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Original Research Article

A tertiary care prospective of epidemiology and aetiopathogenesis of acute pancreatitis

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ABSTRACT

Background: Acute pancreatitis is a potentially lethal condition resulting from an acute inflammatory process in the pancreas usually manifested by upper abdominal pain and raised concentration of pancreatic enzymes in blood, urine and peritoneal fluid. Aims and objectives were to study the epidemiology and aetiopathogenesis of acute pancreatitis in Jammu region of Northern India.
Methods: This was a descriptive cross-sectional hospital based study, conducted in the postgraduate department of surgery, Government Medical College Jammu for a period of 3 years and included all admitted patients with diagnosis of acute pancreatitis. The main outcome variable was to find the various etiological factors associated with acute pancreatitis.
Results: In our study acute pancreatitis was found to be more common in younger people. Most of the patients in the study population were below 40 years of age. Majority of the patients presented first time to the hospital with the chief complaints of pain upper abdomen. In this study, we found that the two principal causes of acute pancreatitis in our population were gall stones and alcoholism which contributed a total of about 68% cases followed by other causes such as hyperlipidemia, drug induced pancreatitis, worm induced acute pancreatitis, post-surgical pancreatitis, post traumatic pancreatitis, and hypercalcemia.
Conclusions: Acute pancreatitis is a disease with high morbidity and mortality, and is quite common in Northern India. As such there is a need to make our population aware regarding the impact of alcoholism and bad dietary practices in causation of acute pancreatitis.

Keywords: Acute pancreatitits, Computed tomography, Serum amylase, Serum lipase

INTRODUCTION

Acute pancreatitis is a potentially lethal condition resulting from an acute inflammatory process in the pancreas usually manifested by upper abdominal pain and raised concentration of pancreatic enzymes in blood, urine, peritoneal fluid at least 3 times the normal.[1] If the cause of the attack can be eliminated no further attacks may ensue.[2] Gall stone diseases and alcohol are the most common causes behind acute pancreatitis, the former is responsible for 30-70% of cases and the latter for 30% of cases.[3-5] Once these two causes are excluded, there remains a group, approximately 20-25%, and in this context other predisposing factors like structural or functional alterations in the ductal system, microlithiasis, metabolic defects, trauma, hereditary and iatrogenic causes, obstruction, unknown causes, drugs, auto-immunity, infections, post-operative, post-endoscopic retrograde cholangiopancreatography (ERCP), trauma, hypertriglyceridemia and genetic factors may be

associated with acute pancreatitis.[6,7] The present work is undertaken to identify the various etiological factors which are responsible for acute non-gall stone pancreatitis. The main objective is to identify the causing factor in non-gall stone pancreatitis.

Aims and objectives

Aims and objectives of the research were to study the epidemiology and aetiopathogenesis of acute pancreatitis in Jammu region of Northern India.

METHODS

This was a descriptive cross-sectional hospital based study, conducted in the postgraduate department of surgery, Government Medical College Jammu for a period of 3 years from January 2018 – December 2020. All consecutive patients who were admitted with diagnosis of acute pancreatitis in the specified period were taken in the study. The diagnosis of acute pancreatitis was based on the clinical examination, imaging and laboratory findings.

Inclusion criteria

Patients with classical symptoms of acute pancreatitis like pain abdomen with one or more of the below mentioned; rise in serum amylase and lipase >3 times normal value; and ultrasonography (USG)/contrast enhanced computed tomography (CECT) findings consistent with diagnosis of acute pancreatitis were included.

Exclusion criteria

Patients with previous ERCP or stenting of pancreatic duct, and patients suffering from chronic pancreatitis were excluded.

The primary end point was the number of patients with acute pancreatitis. The details of patients' complaints, clinical examination and investigations were recorded in a specially designed performa. Informed/written consent was taken from each patient before the start of study. All the patients were evaluated and assessed including an elaborate history of gallstones, drug intake, alcohol intake or any previous infection. Disease history and family history was carefully recorded. Thereafter a detailed clinical examination, routine investigations, USG abdomen and CECT abdomen were done. The initial diagnostic work-up of acute pancreatitis (laboratory tests, imaging) were done during the hospital stay. Laboratory tests were conducted to detect possible: alcohol abuse – glutamyltransferase (GTT); biliary disease [alkaline amino-transferase (ALT), aspartate amino-transferase (AST), alkaline phoshatase (ALP), and bilirubin; or other aetiologies such as hyperlipidemia [triglycerides] and hypercalcemia.

Imaging studies include trans-abdominal USG and a contrast enhanced CT scan of the abdomen. Specific investigations (MRCP), required to rule out causes of pancreatitis, were carried out during the hospital stay or in follow-up.

About 200 patients were selected for study, for a period of 3 years. The research was aimed at determining the aetiology of acute pancreatitis. The main outcome variable was to find the various etiological factors associated with acute pancreatitis like gall stones, worms, alcohol, drugs, viral infections, auto-immune diseases, choledochal cysts, pancreatic tumours, hypercalcemia, and hypertriglyceredemia.

Various socio-demographic related details of patients namely age, sex, gender, socioeconomic status, were taken into consideration. History of previous attacks of acute pancreatitis, recurrence, and follow up's, various biochemical parameters like LFT, USG abdomen and pelvis, MRCP, serological investigations like HIV, hepatitis serology were also considered. The data collected was analyzed using Microsoft excel 2007, R 2.80 statistical package for the social sciences (SPSS) for Window's version 20.0. Frequency and association of various variables were analysed.

RESULTS

The present study was a descriptive cross-sectional hospital based study, conducted in the postgraduate department of surgery, Government Medical College Jammu for a period of 3 years from January 2018 – December 2020 and consisted of 200 patients who met the inclusion criteria of this study as detailed above. The following observations/data were collected and analysed.

Age and sex distribution

The mean age of study population was 44 years. Among 200 patients 12 patients were in age group of <20 years, 97 in 20-39 years, 50 in 40-59 years and 30 in 60-79 years and 11 patients in age of ≥80 years of age group as shown in Table 1. Most of the patients were in their 3rd and 4th decade of life. Also there were a greater number of male patients as compared to females with a male to female ratio of 14: 11 (Table 1).

Urban versus rural population

The study consisted of 200 patients and came from all parts of Jammu region. Majority of the patients were from rural areas while a lesser number of patients were from urban areas with a statistically significant p value (Table 2).

History of similar complaints in past

In our study population of 200 patients, majority of the patients presented first time to the hospital with the chief complaints of pain upper abdomen. However a significant number of patients also gave history of similar complaints

in the past as shown in Table 3. Out of them, about 74% of the patients had only one attack of recurrence in past.

Table 1: Age distribution of the patients.

Age group (years)	Males	Females	Total	Percent-age
<20	07	05	12	6
20-39	54	43	97	48.5
40-59	29	21	50	25
60-79	14	16	30	15
≥80	08	03	11	5.5
Total	112	88	200	100

Table 2: Urban versus rural population.

Dewelling	Number	Percentage
Urban areas	86	43
Rural areas	114	57
Total	200	100

Table 3: History of similar complaints.

Similar history in past	Number	Percentage
Present	62	31
Absent	138	69
Total	200	100

Table 4: Aetiology of acute pancreatitis.

Causative agents	Number	Percentage
Gall stones	88	44
Alcohol	48	24
Hyperlipidemia	12	06
Obstructive causes	05	2.5
Worm induced	09	4.5
Drug induced	04	2.0
Post traumatic	02	1.0
Post-surgical	04	02.0
Viral etiology	03	1.5
Hypercalcemia	04	2.0
Non-specific/idiopathic	21	10.5
Total	200	100

Aetiology

In our study, in 44% of cases of acute pancreatitis were due to gall stones followed by alcohol which was implicated in 24% cases of acute pancreatitis. Alcohol and gall stones formed 2/3rd of cases of acute pancreatitis. It was followed by hyperlipidemia and worm induced acute pancreatitis which constituted 06% and 4.5% of cases of acute pancreatitis. Rest of the causes such as post-surgical/traumatic, and hypercalcemia were implicated in about 11% of cases. In about 21 cases of acute pancreatitis, the cause was not found and these were grouped under non-specific cause of acute pancreatitis (Table 4).

Presenting complaints

In this study, nearly all of the patients came with chief complaint of pain upper abdomen. They constituted about 96% of cases. Second most common complaint was that of nausea or vomiting, which was present in about 84% of cases. Other complaints such as fever and abdominal distension was present in a lesser number of people and constituted about 21% and 18% of cases respectively. There were non-specific complaints such as retching, and excessive flatulence which were present in a very small number of cases (Table 5).

Table 5: Presenting complaint.

Presenting complaint	Number	Percentage
Pain upper abdomen	192	96
Nausea/vomiting	168	84
Fever	42	21
Abdominal distension	36	18

DISCUSSION

Acute pancreatitis is a relatively common disease with varied etiology and clinical presentation. Severe acute pancreatitis has a very high morbidity and mortality rate. Early hospitalization and management, according to disease severity may be beneficial to identify those who require aggressive intervention, to prevent further attacks of pancreatitis, as well as to reduce morbidity and mortality. In our study, the main aim was to identify the etiological factor, associated with acute pancreatitis in our population.

Age and sex distribution

In our study acute pancreatitis was found to be more common in younger people. Most of the patients in the study population were below 40 years of age as shown in Table 1. This is in variance to most of the studies. In a similar study conducted by Banerjee et al, they found that most of the patients (63.3%) of acute pancreatitis were less than 40 years of age.[8] Baig et al in their study of 45 cases of acute pancreatitis named "a prospective study of the aetiology, severity and outcome of acute pancreatitis in Eastern India" conducted between August 2002 and December 2003, found the mean age to be 30 years.[9] In our study males outnumbered female patients in number by a ratio of 14: 11. In a similar study of 1192 patients of acute pancreatitis that was done by Chang et al, they found that there were 852 (71.4%) men and 341 (28.6%) women with a male: female ratio of 2.3: 1.[10] This was similar to our study. Raj et al did a similar study in 142 subjects.[11] In their study, females outnumbered males by a ratio of more than 3: 1. This variation in our study can be attributed to a greater majority of males being alcoholic as compared to

females in our population which is the second most common aetiology of acute pancreatitis in our population.

Urban versus rural population

In our study, we found that majority of the patients were from rural areas while a lesser number of patients were from urban areas with a statistically significant p value. This can be due to the late detection of gallstones in people living in rural areas due to lack of imaging facility and health care. Late detection of gall stones leads to more cases of pancreatitis. Also, habit of alcoholism is quite prevalent in rural areas which leads to a greater number of cases.

History of similar complaints in past

In this study, majority of the patients presented first time to the hospital with the chief complaints of pain upper abdomen. However a significant number of patients also gave history of similar complaints in the past as shown in Table 3. Most of these patients suffered from gall stone induced pancreatitis which was being managed conservatively. Also, one more reason of recurrence was alcoholism in general population. Out of the patients, who had recurrence, about 74% had only one attack of recurrence in past.

Aetiology

In this study, we found that the two principal causes of acute pancreatitis in our population were gall stones and alcoholism which contributed a total of about 68% cases followed by other causes such as hyperlipidemia, drug induced pancreatitis, worm induced acute pancreatitis, post-surgical pancreatitis, post traumatic pancreatitis, hypercalcemia. This is because of the problem of alcoholism is quite predominant along with bad dietary habits in general population which leads to gall stones as well as hyperlipidemia. In our study obstruction (pancreatic divisum, and choledochocoele) as cause of pancreatitis was attributed in 2.5% of subjects. In a study by Khuroo et al, they found a large number of cases of acute pancreatitis due to ascariasis.[12] However, we found less number of cases related to ascariasis as it is not endemic in our region. It is of importance to mention here that in about 21 cases of acute pancreatitis, the cause was not found and these were grouped under non-specific cause of acute pancreatitis. Grag et al in their follow up study found that billiary microlithiasis was an important cause of idiopathic pancreatitis in approximately 13 percent of their cases.[13] These cases often had recurrence of symptoms. In a study by Lee et al, he found that out of 36 patients labelled as idiopathic among a group of 86 patients, 23 patients had microscopic evidence of billiary sludge.[14] Thus we can deduce that microlithiasis can be an underestimated cause of idiopathic pancreatitis. In another study by Agrawal et al they assessed the role of non-alcoholic fatty liver disease in acute pancreatitis and concluded that non-alcoholic fatty liver disease may be an independent risk factor for development of acute pancreatitis.[15] It is also possible that non-alcoholic fatty liver disease may have pathophysiologic interplay with formation of sludge/gallstones that is a known risk factor for acute pancreatitis.

Presenting complaints

In this study, pain upper abdomen was present in almost all of the subjects. They constituted about 96% of cases. Second most common complaint was that of nausea or vomiting, which was present in about 84% of cases. Other complaints such as fever and abdominal distension was present in a lesser number of people and constituted about 21% and 18% of cases respectively. Such findings are similar to many other research in the past as were done by Chang et al and Khuroo et al.[10,12] There were non-specific complaints such as retching and excessive flatulence which were present in a very small number of cases.

CONCLUSION

This was an observational cross sectional study to know about the epidemiology and aetiopathogenesis of acute pancreatitis from a tertiary care point of view. We found that gall stones, alcoholism and hyperlipidemia account for more than 70% causes of acute pancreatitis. Acute pancreatitis is a disease with high morbidity and mortality, and is quite common in Northern India. As such there is a need to make our population aware regarding the impact of alcoholism and bad dietary practices in causation of acute pancreatitis. As we say prevention is better than cure, Awareness in this direction can significantly decrease the burden on health infrastructure due to pancreatitis. Also there is a need to do a detailed study in our population to know the exact causes of idiopathic pancreatitis which can help us to reduce the incidence of pancreatitis in our population. This can be achieved with a diligent work up including a biliary microcrystal analysis, a SOD manometry and possible gene analysis.

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