biliary stricture	2 (4.44)	2 (5.41)	0	
Comorbidity **	31 (68.9)	25 (67.56)	6 (75)	1.000
Comorbidities **				
Diabetes mellitus	6 (13.33)	4 (10.81)	2 (25)	
Coronary artery disease	7 (15.55)	6 (16.22)	1 (12.5)	
Hypertension	14 (31.11)	11 (29.73)	3 (37.5)	
Chronic obstructive pulmoner disease	2 (4.44)	1 (2.7)	1 (12.5)	
Others	3 (6.67)	3 (8.11)	0	
Stapfer classification **				
Type I	4 (8.89)	0	4 (50)	<0.001
Type II	6 (13.33)	4 (10.81)	2 (25)	
Type III	3 (6.67)	2 (5.41)	1 (12,5)	
Type IV	32 (71.11)	31 (83.78)	1 (12,5)	
Length of hospital stay (days)***	8 (1-95)	7 (1-38)	15 (5-95)	0.040
Mortality**	7 (15.56)	3 (8.11)	4 (50)	0.013
Time between procedure and treatment **				
< 24 hours	31 (68.88)	27 (72.98)	4 (50)	0.231
> 24 hours	14 (31.11)	10 (27.02)	4 (50)	

*Mean±SD; ** n(%); ***Median (min-max)

TABLE III - *Analysis of variables affecting mortality*

Variables	Non-survivors (n=7)	Survivors (n=38)	p-value
Age			
≥ 70 (n=9)	4 (% 57.14)	5 (13.16)	0.022
< 70 (n=36)	3 (% 42.86)	33 (86.84)	
Comorbidity (n=31)	6 (85.71)	25 (65.79)	0.407
Time between procedure and treatment			
24 hours (n=31)	2 (28.57)	29 (76.32)	0.023
> 24 hours (n=14)	5 (71.43)	9 (23.68)	
Treatment method			
Conservative treatment (n=37)	3 (42.86)	34 (89.47)	0.013
Surgical treatment (n=8)	4 (57.14)	4 (10.53)	
Type of perforation			
Type I	3 (42.86)	1 (2.63)	0.006
Type II	1 (14.29)	5 (13.16)	
Type III	1 (14.29)	2 (5.26)	
Type IV	2 (28.57)	30 (78.95)	

n (%)

TABLE IV - Multivariate analysis of variables associated with mortality

	p-value	OR	95% CI for OR	
			Lower	Upper
Time between procedure and treatment (RC: ≤24 hours)	0.030	30.61	1.38	678.19
Treatment(RC: Conservative)	0.951	0.87	0.01	66.19
Age (RC: <70)	0.077	14.33	0.75	273.72
Type of perforation (RC: Type I)	0.382	-	-	-
Type II	0.407	0.09	0.00	26.19
Type III	0.242	0.03	0.00	10.13
Type IV	0.132	0.01	0.00	3.87

OR: Odds rate RC: Reference category

III in 3 patients, and Type IV ERCP-P in 32 patients (71.1%). Conservative follow-up was performed in 37 (82.22%) patients. 83.78% of the patients who received conservative treatment had Stapfer Type IV perforation, while the majority (50%) of the patients in the surgical group had Type I perforation. This difference was statistically significant (p<0.001). LOS was 8 (1-95) days. 7 patients (15.56%) died (Table II).

There were surgical treatments in eight patients (17.78%). A 72-year-old female patient with Type I injury was monitored for pancreatitis after ERCP, and perforation was present in the imaging performed upon worsening condition. She underwent surgery 7 days after the ERCP.

Then, she had a choledochotomy + T-tube. The patient died on the 38th day after the operation. A 32-year-old patient with Type I perforation underwent an emergency surgery on the second day after the ERCP procedure. The patient underwent choledochotomy + T-tube with gastroenterostomy. The patient died on the 12th day after the operation. The other two patients, 97 and 39 years old, with Type I perforation, were diagnosed in the first 24 hours after the procedure and underwent emergency operation.

Drainage+ primary repair of duodenum+ ascending tube duodenostomy was performed in these patients. The 97-year-old patient died by entering high-speed atrial fibrillation (AF) on the 5th postoperative day due to concomitant cardiac problems. Two 58- and 31-year-old patients with type II perforation were diagnosed and operated on in the first 24 hours after ERCP. One of these patients who underwent drainage + irrigation was discharged on the postoperative 95th day and the other on the 12th day. A drainage catheter was placed due to the development of a post-operative intraabdominal abscess in the patient who was hospitalized for a longer time. An 80-year-old patient with type III perforation was followed up for 5 days after the procedure due to abdominal pain and flat abdomen examination findings and was consulted with us as the condition did not improve. He underwent surgery after perforation was present on CT.

A choledochotomy + T-tube was applied to the patient. The patient died due to aspiration on the 30th postoperative day. A 44-year-old patient with type IV perforation was taken into operation after conservative observation for 14 days; however, there was no improvement in his condition, and extravasation of the orally admin-

TABLE V - *Analysis of variables affecting mortality in groups*

	Conservative treatment group (n=37)		
Variables	**Non-survivors (n=3)**	**Survivors (n=34)**	**p-value**
Age*	66 (64 -76)	58.50 (26 - 80)	0,081
Comorbidity**	3 (100.)	22 (64.71)	0.537
Time between procedure and treatment **			
≤ 24 hours	1 (33.33)	26 (76.47)	0.172
> 24 hours	2 (66.67)	8 (23.53)	
Type of perforation **			
Type I	0 (0)	0 (0)	0.421#
Type II	1 (33.33)	3 (8.8)	
Type III	0 (0)	2 (5.9)	
Type IV	2 (66.67)	29 (85.3)	

	Surgical treatment group (n=8)		
Variables	**Non-survivors (n=4)**	**Survivors (n=4)**	**p-value**
Age*	76 (32 - 97)	41.5 (31 - 58)	0.200
Comorbidity**	3 (75)	3 (75)	1.000
Time between procedure and treatment **			
≤ 24 hours	1 (25)	3 (75)	0.486
> 24 hours	3 (75)	1 (25)	
Type of perforation **			
Type I	3 (75)	1 (25)	0.257
Type II	0 (0)	2 (50)	
Type III	1 (25)	0 (0)	
Type IV	0 (0)	1 (25)	

*median (min-max); **n (%); # Type II, II and IV were compared.

istered contrast agent into the abscess was detected on CT. The patient underwent drainage + irrigation. The patient was discharged on the 18th postoperative day.

In selecting the treatment method, the Stapfer classification showed a significant difference between the two groups (p<0.001). All 4 patients with Stapfer classification type I underwent surgery, and 50% of the patients who underwent surgery were in this group, which was statistically significant (p<0.001).

The Stapfer classification was similar in the two groups with type II (p=0.286). Similarly, Stapfer classification type III patients were similar in the two groups (p=0.452). Of the 32 patients with Stapfer classification type IV, only one had undergone surgical treatment, and 96.8% were conservative, which was statistically significant (p<0.001). The median LOS of the conservative-group patients was 7 (1-38) days, while the median LOS of the patients who underwent surgery was 15 (5-95) days (Table II).

Three conservatively followed patients (one type II, the other type III, and type IV) had percutaneous drainage upon detecting an infected abscess during imaging due to elevated inflammatory parameters and persistent fever. In the same group, biliary drainage was applied to 2 patients with type II and IV perforation. Among these patients, the patient with type II perforation died on the 1st day. This patient had coronary artery disease, diabetes mellitus, and hypertension comorbidities. In the surgical group, percutaneous drainage was performed to the intraabdominal abscess on the 11th postoperative day in only 1 patient. One patient developed acute renal failure. There was not any major lung morbidity or surgical site infection in either group. The reason for prolonged hospitalization in both groups was the need for antibiotics.

In our study, three of the seven patients lost were in the conservative group (Table II). Type IV perforation was present in 2 of these patients, and type II perforation was present in one. The >70-year-old patient with type II perforation and periampullary region tumor died within the first 24 hours. There was no extravasation in the radiology of this patient, and only air was detected. The time between ERCP-P diagnosis and treatment was >24 hours in two patients with Type IV perforation, one with choledocholithiasis at the age of 66 and the other with periampullary region tumor at the age of 64. One of these patients died on the 5th day, and the other died on the 7th day due to septic complications. 4 patients (50%) in the surgical treatment group died.

Of these patients, 3 had type I, and 1 had type III perforation. All of them underwent ERCP with a diagnosis of choledocholithiasis. A 97-year-old patient with type I perforation who underwent ascending tube duodenostomy with duodenal primary repair in the first 24 hours

died on the 5th day due to accompanying cardiac problems. Duodenal medial face repair and choledochotomy + T-tube were applied to a seventy-two-year-old patient with Type I perforation with >24 hours between ERCP-P diagnosis and treatment.

This patient died on the 38th day due to septic complications. The time between ERCP-P and treatment was >24 hours in the last patient with Type I perforation at the age of 32 without comorbidity. This patient underwent choledochotomy + T-tube + gastroenterostomy. Postoperative 12th day, the patient was lost from septic complications. Eighty-year-old patient with Type III perforation underwent choledochotomy + T-tube. In this patient, the time between ERCP-P diagnosis and treatment was >24 hours, and the patient died on the 30th postoperative day. The LOS (p=0.040) and mortality rates (p=0.013) were significantly higher in the surgical group than in the conservative group. In both groups, there was no difference in the time between ERCP-P diagnosis and treatment before or after 24 hours (p=0.231).

When age, comorbid pathology, the time between ERCP-P and treatment initiation, the type of perforation (according to grading), and the treatment applied were evaluated, factors other than comorbid pathologies were effective. The mortality rate was 19.35% in 31 cases with comorbidities in the series; on the contrary, it was 7.14% in 14 cases without comorbid pathology, but it was not statistically significant (p=0.407). A total of 44.4% (n: 4) of the patients over seventy years of age (n: 9) died, while this rate was 8.33% (n:3) in patients <70 years of age, and this was statistically significant (p=0.022). The mortality rate, which was 6.45% in 31 patients who were noticed and treated within 24 hours after the procedure, increased to 35.71% in 14 patients who started treatment after 24 hours, and the difference was statistically significant (p=0.023).

Similarly, the mortality rate, which was 7.89% in 38 cases treated conservatively, increased to 50% in 8 cases treated surgically, and the difference was statistically significant (p=0.013). Considering the type of perforation, 42.86% of the patients who died had Stapfer Type I perforation, while 78.95% of the surviving patients had Type IV perforation. This difference was statistically significant (p=0.005). There was no difference between the other perforation types (II and III) (Table III).

The significant variables of the univariate analyses were in the model, and binary multivariate logistic regression analysis determined the risk factors for mortality. The model was statistically significant (Omnibus p=0.003; Hosmer-Lemeshow p=0.551), and the time between ERCP-P diagnosis and treatment was statistically significant. The risk of death was 30.61 times higher in patients with more than 24 hours of elapsed time between ERCP-P diagnosis and treatment than in other patients (p=0.030) (Table IV).

The median age was 76 (32-97) days, and the median LOS was 23.5 (5-38) days in patients who underwent surgical treatment and died. In patients who underwent conservative surgery and died, the median age was 66 (64-76) days, and the median LOS was 5 (1-7) days.

Considering these variables (time between ERCP-P and treatment, type of perforation, comorbid pathology, and age) that may have an effect on mortality considering the treatment approach applied, no significant difference was found in time between ERCP and treatment (p=0.172) in terms of perforation type (p=0.421), comorbid pathology (p=0.537), and age (p=0.081) in the conservative group. Similarly, there was no significant difference in ERCP-P diagnosis and treatment in terms of time (p=0.486), perforation type (p=0.257), comorbid pathology (p=1.000), or age (p=0.200) in the surgical group (Table V).

Although not statistically significant, the patients with mortality in the surgical group were older. In addition, 75% of the patients who received delayed treatment (>24 hours) in the surgical group were lost, while this rate was 25% in patients who received early treatment (≤ 24 hours) (Table V). The only patient who received early treatment and died from high-speed atrial fibrillation was a patient with severe cardiac problems. Diagnosis and treatment of the other 3 patients started after 24 hours, and the cause of mortality in these patients was sepsis.

Discussion

ERCP-P is a rare, serious complication. Although the main reason is technical shortcomings (such as inexperienced endoscopist, difficult cannulation, precut, and sphincterotomy), patient factors (such as post-Billroth II gastrectomy) may also cause this complication[5].

While the general approach for ERCP-P was surgery, conservative treatment is increasingly adopted today. In the literature, the general approach to ERCP-P cases is based on the Stapfer classification. Surgical treatment is recommended for 80% of Stapfer Type I perforations [6]. In these patients, the mortality rate with surgical treatment was 15% [7], and the mortality rate was lower, especially in early surgery (<24 hours) compared to late surgery [8]. Conservative treatment is more prominent in type II perforations (2,9,10).

However, surgery may be required if there is diffuse air or a large retroperitoneal abscess in Type II perforations or if there is still a stone in the bile ducts after ERCP [4]. In type II perforations, the success rate was more significant in patients who underwent surgical treatment at the beginning than in the group who underwent conservative treatment at the beginning [7,8]. Mortality in early surgery is lower in those who undergo surgical treatment compared to late surgery [9].

Although conservative treatment is applied more frequently in type III perforations, the success rate of patients who underwent surgery and those who were fol-

lowed up conservatively was 100%, i.e., no mortality [7,11]. While conservative treatment was applied in almost 90% of Type IV perforations, mortality was not observed [9]. Again, in a review by Machado et al. examining 251 perforation cases, patients with Type I perforation always needed surgical intervention; on the other hand, most patients with Type II perforations could be successfully managed conservatively [12].

In our study, surgery was preferred in all Stapfer I perforations. 83.78% of the Type IV perforations were conservative, but 1 patient underwent surgery due to contrast extravagance into the abscess pouch and the condition that did not improve during conservative follow-up. 67% of Type II and III perforations were conservative. In our study, the mortality rate in Type I perforations was 75%, and the time between ERCP-P diagnosis and treatment was >24 hours in half of these patients.

Mortality in ERCP-P varies between 8-23%. However, advanced age, comorbidity, and especially the long time between diagnosis and treatment are the factors that increase mortality [13,14]. Mousa et al found that the mortality rate after ERCP-P was 33%. This comparatively higher mortality rate was explained by delayed diagnosis and treatment [15]. In the study of Kim et al., patients who were noticed and treated during the procedure had significantly good clinical results compared to patients who received delayed treatment (14.5 hours) with poor clinical outcomes [16]. Avgerinos et al. reported a mortality rate of 20% in a series of 15 cases. The time between ERCP-P diagnosis and operation was >24 hours in all patients with mortality [17].

In another study, mortality was lower (5.9%) after early surgery (<24 hours after ERCP) than after late surgery (14.3%) [9]. In another study, while the timing of the surgery and the surgery to be chosen are important especially in type 1 perforations, it was emphasized that the decision should be made according to the close follow-up of the patient in Type 2, 3 and 4 perforations [18]. Similarly, the mortality rate was reported in patients with delayed Type II perforation who were followed up with conservative treatment and then required surgery was 33-80% in a review of 18 studies between 2011 and 2014 [19].

Although it is not a standard method in the surgical approach of ERCP perforations, the principles of treatment include the drainage of extraperitoneal and intraabdominal abscesses and the control of sepsis, eliminating the focus in patients with gallstone disease and repairing the leakage area with or without diversion. A duodenal diversion procedure is recommended for these patients, especially for patients with type I perforation where a high flow rate duodenal fistula is present, along with drainage of the retroperitoneal cavity and primary repair of the perforation.

In our study, mortality is higher, especially in the >70 age group, when the time between ERCP-P diagnosis and treatment is >24 hours, and in the surgical group. There was no effect of comorbid pathologies on mortality. Considering the factors affecting mortality on a group basis, the patients who died in both groups were of advanced age, even if this difference is not statistically significant. Considering that age was close to the limit in statistical significance, especially in the conservative group, and 50% of the patients lost in the surgical group were >70 years old, and likewise, although 75% of the patients who received late treatment in the surgical group were lost, the lack of statistically significant results can be explained by the low number of data in the groups, and consequently, decreased power of the analysis.

One of the reasons for the increase in mortality in the surgical group may be that 75% of the patients in this group had Type I perforation. When we analyzed the conservative group, 83.78 of the patients included Type IV perforation patients with low mortality reported in the literature. In Type IV perforation patients with only retroperitoneal air radiological findings, conservative treatment in ERCP-P appears to be possible as long as clinical findings permit. However, the prognosis is quite poor in patients with Type 1 perforation. Although surgery is the primary option, its mortality rate is pretty high. Even though advanced age may be an effective factor, especially for prognosis, surgery is not superior to conservative treatment in patients with type 2 and 3 perforations. Conservative follow-up should be kept in mind in clinically appropriate patients.

The retrospective nature of the study, the limited number of cases, and the fact that patients with Type 4 perforation, who are more suitable for conservative follow-up constitute the limitations of the study, but when all patients in the study are evaluated, advanced age, delayed treatment, and Type 1 perforation appear to be poor prognostic criteria.

As a result, both the radiological findings and the prognosis of the patients in the surgical group were poor, and the LOS was significantly longer. Additionally, the patients who underwent surgery and died were elderly. In the univariate and multivariate analyses conducted throughout the study, the time between ERCP-P diagnosis and treatment was the only factor affecting mortality.

Riassunto

INTRODUZIONE: La colangiopancreatografia retrograda endoscopica (ERCP) ± sfinterotomia endoscopica, post-perforazione (ERCP-P), che è un metodo comunemente utilizzato nella diagnosi e nel trattamento dei casi epatopancreatobiliari in passato, è una rara complicanza con un'elevata mortalità. Mentre la chirurgia era in prima linea nelle perforazioni post-ERCP negli anni precedenti, il trattamento conservativo è ampiamente accetta-

to oggi, ad eccezione di alcuni casi speciali. Lo scopo di questo studio era di determinare l'incidenza di ERCP-P in un centro epatobiliare, l'esito delle modalità di trattamento ei fattori di rischio di mortalità per perforazioni. MATERIALE E METODO: I pazienti ricoverati in ospedale nella nostra clinica con la diagnosi di ERCP-P sono stati rivisti retrospettivamente. Sono stati analizzati l'età dei pazienti, il sesso, l'indicazione ERCP, il metodo di trattamento, il tempo tra la diagnosi e il trattamento di ERCP-P, la classe di lesione, la durata della degenza ospedaliera e i primi risultati.
RISULTATI: Tra il 2006 e il 2022, 45 pazienti sono stati ricoverati nella nostra clinica a causa dello sviluppo di ERCP – P. Il trattamento conservativo è stato applicato a 37 di questi pazienti e il trattamento chirurgico è stato applicato a 8 pazienti. Quando sono stati esaminati i tipi di perforazione, Stapfer di tipo 1 in 4 pazienti, di tipo II in 6 pazienti, di tipo III in 3 pazienti e di tipo IV ERCP-P in 32 pazienti (71,1%). La durata del ricovero è stata più lunga nel gruppo chirurgico rispetto al gruppo di trattamento conservativo (p=0,040). La mortalità è stata osservata in 15,56 pazienti. Il 57,1% di questi pazienti era nel gruppo chirurgico. Nell'analisi multivariata, l'unico fattore efficace sulla mortalità era ERCP-P, il tempo tra la diagnosi e il trattamento era significativo. Il rischio di morte è risultato essere 30,61 volte maggiore nei pazienti con diagnosi di ERCP-P, il tempo tra la diagnosi e il trattamento superiore a 24 ore, rispetto a quelli diagnosticati prima di ≤24 ore (p=0,030).
DISCUSSIONE: Nel nostro studio, è stato osservato che la prognosi dei pazienti nel gruppo chirurgico era sfavorevole e la durata della degenza ospedaliera era significativamente più lunga. Allo stesso tempo, l'unico fattore efficace sulla mortalità è il tempo che intercorre tra la diagnosi e il trattamento dell'ERCP-P.

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