Original Article

IMPACT OF BILIARY ETIOLOGY ON THE OUTCOME OF ACUTE PANCREATITIS

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ABSTRACT:

OBJECTIVE: To determine the impact of biliary etiology on the outcome of acute pancreatitis.
STUDY DESIGN: Randomized controlled trial
PLACE & DURATION OF STUDY: Study was conducted at Department of General Surgery, Pakistan Institute of Medical Sciences, Islamabad from January 2013 to January 2014.
METHODOLOGY: A total of one hundred and sixty (n=160) patients of both genders having age >13 years presented with acute pancreatitis were enrolled and randomly divided in two groups A (biliary etiology) and B (non-biliary etiology). Outcomes in both groups were noted in terms of analgesia requirement, hospital stay, need for assisted ventilation, oxygen inhalation and occurrence of local and systemic complications etc. Student *t*-test and chi-square test was used to analyze data. P-value <0.05 considered as significant.
RESULTS: Oxygen was required in 60% of patients in group A while 48.75% in group B during their stay at hospital. Frequency of patients who discharged within one week of admission, need ventilator support and operative management found to be 37.5%, 30% and 47.5% in group A while 47.5 %, 15% and 15% respectively in group B.
CONCLUSION: Fewer complications were associated with non-biliary etiology. Frequency of favorable outcome was lower in the patients with biliary etiology.
KEY WORDS: Acute Pancreatitis, Gall stones, Biliary Sludge, ERCP

INTRODUCTION:

Acute pancreatitis (AP) is a growing global problem with high rate of mortality and morbidity. It is a complicated disease with various etiologies but frequently caused by gallstone disease or excess alcohol consumption.[1,2]. Gallstone-induced pancreatitis is caused mainly due to the duct obstruction by the passage of tiny stone into the common bile duct where it gets impacted at ampulla of vater[3]. Other factors contributing to the development of biliary pancreatitis are anatomical variations associated with an increased biliopancreatic reflux, bile and pancreatic juice obstruction at the duodenum[4]. The prevalence of acute pancreatitis varies geographically reflecting differences in culture, tradition and lifestyle[5]. Gallstones account for almost 80 % of patients presenting with acute pancreatitis in Pakistan and 35–60% in the U.S.A and Western Europe[6,7]. Most cases of acute pancreatitis show spontaneous resolution without complications, however, approximately 25% of patients experience severe complications with increased risk of mortality[8]. Diagnosis of biliary AP mainly based on the laboratory reports and radiological investigations. Recognition and demarcation of etiologies are of extreme important in the management of AP, because it can affect the

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specific remedial strategies, and eliminating causes of AP prevents further aggravation and recurrence of Ap[9]. Generally, it is professed that acute pancreatitis runs a benign course in developing countries like Pakistan and the causing factors are different from the developing nations in these countries. There is insufficient or very little information is available in literature describing outcome of acute pancreatitis on the basis of its etiology in our population. This study aimed to compare the clinical outcomes of acute pancreatitis in patients with biliary and non-biliary etiology in our setup.

PATIENTS AND METHODS:

The study was conducted at Department of General Surgery, Pakistan Institute of Medical Sciences, Islamabad from January 2013 to January 2014. It was a randomized controlled trial performed on one hundred and sixty patients of both genders with age more than 13 years. Only those patients were enrolled who were admitted with clinical diagnosis of acute pancreatitis. Patients with equivocal diagnosis of acute pancreatitis, having a history of admission for acute or chronic abdomen during last 6 months, having co-morbids like obesity, diabetes, hypertension, IHD which may act as a confounding factor in the need for intensive treatment and the patients who were labeled as idiopathic pancreatitis after all work up were excluded from the study. All the patients were divided into two equal groups. Patients of acute pancreatitis with biliary etiology were kept in group A and those with non-biliary etiology were kept in group B. Detailed clinical history and physical examination of all the patients was performed. All the required laboratory and radiological investigations were performed for every patient. Acute pancreatitis was diagnosed according the criteria proposed by the Atlanta Pancreatitis Classification including: acute abdominal pain and rebound tenderness in the upper abdomen; raised serum amylase at least three fold greater than normal limits at its peak (or at least 24 hours after the onset of pain); and abnormalities characteristic of acute pancreatitis as determined by radiological findings like peripancreatic fluid collections as seen on abdominal ultrasonography and/or pancreatic and peripancreatic changes as seen on abdominal CT. Gallstone related etiology were confirmed from the radiological findings. Non-biliary etiologies like alcohol consumption, traumatic or infectious etiologies were diagnosed on the basis of patient history. The etiology was considered to be unknown when no identifiable factor could be found. All patients were thoroughly observed during their stay. The Ranson score at the time of admission as well as at 48 hours after admission was recorded for each patient. A meticulous record of their treatment was kept. Outcomes in both groups were noted in terms of analgesia requirement, hospital stay, need for assisted ventilation, oxygen inhalation and occurrence of local and systemic complications etc. Data was analyzed on SPSS version 23. Frequency and percentage computed for qualitative variables while mean ± standard deviation for quantitative variables among two groups. Chi square test was used to compare the outcomes in both groups and *P*-value < 0.05 considered significant.

RESULTS:

A total of one hundred and sixty patients (n=160) were enrolled in the study who were equally divided in two groups. The mean age of the patients with biliary etiology (Group A) was 37.41 years SD ±11.65 and 36.0 years SD ±10.00 of the patients with non-biliary etiology (Group B). Out of the total study population, 84 (52.50%) were male and 76 (47.50%) were female. Statistically no significant difference (p <0.05) was found in age and gender of both groups. Mean level of serum ALT was 570.40U/L ± 80.50 in Group A and 927.0 ± 80.50 in Group B patients. There was no statistically significant difference in mean Ranson's score was found among patients of both group. Ranson's score at the time of admission and at 48 hours of admission in both groups are shown in table 1. Narcotic analgesia was administered in 51 (61.25%) patients of group A while 39 (48.75%) patients of group B were administered narcotic analgesia. There was statistically significant difference in need for surgical management and ventilatory support among both groups (Table 2). While compared the local complications in both groups, no patients was found pancreatic abscess in group

B and there was no significant difference ($p < 0.05$) was found in local complications among both groups (table 3). A significant difference was found in systemic complications among both groups. Moreover, no patient from group B was involved in renal failure, encephalopathy and DIC (Table 3). Frequency of favorable outcome was significantly higher in the group B (patients with non-biliary etiology).

Table 1. Frequency of Ranson's score among both groups at the time of admission and at 48 hours

	Ranson's Score at the time of admission					Ranson's Score at 48 hours			
	2.00	**3.00**	**4.00**	**5.00**	***p*-value**	**1.00**	**2.00**	**3.00**	***p*-value**
Group A (Biliary Pencreatitis) n=80	18.00	17.0	22.00	23.00	0.05	31.00	27.00	22.00	0.76
Group B (Non-Biliary Pencreatitis) n=80	22.00	23.0	18.00	17.00		22.00	27.00	31.00	

Table 2. Frequency of different outcome variables among both groups

		Group A (Biliary Pencreatitis) n=80	**Group B (Non-Biliary Pencreatitis) n=80**	***p*-value**
Type of Analegesia Required	**Narcotic** **Non Narcotic**	51 29	39 41	0.05
Need of Oxygen Administration	**Yes** **No**	50 30	40 40	0.17
Duration of Hospital Stay	**<7 days** **>7 days**	28 52	42 38	0.07
Need of Ventilatory support	**Yes** **No**	24 56	05 75	0.04
Need of Surgical Management	**Yes** **No**	38 42	05 75	0.03

Table 3. Frequency of systemic and local complications in both groups

		Group A (Biliary Pencreatitis) n=80	Group B (Non-Biliary Pencreatitis) n=80	*p*-value
Systemic Complications	**ARDS**	4	6	
	Shock	10	15	
	Renal Failure	6	00	0.04
	DIC	10	00	
	Encephalopathy	7	00	
	None	43	59	
Local Complications	**Sterile or infected pancreatic necrosis**	10	05	
	Pancreatic abscess	12	00	0.05
	Pseudocyst	10	15	
	Pleural Effusion	12	10	
	None	36	50	

DISCUSSION:

Acute pancreatitis (AP) is the inflammatory disease of pancreas mostly caused by choledocholithiasis or excess use of alcohol. Together these two etiologies are responsible for about 80% of all episodes of Ap[10]. Proportion of each etiological factor vary greatly with geographic and social variation[11]. As the causing factor affects the treatment course of AP, so it is important to identify the specific etiology associated with AP[12]. The rationale of this study was to identify the impact of etiological factor on the treatment outcome of AP. Our results are in concordance with the previously published data on the subject. In our study, AP was more prevalent in male (52.5%) while the mean age of the patients was not significantly different in patients with biliary and biliary etiology that are comparable to the similar study conducted by Vujasinovic M et al, where male to female ratio was higher and no significant difference was found among the mean age of patients[13]. In another study, Bai Y et al studied the records of 1976 patients over a period of 15 years and reached the conclusion that there was no direct relation between increasing age and mortality in acute pancreatitis[14]. Kim DB et al, in a series of 905 patients analyzed the factors associated with the severity of AP according to the etiology and their results showed that pancreatic fluid collection was significantly associated with non-biliary AP (p = 0.04) but not gallstone-induced AP (p = 0.27)[15]. However, our study results revealed that pancreatic fluid collection was significantly associated with biliary AP rather than non-biliary AP. In our study, we found that 61.25% of the patients with biliary AP needed narcotic analgesia for pain relief however, if we compare this figure with the patients of non-biliary AP, we found no significant difference. Severe disease is characterized by organ failure and / or local complications such as necrosis, pseudocyst or abscess. Barauskas G et al, investigated the impact of etiology on the course and outcomes of AP and their results showed that the duration of hospital stay was significantly longer in patients with non-biliary etiology (p <0.021)[16]. Moreover, renal dysfunction and ICU admission was more prevalent in non-biliary group in this study. Our study results are contrary to these results where there is no significant difference is found in hospital stay among both groups. Further, no case of renal dysfunction was found in non-biliary group and the ICU admission was more frequently observed in patients with biliary AP. In our study, Shock and pseudocyst was more prevalent among non-biliary group while no

patient of Renal Failure, DIC, Encephalopathy and Pancreatic abscess was found in this group. In another study, Millat B and Gayral F analyzed that the value of serum amylase was higher in biliary acute pancreatitis and its decline was more rapid than in pancreatitis due to other causes[17]. In contrast to this study, the results of our study show that the serum ALT level was higher in non-biliary group (927.0 ± 80.50) than biliary group (570.40U/L ± 80.50). Although available literature supports the results of this study to the extent that there is no significant difference between the outcome of acute pancreatitis secondary to biliary etiology and acute pancreatitis due to non-biliary etiology, there were certain limitations in this study. The sample size was small and patient population was limited to only Islamabad or surrounding areas. This study was a comparative study, yet not effort was made to breakdown the etiologic factors in both groups and no analysis was therefore possible.

CONCLUSION:

Unfavorable outcomes of acute pancreatitis are more frequently associated with biliary etiology and it is a much life threatening condition compared to non biliary pancreatitis. Patients with biliary etiology frequently need surgical management. It is pertinent to mention that the systemic and local complications are more prevalent in patients with acute biliary pancreatitis.

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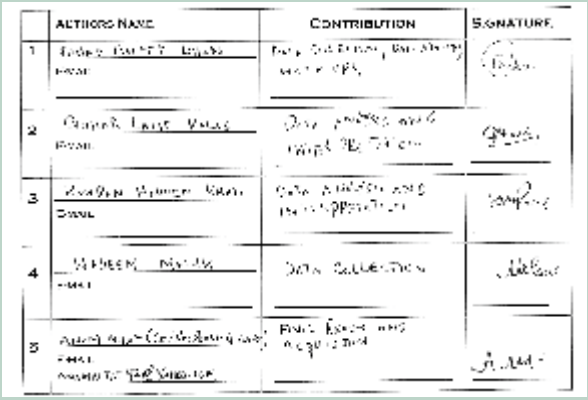

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Failures are often the results of timidity and fears; disappointments are the results of bashfulness; hours of leisure pass away like summer-clouds, therefore, do not waste opportunity of doing good

Hazrat Ali (Karmulha Wajhay)