

# COMPARATIVE STUDY OF ACUTE PANCREATITIS IN DIFFERENT ETHNIC POPULATIONS IN A MALAYSIAN PUBLIC HOSPITAL

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## ABSTRACT:

Malaysia is a country consisting of people of Malay, Chinese and Indian ethnic origin and also of some Indonesian and Thai population. In this study of acute pancreatitis, the age group, sex incidence, clinical features, complications and treatment were compared between different ethnic groups. A total of fifty-four consecutive patients admitted in Sungai Petani Hospital, Kedah, Malaysia with acute pancreatitis from 2002 to 2004 were taken for this study. There were 29 males and 25 females. The 40–60 years age group was more commonly involved. The common factors associated with acute pancreatitis were alcohol intake in males and biliary disease in females. Two females suffered from acute pancreatitis following endoscopic retrograde cholangiopancreatography (ERCP). One of the 54 cases died due to multi-organ failure. (*JUMMEC 2008: 11(1) 18–21*)

**KEYWORDS:** Acute pancreatitis, alcohol intake, gall stones, serum amylase

## Introduction

Acute pancreatitis (AP) is an uncommon disease encountered by a surgeon in the emergency room practice. Acute pancreatitis is usually a self-limiting disease caused by gallstones, alcohol intake, hyperlipidemia, or sometimes of unknown causes. However, it may progress to multiple organ failure due to the initiation of inflammatory mediators that have local and systemic effects (1). A careful review of the patient's history and appropriate laboratory studies can help the physician identify the etiology of the condition and guide management (2). The etiological factors are common conditions like alcohol intake and gall stone disease and rarely following ERCP and acute parotitis of viral origin (mumps). As the incidence of gall bladder disease is increasing, acute pancreatitis is also becoming more common. The etiology and clinical presentation of the disease are varied among Malays, Indians, Chinese and other races due to differences in cultural practices particularly related to alcohol consumption, and food habits. This study was undertaken to understand the demographic pattern, clinical presentation and outcome of AP cases in our hospital population. This was a retrospective study based on the clinical data collected from the hospital case records.

## Patients and Methods

The study was conducted in Sungai Petani Hospital in the state of Kedah, Malaysia. It is a 300-bedded hospital catering to the population of Sungai Petani and surrounding villages. A total of 54 patients admitted consecutively from March 2002 to October 2004 with acute pancreatitis were taken for the study. There were 31 Malay patients, 21 Indian patients and two Thai patients; however, there were no Chinese patients in the study population. The history of recent alcohol consumption was elicited. Gall bladder disease was considered when ultrasonically demonstrable cholecystitis or gall stone was present. Most of them were presented with epigastric pain, vomiting and jaundice. The diagnosis of acute pancreatitis was based on the clinical symptoms and signs and also the laboratory values of serum amylase, urine amylase,

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diastase, LDH and ultra sonogram features. The diagnostic values were as follows: serum amylase more than 800 units, urine diastase more than 800 units, LDH more than 600 u/l. Ultrasonogram was done for all the patients and the presence of pancreatic edema, peripancreatic fluid collection, and pancreatic necrosis were noticed in some patients. All the patients were advised to undergo computer tomography of the abdomen. However, only 10 patients reported back and in all of them the findings confirmed the ultrasonographic features.

## Results

The incidence of acute pancreatitis by age and gender is shown in Table 1. The etiological factors for acute pancreatitis are listed in Table 2. Out of 54 patients admitted for acute pancreatitis, gall stone disease was observed in 17 patients. Alcohol consumption was noted in 18 cases. One patient was admitted for recurrent acute pancreatitis due to gall stone. A boy aged ten years suffered from acute pancreatitis due to mumps. Post-ERCP acute pancreatitis occurred in one female patient who had gall stones. Malays had more symptoms compared to Indians (Table 3). Serum enzymes like amylase and LDH and urine diastase were elevated more commonly in Malays than in Indians. Blood urea, sugar and total WBC count were elevated in Malays. Serum albumin and  $PO_2$  were elevated more commonly in Malays than in Indians (Table 4).

**Table 1.** Age by sex incidence of acute pancreatitis.

Age group	0-9	10-19	20-29	30-39	40-49	50-59	60-69	70 above	Total
Male	1	4	3	12	2	4	2	1	29
Female	1	2	1	8	9	3	1	0	25
Total	2	6	4	20	11	7	3	1	54

**Table 2.** Etiological factors of acute pancreatitis.

Etiology	Malay	Indian	Total
Alcohol	1	17	18
Biliary disease	14	3	17
Viral	0	1	1
ERCP	2	0	2
Others	1	0	1
Unknown	13	0	13
Total	31	21	52

(Out of 2 Thai patients, one was due to alcohol intake; etiology was not known in the other)

Most of the patients were treated in the general ward while four patients required the use of the high dependency ward. Severe acutely ill patients (as per Ranson's score) were initially treated conservatively with antibiotics and intravenous fluids. There was one death due to multi-organ failure. Those patients having gall stones underwent elective cholecystectomy and three patients underwent ERCP and CBD stone removal and sphincterotomy. Four patients underwent laparotomy for either cystogastrostomy, removal of phlegmon or drainage of abscess.

Both local and systemic complications were more common in Malays. The local complications included pseudocyst of pancreas, pancreatic necrosis and peripancreatic collection, and the systemic complications recorded were pleural effusion, shock and sepsis (Table 5). One Malay lady aged 43 years died due to multi-organ failure.

## Discussion

The incidence reported in literature varies from 21 to 283 cases per million population. In Japan, the reported estimate is that of 121 cases per million population. The disease may occur at any age, with a peak in the young male and the older female. The mortality has remained unaltered at 10-15% over the past 20 years. About one-third of patients die in the early phase of an attack from

**Table 3.** Clinical presentations of acute pancreatitis.

Clinical presentation	Malay	Indian
Shock	1	1
Epigastric pain	31	20
Abdominal distension	6	6
Vomiting	30	17
Fever	10	5
Jaundice	9	3

**Table 4.** Investigations of acute pancreatitis.

Investigations	Malay	Indian
Serum amylase >800 U/L	29	8
Urine diastase >800 U/L	30	14
Total WBC Count >15000	13	5
Blood Urea >16 mmols / L	4	0
PO <sub>2</sub> <60%mm/Hg	4	0
Serum Albumin>3.2 g/dl	10	2
LDH >600U/L	10	1
Serum Calcium <2mmols/L	12	2
Blood Sugar >10 mmols/L	10	5

**Table 5.** Complications of acute pancreatitis.

Complications	Malay	Indian
Respiratory	5	1
Cardiovascular	2	1
Infection/sepsis	3	1
Renal	4	1
DIVC(Disseminated intravascular coagulation)	1	0
Pancreatic pseudocyst	2	0
Pancreatic necrosis	6	2
Peri Pancreatic collection	7	2
Total	30	8

multiple organ failure, while deaths occurring after the first week of onset are due to infective complications. Eighty per cent of patients will have a mild attack of pancreatitis in which the mortality is around 1%, while in those who have a severe attack of pancreatitis, the mortality varies from 20 to 50% (3).

Out of 54 patients admitted for acute pancreatitis, gall stone disease was observed in 17 of them and alcohol consumption was noted in eighteen cases. One patient was admitted for recurrent acute pancreatitis due to gall stone. A boy aged ten years suffered from acute pancreatitis due to mumps. Post-ERCP acute pancreatitis occurred in one female patient who also had gall stones. In other patients, the etiology could not be found.

It has been reported that biliary disease and alcohol consumption account for 80% of cases (4). In Indians, the history of alcohol consumption was 81% in our study. Recent reports suggest alcohol consumption as the most common etiological factor but in Malaysia,

alcohol consumption is not practised among Malays due to religious reasons. It was further reported that alcohol-related pancreatitis was particularly excessive among the Indians and was observed in 73.3% of their cases (15). It is an established fact that alcohol dependence is higher among Indians when compared to the other races in the country (6, 7, 8).

In our study, the incidence of gall stone was 1.4% in Indians and 41% in Malays. In a study by Frey *et al* (9) 32.6% had biliary tract disease alone, 20.3% had alcohol abuse alone, and 36.6% were idiopathic. In our study, it was found that both alcohol and biliary disease were equally significant causative factors for producing acute pancreatitis. However, alcohol intake was common in Indian patients where as biliary disease in Malays. One pregnant woman suffered from acute pancreatitis. One child developed acute pancreatitis due to mumps.

In Europe and other developed nations, such as Hong Kong, more patients tend to have gallstone pancreatitis, whereas in the United States, alcoholic induced pancreatitis is more common (10). Since Malaysia has a multi-ethnic population, both alcohol and gall stones are equally important causes.

Malays are more symptomatic in having a higher incidence of vomiting, epigastric pain and abdominal distension than Indians. The serum enzymes, blood urea and blood sugar were elevated more frequently in Malays. Similarly, the complication rate was also higher in Malays. One Malay patient died as a result of multi-organ failure. Severe acute pancreatitis (SAP), a multi-system disease, is characterized by multiple organ system failure and additionally by local pancreatic complications such as necrosis, abscess or pseudocyst (11).

Biliary disease is known to be a chronic process, which can be complicated by infection leading to severe problems. This fact probably explains our observation that AP becomes severe and complicated in Malays. Excessive alcohol intake is an acute insult to pancreas and AP due to alcohol can be better managed without serious complications. Hence, Indian patients showed better prognosis with lesser complications.

There were no Chinese patients in this study. We presume that they might have been admitted to private hospitals. There were two Thai nationals as the state of Kedah, Malaysia, is nearer to the Malaysian-Thai border.

## Conclusion

Our study highlights the striking differences in the etiological factors for acute pancreatitis among the two different ethnic groups in Malaysia. This is most likely due to the differences in alcohol consumption among the ethnic groups. The clinical features and complications were found to be more severe in Malays as compared to Indians.

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