

Epidemiology and Etiology of Acute Pancreatitis: A Retrospective Single-Centre Study

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Keywords

Acute pancreatitis; Recurrent Pancreatitis; Chronic Pancreatitis; Endoscopic Retrograde Cholangiopancreatography

Abbreviations

AP: Acute pancreatitis; RP: Recurrent Pancreatitis; CP: Chronic Pancreatitis; ERCP: Endoscopic Retrograde Cholangiopancreatography

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Abstract

Background: Acute pancreatitis is a common and potentially life threatening condition with variation in severity. It has several underlying etiologies such as biliary, hypertriglyceridemia, alcohol, post ERCP and more. It is diagnosed according to fulfillment of the criteria of the Atlanta classification of pancreatitis

Methods: Medical records for all the patients admitted to the intensive care unit between the time period of September 2018 and January 2021 with a diagnosis of acute pancreatitis. The criteria of Atlanta classification of acute pancreatitis was applied to confirm the diagnosis and the Bedside Index for Severity in Acute Pancreatitis score was used to assess the severity.

Results: We identified a sample size of 23 patients, with a predominance of males (78.3%) over female (21.7%). The mean age of all patients was (39 years \pm 11.98). At the time of admission all the patients (100%) reported having abdominal pain. The etiology distribution was as follows, idiopathic (43.5%), biliary (21.7%), hypertriglyceridemia (17.4%), alcohol (4.3%), malignancy (4.3%) and other (8.7%).

Conclusion: We documented acute pancreatitis as more prevalent amongst males and the age group of 30-59 years of age. The most common etiology recognized in our population was idiopathic followed by biliary. Additional studies must be conducted about this condition in this region to amplify our knowledge on it.

Introduction

Acute pancreatitis (AP) is considered a serious and life threatening medical condition, in which the spectrum of severity of the illness varies from mild to a severe and complicated disease with a high risk of morbidity and mortality [1]. The underlying etiology of AP include gallstones, alcohol, hypertriglyceridemia, post-endoscopic retrograde cholangiopancreatography (ERCP), medications, genetic risk, pancreatic duct injury, hypercalcemia, biliary obstruction, infections, vascular disease, and idiopathic [2]. Gallstones and chronic alcohol disorder account for the majority of cases of AP [3]. Patients may present with a variety of symptoms and signs, yet the diagnosis is confirmed by fulfilling the criteria of the Atlanta classification of pancreatitis [4].

Over time, the incidence has gradually increased in the Western countries [5], while in the Middle Eastern region there is minimal information about the epidemiology of AP. In this study, our aim is to highlight the epidemiology of this condition in our hospital within the Middle East.

Methods

This is a retrospective cross-sectional study, single center study that reviewed all admissions to the ICU of Mediclinic Parkview hospital between September 2018 and January 2021. Ethical approval obtained from the Ethics Committee of Mediclinic Middle East. The criteria used for the diagnosis of AP was the Atlanta criteria, which required the presence of at least two of the following: 1) new onset of upper abdominal pain or tenderness, 2) elevation in serum levels of pancreatic enzymes of three or more folds, 3) radiological changes suggestive of AP [4]. Data collection included the following variables: age at the time of admission, gender, clinical presentation, etiology, radiological and laboratory abnormalities, complications, and outcome. The Bedside Index for Severity in AP, is (BISAP) score was also found to determine the severity of AP. The BISAP score is reliable at determining the risk of unfavorable outcome in patients with AP [6]. Biliary pancreatitis diagnosed when there was a radiological evidence of biliary obstruction by stones. Alcoholic pancreatitis was based on the patient's

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history and excluding other causes. Hypertriglyceridemia induced pancreatitis confirmed by the presence of high triglyceride levels without other abnormalities. Recurrent pancreatitis (RP) diagnosed if a patient had at least two episodes of AP with a remission in between. Idiopathic pancreatitis diagnosed if a patient had no evidence of any etiology as above after a thorough investigation.

Statistical analysis

The data spreadsheet was transferred to the Statistical Package for the Social Sciences (SPSS). We reported the clinical characteristics and patients demography as percentages or frequencies for dichotomous or polychotomous variables or as means \pm Standard Deviations (SD) for numerical variables. The etiological groups were categorized and presented in the same format as above.

The data analysis, of this sample was divided according to the etiology, age and gender then compare between the figures to determine the prevalence of the etiologies.

Results

We identified 23 patients were admitted to the ICU of this hospital with AP. Out of the 23 patients, 18 (78.3%) patients were males and 5 (21.7%) were females. The mean age of all patients was (39 years \pm 11.98), for male and female patients was (40.3 \pm 13.27) and (35.8 \pm 4.66) respectively. The duration of the stay was ranging from 1-10 days with a mean of (6.35 \pm 1.53). We divided the patients into three age groups (1-29), (30-59) and above 60 years of age with their frequencies presented in Figure 1.

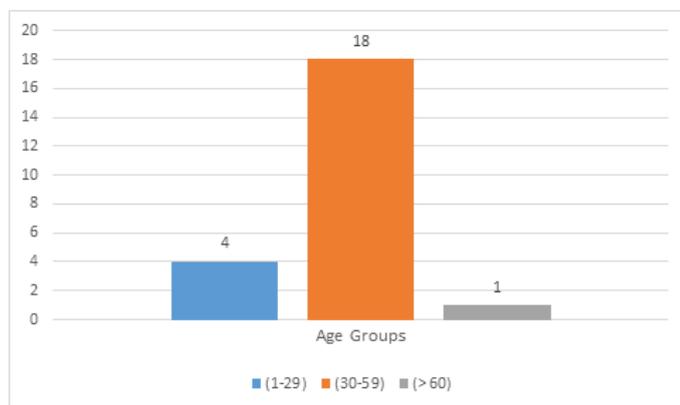


Figure 1. Age group frequency distribution.

At the time of admission, all patients (100%) had abdominal pain, nine (42.9%) patients had nausea and/or vomiting and 3 (13.0%) patients had fever. AP classified in this study according to the etiological factors, idiopathic, biliary, hypertriglyceridemia, alcohol, malignancy and others. Idiopathic was the most common cause; ten patients (43.5%) and five (21.7%) patients with biliary cause followed by four (17.4%) patients with hypertriglyceridemia. Then the remaining were malignancy and alcohol in whom one patient (4.3%) of each. Finally, other causes were in two (8.7%) patients, one had history of ulcerative colitis in remission for more than 7 years without treatment and the second with chronic pancreatitis confirmed by CT scan of the pancreas. There were two patients from each gender (50%) out of the four patients presented with AP due to hypertriglyceridemia. These values have been demonstrated in Table 1.

Table 1. Etiology of acute pancreatitis, frequencies and percentages.

| Etiology | Frequency | Percentage % |
|----------------------|-----------|--------------|
| Idiopathic | 10 | 43.5 |
| Biliary | 5 | 21.7 |
| Hypertriglyceridemia | 4 | 17.4 |
| Alcohol | 1 | 4.3 |
| Malignancy | 1 | 4.3 |
| Other | 2 | 8.7 |

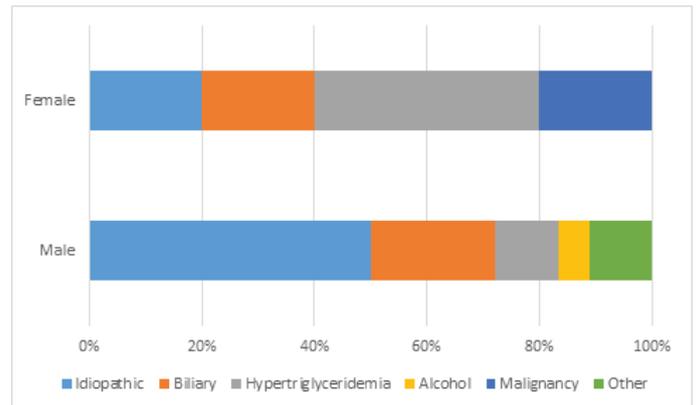


Figure 2. Etiological groups by gender.

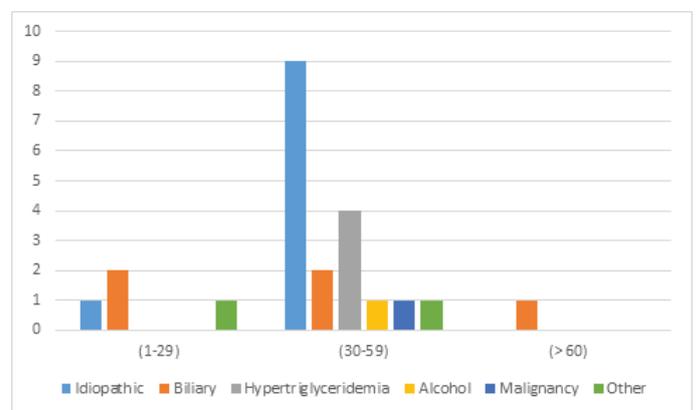


Figure 3. Age distribution of etiological groups.

One female (20%) had biliary pancreatitis out of the five patients of the same. The etiological frequency distribution between both genders is demonstrated in Figure 2 and the etiological frequency distribution amongst age groups is demonstrated in Figure 3.

There were five (21.7%) patients with recurrent pancreatitis and all were males. This complication recorded in five patients, two of which were of idiopathic origin and the same number with biliary cause and finally, the fifth patient had ulcerative colitis as described above. One male patient has pancreatic pseudocyst complication confirmed by CT of the pancreas. There was no mortality in this group of patients.

Discussion

Acute pancreatitis is an inflammatory condition which ranges from mild to severe and potentially life threatening condition [7]. The global incidence of AP is increasing with

time [8] and it is mainly attributed to three etiologies being acute biliary pancreatitis, acute alcoholic pancreatitis and idiopathic pancreatitis. Acute biliary pancreatitis is reported to be the prevailing cause amongst these [9].

A few systematic reviews and meta-analyses were conducted about this topic in which cohort studies were collectively analyzed in attempts to evaluate and estimate the global frequency and impact of AP [8-10].

One of the systematic reviews by Xiao AY. et al published in 2016 [10] highlighted the lack of sufficient estimates of the worldwide incidence and mortality of AP and other disease of the pancreas. The estimated global pooled incidence of AP is 34 cases per 100,000 of the general population per annum with no statistical significant differences amongst both genders, with a predominance in the middle-aged or older population groups. This was found to be the same in North America and Western Pacific regions, but there is a lack of data on AP in the Eastern Mediterranean regions.

However, we have identified five articles within the Middle East on this topic. Two from Saudi Arabia [11,12] and one in each of Oman [13], UAE [14] and Lebanon [15].

There is a small number of 23 patients in this study compared to larger number of patients in this region with the same condition, 218, 107 and 174 in Al-Karawi et al [11], Al Lehibi et al [12], Albulushi et al respectively [13].

In our study, males (18/78.3%) are almost quadruple of the females (5/21.7%) and was the same in Al Lehibi (53% males) et al [12], and Albulushi et al (males 54%) [13]. However, Al-Karawi et al [11] reported a female to male ratio of 1.3 to 1 [4]. In Reid et al, a study from Jamaica of AP demonstrated a significantly higher females (70) versus (21) males [16]. We think there is no a geographical variation in gender in this condition, but it is related to the sample of patients included in any study.

The range of age in this study was 6-69 years of age which is close to the wide range age group of 2-86 years by Reid et al [16]. In Albulushi et al all the included patients were above the age of 18 years [13]. The 6-year-old boy in our cohort had idiopathic pancreatitis despite of all the investigations conducted. It seems the idiopathic etiology is the most common cause of AP in children [17].

The severity and the complications play a role in the duration of hospital stay, in our patients it was 6.35 ± 1.53 days which is between El Halabi et al (4 days) [15], and Reid et al (9.51 ± 8.28 days) [16].

Idiopathic was the most common cause of AP in our cohort (43.5%), followed by five (21.7%) patients with biliary pancreatitis, and four (17.4%) patients with hypertriglyceridemia. The remaining etiologies were malignancy and alcohol in whom one patient (4.3%) of each. Finally, other causes were in two (8.7%) patients, one had history of ulcerative colitis in remission for more than seven years without treatment and the second with chronic pancreatitis (CP) confirmed by CT scan of the pancreas. In Albulushi et al, CP was the most common complication (44.6%) out of 174 patients [13]. While other studies in the region reported biliary causes to be the most common etiology (65%) [11], (39%) [12], (35%) [13]. We confirmed in our study the most common cause as idiopathic pancreatitis. However, in El Halabi et al the second most common cause was idiopathic (16%) [15]. Alcoholic Pancreatitis was rare in our cohort (4.3%), compared to Albulushi et al as their second most common cause was alcoholic pancreatitis (32%) [13].

We had (5, 21.7%) patients with acute RP, while in Albulushi et al, recorded the same of (71, 40%) [13]. Interestingly we reported a 21-year-old male with RP since the age of 17, with

a past history of ulcerative colitis under remission for the past 7 years without treatment. However, RP may be preceded by ulcerative colitis [18] and may be induced by Mesalazine and azathioprine [19].

Multiple complications were reported in one of our patients including RP, pancreatic pseudocyst, and pancreatic necrosis. The same was described by Chatila et al [11]. In other studies, pancreatic pseudocyst was reported to be a common complication, such as with Al Lehibi (15%) Albulushi (30%) [12,13]. These studies had higher complication rate related to a larger number of patients. Mortality rate was 7.9% in Al Lehibi et al [12] and 1.4% in Reid et al [16] while in our study there were none reported due to our small sample size.

Conclusion

The most common etiology of AP in this study is Idiopathic with high frequency in patients between the age of 30-59 years and more prevalent in males. However, the patient's sample in this study was small but it is likely reflects the epidemiology of AP in this part of the Middle East. Therefore, further studies are required to elaborate more about this condition.

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Montaser AlSmady and Sarah AlKabbani searched files and collected the data.

Fuad AlSaraj and Kalpana Krishnareddy analyzed the data and wrote the draft of the manuscript.

Gerasomas Capatos and Apoorva Bhushan Singhal added on the discussion, reviewed the draft and finalized the manuscript.

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