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ORIGINAL ARTICLE

Patients' Prognosis in a Pakistani Hepato-Biliary Unit Treating Acute Severe Necrotizing Pancreatitis

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ABSTRACT

Objective: The outcomes of individuals who were admitted to a hepatobiliary unit suffering from acute severe necrotizing pancreatitis will be the focus of this research.

Study Design: Observational/ Prospective study

Place and Duration: Conducted at Department of Gastroenterology Hayatabad Medical Complex Peshawar, during from the period Jan, 2021 to June, 2021.

Methods: There were 85 patients of both genders were presented in this study. Included patients were aged between 20-70 years. All the patients had severe necrotizing pancreatitis were included. Detailed demographics of enrolled cases included age,sex, body mass index, etiology and comorbidities were recorded after taking informed written consent. Outcomes were calculated in terms of complications, hospital stay, number of drains inserted and nutritional support among all cases. SPSS 22.0 was used to analyze all data.

Results: Among 85 patients, majority of the cases were males 62 (72.9%) and the rest of the patients were females 23 (27.1%). Included patients had mean age 47.12±8.39 years and had mean BMI 26.2±6.25 kg/m^2. Most common comorbidity was diabetes mellitus found in 18 (21.2%),followed by hypertension in 17 (20%) and ischemic heart disease in 9 (10.6%) cases. Gall stones were the most common etiology found in 35 (41.2%) followed by idiopathic in 16 (18.8%) and cigarette smoking in 13 (15.3%) patients. NG feed was the most common nutrition in 19 (22.4%) cases. 10 was the most common CTSI score in 43 (50.6%) cases. Mean hospital stay was 31.9±11.82 days and infected necrosis / peri-pancreatic collections was the most common complication.13 (15.3%) cases received EUS drainage and surgical necrosectomy was given to 8 (9.4%) cases. Frequency of deaths was 10 (11.8%).

Conclusion: A specialized hepato-biliary unit with a multidisciplinary team approach improves survival with acute severe necrotizing pancreatitis. Percutaneous and EUS-guided draining of pancreatic collections helps prevent necrosectomy for infected pancreatic necrosis.

Keywords: Disease outcome, Acute pancreatitis, Infected pancreatic necrosis, Necrosectomy Acute Necrotizing Pancreatitis

INTRODUCTION

Acute Pancreatitis (AP) is a very frequent and potentially lethal condition, with more than 200,000 hospital admissions per year in the United States and an incidence of 4 to 45 per 100,000 patients per year in Europe [1,2]. Acute pancreatitis may lead to organ failures lasting more than 48 hours in roughly 20% to 25% of these individuals [3,4]. Even with severe acute pancreatitis, around 10%–20% of patients develop necrosis in one or both of the pancreas' parenchyma or the peripancreatic tissues around it, leading to acute necrotizing pancreatitis (ANP) [4,5]. When this necrotic tissue becomes infected, as occurs in 40–70% of ANP patients, the death rate might rise to 35–40%, as shown by current research on the subject. Although it's not infectious, the death rate is just around 7 percent [6]. Sick pancreatitis may go through two phases if ignored: the first lasts 10–14 days and is characterised by the generation of pro-inflammatory markers and a severe systemic inflammatory response syndrome (SIRS), which in around 40% of patients results in organ system failures. [7].

Poor results and high mortality were formerly associated with surgical therapy for pancreatic necrosis and fluid buildup. Since they have become more reliable and successful, less invasive therapeutic options such percutaneous drainage, EUS-guided drainage, video-assisted retroperitoneal debridement, and endoscopic necrosectomy have replaced surgical necrosectomy as the preferred option. [8]

More than a decade of research has shown that determining which individuals are most likely to have life-threatening complications or die during the first 24 hours after their symptoms first appear is crucial [9,10].

The National Institutes of Health has defined biomarker as "a trait that is reliably tested and analysed as an indication of normal biological processes, pathogenic processes, or pharmacological reactions to a therapeutic intervention" [11]. Biomarkers play a major part in determining a patient's diagnosis, prognosis, and treatment. As soon as a patient is admitted, it is critical to determine the severity of their AP and begin treatment as soon as possible in order to minimise the risk of organ damage and death. However, none of the existing clinical grading systems or biochemical indicators play a definite function, are widely applicable, or are consistently correct [8,12,13]. Early detection of the onset of severe AP therefore remains very difficult.

There are two stages to the AP development process, according to the 2012 update of the Atlanta categorization. Local pancreatic inflammation is the primary cause of systemic symptoms during the early stages, which normally subside by the end of the first week. A broad inflammation known as systemic inflammatory response syndrome emerges as the condition advances (SIRS). Organ failure and other local problems may occur if SIRS is not treated quickly and effectively. The determination of organ failure's duration is critical. Within 48 hours, it is termed "transient organ failure"; if it continues for longer than 48 hours, it is called "persistent organ failure". It is termed multiple organ failure (MOF) or multiple organ dysfunction syndrome (MODS) when more than one organ fails [14]. The late phase is defined by the continuation of systemic inflammation or by local consequences. The immune system is suppressed at this period, rendering the (peri) pancreatic tissue more vulnerable to infection by intestinal bacterial translocation. Late morbidity and death are exacerbated by sepsis and organ failure as a consequence of the following infection.

As much as 65% to 85% of the time, AP is self-limiting and does not need therapy beyond intravenous fluids, painkillers, and supportive care. Even among those who survive, there is a substantial risk of serious illness or death from assaults. This subset of individuals must be recognised early in the illness and treated aggressively to avoid death [15]. Proper diagnosis of a

minor condition is crucial in this regard, as is avoiding overtreatment and saving money as a result of that.

It was in 1974 that the first attempts were made to gauge the severity of this illness. Many more multifactor scoring systems based on common clinical and biochemical criteria have been developed to predict the severity. Though AP pathophysiology has improved recently, further study is required to provide a quicker and more accurate prediction of severe AP.

Study participants with acute necrotizing pancreatitis in a hepato-biliary unit are the focus of this research.[13,14]

MATERIAL AND METHODS

This observational/prospective study was conducted at Department of Gastroenterology Hayatabad Medical Complex Peshawar, during from the period Jan, 2021 to June, 2021 and comprised of 85 patients. All the patients had severe necrotizing pancreatitis were included. Detailed demographics of enrolled cases included age, sex, body mass index, etiology and comorbidities were recorded after taking informed written consent. Patients who presented after three months of illness start, those with mild or moderate severity pancreatitis, and patients who declined to be included in the trial were not considered for the study. Patients who had chronic pancreatitis were also not considered.

Included patients were aged between 20-70 years. Disease progression, clinical worsening, infected walled-off collections and abscesses were among the signs that drainage was necessary for patients who had difficulty managing their pain. From 9Fr to 32Fr drains were employed based on the placement and trajectory of the catheter, as well as the gravity and patient position of the patient. Aspirate size and consistency were used as a guide for the drain size. For patients who are ambulatory, wound care was simplified and their movements were not limited. If the drain output was less than 20 cc/24 hours, the collection(s) had been totally rectified, and the drain was yanked out of service. With progressive organ dysfunction and deterioration on a non-invasive regimen, endoscopic ultrasound (EUS) guided transluminal drainage was used as a step up procedure for minimal invasive drainage, followed by surgical necrosectomy for those who had already undergone necrosectomy for non-infectious causes. a step-up technique for non-invasive draining was devised due to a scarcity of accessible resources

Outcomes were calculated in terms of complications, hospital stay, number of drains inserted and nutritional support among all cases. SPSS 22.0 was used to analyze all data. The data was presented in the form of mean SD, frequency and percentages, if needed. Qualitative data were compared using chi square statistics, and cox regression analysis was performed to predict fatal outcomes in the research cohort. A p-value of 0.05 or below was deemed statistically significant in this study.

RESULTS

Among 85 patients, majority of the cases were males 62 (72.9%) and the rest of the patients were females 23 (27.1%).(fig 1)

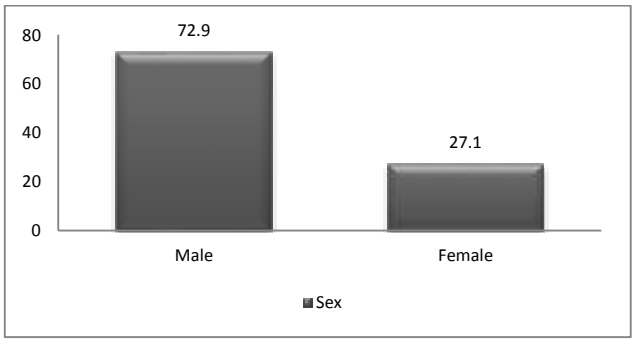

Figure-1: Distribution of sex among included patients

Included patients had mean age 47.12±8.39 years and had mean BMI 26.2±6.25 kg/m^2. Most common comorbidity was diabetes mellitus found in 18 (21.2%),followed by hypertension in 17 (20%) and ischemic heart disease in 9 (10.6%) cases. NG feed was the most common nutrition in 19 (22.4%) cases. 10 was the most common CTSI score in 43 (50.6%) cases.(table 1)

Table-1: Demographics of enrolled cases

Variables	Frequency	Percentage
Mean age (years)		
Mean BMI (kg/m^2)		
Comorbidities		
DM	18	21.2
HTN	17	20
IHD	9	10.6
Non	41	48.2
Nutrition		
NG Feed	29	34.1
Partial TPN with NG feed	25	29.4
NJ feed only	19	22.4
CTSI Score		
10	43	50.6
9	24	28.2
8	18	21.2

Gall stones were the most common etiology found in 35 (41.2%) followed by idiopathic in 16 (18.8%), cigarette smoking in 13 (15.3%) patients, hypertriglyceridemia in 11 (12.9%) cases and alcohol in 10 (11.8%) cases.(fig 2)

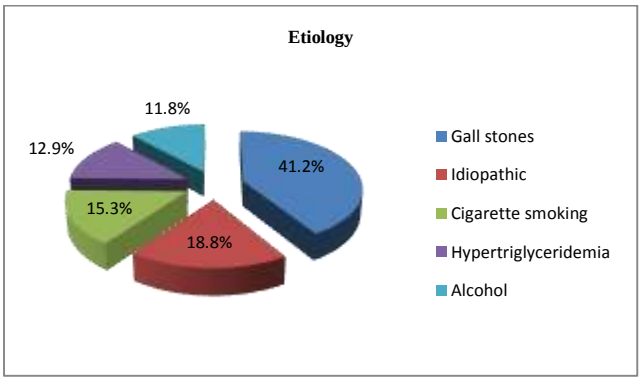

Figure-2: Association of etiology among all cases

Table-2: Outcomes of enrolled cases

Variables	Frequency	Percentage
Mean Hospital stay (days)	31.9±11.82	
Complications		
Infected necrosis / peri-pancreatic collection	70	82.4
Splenic vein thrombosis	20	23.5
Ascites	19	22.4
Pneumonia	15	17.6
Acute respiratory failure	12	14.1
Acute kidney injury	52	61.2
EUS Drainage		
Yes	13	15.3
No	72	84.7
Surgical Necrosectomy		
Yes	8	9.4
No	77	90.6
Mechanical Ventilation		
Yes	18	21.2
No	67	78.8
Pancreatic Insufficiency		
Yes	28	32.9
No	57	67.1
Death		
Yes	10	11.8
No	75	88.2

Mean hospital stay was 31.9±11.82 days and infected necrosis / peri-pancreatic collections was the most common complication.13 (15.3%) cases received EUS drainage and surgical necrosectomy was given to 8 (9.4%) cases. 18 (21.2%) patients were underwent for mechanical ventilation. Frequency of pancreatic insufficiency was found in 28 (32.9%) cases. Frequency of deaths was 10 (11.8%). (table 2)

DISCUSSION

Recent decades have seen an increase in the incidence of acute pancreatitis from 20 to 80 cases per 100,000 people per year in several countries. [16] Necrotizing infected pancreatitis is a potentially life-threatening condition for which many people advise a step-up treatment approach. [17] The existence of infected necrosis, sepsis, and multi-organ failure dictate the death and morbidity rates in severe necrotizing pancreatitis. [18] The prognosis for necrotizing pancreatitis is improving as a result of new treatment modalities and earlier detection of infection. [19]

In current study 85 patients of both genders with ages 20-70 years had severe necrotizing pancreatitis were presented. Among 85 patients, majority of the cases were males 62 (72.9%) and the rest of the patients were females 23 (27.1%). Included patients had mean age 47.12±8.39 years and had mean BMI 26.2±6.25 kg/m^2. Most common comorbidity was diabetes mellitus found in 18 (21.2%),followed by hypertension in 17 (20%) and ischemic heart disease in 9 (10.6%) cases. NG feed was the most common nutrition in 19 (22.4%) cases. 10 was the most common CTSI score in 43 (50.6%) cases. These demographically findings were comparable to the previous researches.[20,21] Gall stones were the most common etiology found in 35 (41.2%) followed by idiopathic in 16 (18.8%), cigarette smoking in 13 (15.3%) patients, hypertriglyceridemia in 11 (12.9%) cases and alcohol in 10 (11.8%) cases. Lee JK et al. found that genetic testing for the previously labelled iatrogenic pancreatitis might explain the cause in many cases despite the fact that many genetic illnesses have limited treatment options, contributing to the suffering of the patients.[22,23]

Mean hospital stay was 31.9±11.82 days. Patients who spend a lengthy time in the hospital are more likely to suffer from infections, thromboembolism, malnutrition, and an increased financial burden. One comparable research found a range from three to 120 days for the median stay for our sample, while ours was lower at 39 (15 IQR) days.[24] In current study 13 (15.3%) cases received EUS drainage and surgical necrosectomy was given to 8 (9.4%) cases. 18 (21.2%) patients were underwent for mechanical ventilation. Frequency of pancreatic insufficiency was found in 28 (32.9%) cases. After a severe parenchymal injury, pancreatic insufficiency is not unusual and has been estimated to range from 35 to 62 percent for exocrine and 23 percent for endocrine insufficiency.[25]In a meta-analysis by Huang W et al., the tendency for severe necrotizing pancreatitis increased, and two-thirds of the patients recovered slowly.[26] Infected necrosis / peri-pancreatic collections was the most common complication.[27]

Frequency of deaths was 10 (11.8%). In a prior investigation, researchers discovered a solid link between pancreatic parenchymal necrosis, duration of hospitalisation, emergence of comorbidities, and demise [28]. Among a group of patients with severe acute pancreatitis who had surgical treatment, death was around 13 times more probable in those who had sterile necrosis (P value 0.012 OR 13.704).[29]

CONCLUSION

A specialized hepato-biliary unit with a multidisciplinary team approach improves survival with acute severe necrotizing pancreatitis. Percutaneous and EUS-guided draining of pancreatic collections helps prevent necrosectomy for infected pancreatic necrosis.

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