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Acute pancreatitis: A 7 year retrospective cohort study of the epidemiology, aetiology and outcome from a tertiary hospital in Jamaica

Gail P. Reid [a, *], Eric W. Williams [a], Damian K. Francis [b], Michael G. Lee [c]

[a] Emergency Medicine Division, Department of Surgery, Radiology, Anaesthesia & Intensive Care, The University Hospital of the West Indies, Mona, Jamaica
[b] Epidemiology Research Unit, Caribbean Institute for Health Research, The University of the West Indies, Mona, Jamaica
[c] Department of Medicine, The University Hospital of the West Indies, Mona, Jamaica

HIGHLIGHTS

- This is the first known epidemiological study on acute pancreatitis in the Caribbean and found a case fatality rate of 2%.
- This is the first report of a female preponderance in acute pancreatitis.
- Biliary pancreatitis was the predominant aetiology in both males and females.
- Transfer status, overweight/obesity, idiopathic aetiology and post-ERCP status increased duration of hospitalisation.
- Disease severity was mild in 61.1%, and severe in 12.2% of patients, with severe cases more likely to have an idiopathic aetiology, post-ERCP status and higher burden of overweight/obesity.

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ABSTRACT

Background: Acute pancreatitis (AP) is a significant cause of acute abdominal pain, morbidity and hospitalisation. There was previously a dearth of studies exploring the incidence, risk factors and outcome of AP in the Caribbean region.

Materials and methods: All patients with a diagnosis of AP admitted to the University Hospital of the West Indies (UHWI) between 2006 and 2012 were reviewed. The epidemiological profile, risk factors, clinical presentation and outcomes of patients with AP were retrospectively studied.

Results: There were 70 females and 21 males with a median age of 44 years (range 2–86). The median age of males was significantly higher than that of females ($p = 0.041$). The incidence of AP was 74 per 100,000 admissions per year. Vomiting and abdominal tenderness were noted in the majority of patients. The most common aetiology was biliary disease (71.4%), idiopathic (12%), post-ERCP (6.6%) and alcohol (5.5%). Alcoholic pancreatitis was only seen in males whereas idiopathic and post-ERCP pancreatitis only occurred in females. The mean duration of hospitalisation was 9.51 ± 8.28 days. Disease severity was mild in 61.1%, moderately severe in 26.7%, and severe in 12.2% of patients. Factors associated with more severe disease included overweight/obesity, idiopathic aetiology and post-ERCP status. The case fatality rate was 2%.

Conclusion: The incidence of AP was 74/100,000 hospital admissions annually. There was an unusual female preponderance, with biliary pancreatitis being the most common type occurring at an equal frequency among males and females. Only 12.2% of the total cases seen were severe. The case fatality rate was 2%. Local health policy should target timely interventions for biliary pancreatitis and should also address the local factors affecting disease severity.

1. Introduction

Acute pancreatitis (AP) is an important cause of abdominal pain which is the most common presenting complaint in the emergency

* Corresponding author.
E-mail address: gporeid@gmail.com (G.P. Reid).

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department (ED) [1–5]. Examining trends in ED visit rates for AP in the United States (US), the average annual visit rate was 18.5 per 10,000 ED visits for 1993–2003, which corresponds to 68 per 100,000 population [6]. In a review of the burden of gastrointestinal diseases in the US, AP was the most common reason for hospitalisation [7]. In addition to its impact on ED care, AP places significant economic burden on health systems [8].

Although there are large geographical differences, the incidence of AP has been increasing globally, especially in Europe, North America and parts of Asia [9–13]. The lowest incidence has been reported in the Netherlands and the United Kingdom (UK), whilst the highest incidence occurs in Scandinavia and the US [14].

In AP, there is an acute inflammatory process that results in variable clinical presentations [15]. The American College of Gastroenterology and the revised Atlanta Classification state that the presence of at least two of the following three features are required to satisfy the definition of AP: 1) characteristic abdominal pain, 2) an appropriate elevation of pancreatic enzymes in the serum to at least three times the upper limit of normal, and 3) specific computed tomography (CT) findings (but may also include transabdominal ultrasonographic or magnetic resonance findings) [1,8,16,17].

Risk factors and the aetiology of the disease influence the outcome of patients with AP. Consequently, establishing the aetiology of AP is important for its management and secondary prevention. In the UK and Southern Europe, biliary disease is most common, whereas alcohol consumption is dominant in the US and Northern Europe [10,14]. The overall increased frequency of AP has been attributed to the increased incidence of biliary pancreatitis and the obesity epidemic is believed to be a contributing factor [8]. In the Caribbean region, there is a dearth of studies exploring the incidence of AP and its risk factors to elucidate relevant predictors of the disease. In 1970, there was a report on an isolated cause of AP in Trinidad and Tobago, and in Jamaica, there has been only one study on chronic pancreatitis [18,19]. The results of this study will therefore delineate the factors which predispose to AP at the University Hospital of the West Indies (UHWI) and serve to guide health education and hospital policy with regards to the management of these patients. This study seeks to describe the epidemiological profile, the patient characteristics including the presence of established risk factors, the clinical presentation and outcomes of acute pancreatitis in Jamaica.

2. Methods

The study was conducted at the University Hospital of the West Indies (UHWI) which is in the urban area of Kingston, Jamaica. It is the major referral institution in Jamaica with specialties and subspecialties including gastroenterology and hepatobiliary surgery.

A retrospective review of all relevant patient records at the UHWI for the study period January 1, 2006 to December 31, 2012 was performed. Records were reviewed for consecutive patients, with a discharge diagnosis of AP as defined by the tenth revision of the International Statistical Classification of Diseases and Related Health Problems (ICD-10).

Patients were deemed to have AP if they fulfilled at least two of the following three defining criteria as outlined in the modified 2012 revision of the Atlanta Classification outlined above. Regarding pancreatic enzymes, the normal range for amylase at the UHWI is 18–98 U/L. The qualifying value for the diagnosis of AP used was 294 U/L or greater, which is at least three times the upper limit of the normal range. Lipase values were not utilised since this investigation was not routinely available.

If recurrent episodes were noted for any patient within the study interval, only the initial one was utilised since the epidemiological data for that patient would remain unchanged. Other exclusion criteria included: 1) patients who had a discharge diagnosis of AP as determined by the ICD coding but did not fulfil the previously outlined diagnostic criteria, 2) admissions for chronic pancreatitis and 3) patients for whom no medical record was located.

Data extraction was performed by a trained physician in the emergency department with the use of a standardized form which was developed for this study. This data included patient demographics, geographic location, year of admission, clinical presentation, past medical history and substance abuse. According to the address provided, a designation was made as to whether the patient was from an urban or rural area, as per determinations by the Statistical Institute of Jamaica. In addition, laboratory and radiological investigations, clinical management, complications, severity and outcome (as measured by length of hospital stay, intensive care unit (ICU) admission, surgical intervention, and mortality) were further determined. All extractions were validated by checking the abstracted information against the patient record before data entry. The aetiology was taken as that documented by the team of doctors managing the patient. Disease severity was determined according to the revised Atlanta Classification.

Statistical analyses were performed using SPSS version 16.0, for Windows. Means and proportions for the various risk factors for AP were obtained within and across gender by socio-demographic and other factors. The Pearson's $x2$ test was used to examine associations between AP and risk factors, and the students' t-test for comparing differences in means. Age-related data was categorized into twenty year bands and statistical significance set at alpha of 0.05. Case fatality was calculated as the percentage of persons diagnosed as having acute pancreatitis who died as a result of AP within the seven year period of the retrospective study.

The study was approved by the ethics committee of the Faculty of Medical Sciences of the University of the West Indies, Mona campus.

3. Results

A total of 144 patients admitted to the UHWI on 174 occasions with a diagnostic code of AP were assessed for eligibility. Of these, 91 patients fulfilled the study criteria for AP, and were included in the study. Overall, 79% had characteristic abdominal pain, 90% had significantly elevated amylase and 21% had evidence of AP on ultrasonography while CT was diagnostic of AP in 46%. Most patients (66%) had CT done greater than 48 hours after symptom onset, as recommended.

Of the 91 patients, 70 (76.9%) were female and 21 (23.9%) male. The mean patient age was 45.68 ± 19.64 (median 44 years) and range 2–86 years. The median age of males was statistically higher than females. When patients under 20 years were excluded the adjusted median age was 45 years (range: 20–86 years) and mean age 48.45 ± 17.71 years.

The majority (80%) of patients was direct admissions, from an urban area, and reported non-drinkers. Fourteen patients were transferred from other institutions, of which 50% were from a private hospital. Three patients (21%) were transferred from other parishes and two (14%) were transferred from outside Jamaica.

Cumulative incidence was 74 patients per 100,000 hospital admissions with a notable decrease in the incidence rate over the study period.

Table 1 outlines the clinical features and investigations. The duration of symptoms on presentation was 1–21 days, with the majority of patients (54%) presenting within the first 24 h and 68% within 48 h. Males presented later than females. More females experienced abdominal pain compared to their male counterparts