

RISK FACTORS FOR ACUTE IDIOPATHIC PANCREATITIS

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ABSTRACT

Objective: To determine the risk factors for Acute Idiopathic Pancreatitis (AIP) in Lahore's tertiary care hospital. It is cross-sectional study performed at Department of Surgery Sheikh Zayed Hospital Lahore, from January 2019 to December 2019. **Material and Methods:** All abdominal pain cases diagnosed as acute pancreatitis based on history, clinical examination, and serum amylase levels (>3 times average) were included in the study. Imaging studies (ultrasound, Computed Tomography (CT) scan abdomen and Endoscopic retrograde cholangiopancreatography (ERCP) were conducted in each case to confirm the diagnosis. A thorough assessment was done to determine the cause of acute pancreatitis, including the radiological findings, previous history of abdominal trauma or surgery along with past medical history, drug history and socioeconomic activities (alcohol/smoking/ Gutka/Pan/pan/charas). **Results:** 70 cases of acute pancreatitis, including 23 idiopathic cases, found Gutka/Pan/pan Chewing as the leading risk factor for acute idiopathic pancreatitis, especially in young male patients with atypical presentation. **Conclusion:** Further studies are needed to determine the pathophysiological role of this increasingly important risk factor of acute pancreatitis.

KEYWORDS: Idiopathic pancreatitis, Tobacco, Gutka/Pan chewing, Alcohol consumption.

INTRODUCTION

Acute pancreatitis (AP) is a common clinical problem and the single most crucial gastrointestinal cause of hospital admissions worldwide, leading to considerable morbidity and mortality.^[1] Gall stone disease and alcohol consumption remain the most common etiological factors for acute pancreatitis for many decades.^[1-3] But there are a significant number of patients in which no cause is identified after initial laboratory and imaging investigations. These are termed as 'acute idiopathic pancreatitis (AIP)' and account for 10-40% of acute pancreatitis cases.^[4-6] As recurrence is a standard and life-threatening complication after an initial attack of acute pancreatitis, it is vital to define the cause and offer appropriate management. Many studies have attributed microlithiasis and biliary sludge as a significant risk factor for AIP.^[5,7] More recently, smoking tobacco is identified as an independent risk factor for the development of acute pancreatitis.^[1,8]

MATERIAL AND METHODS

This cross-sectional study was conducted in the Department of Surgery Sheikh Zayed Hospital Lahore, from January 2019 to December 2019. All abdominal pain cases diagnosed as acute pancreatitis based on history, clinical examination and serum amylase levels (>3 times standard) were included in the study. Imaging studies (ultrasound, CT scan abdomen, MRCP, ERCP)

were conducted in each case to confirm the diagnosis. Assessment of severity was done using Ransoms Scoring. A thorough review of clinical notes was done to determine the cause of acute pancreatitis, including the history and clinical examination findings, routine laboratory results and radiological findings. Laboratory investigations included complete blood count (CBC), random blood sugar (RBS), serum amylase, serum calcium, liver function tests (LFTs), fasting lipid profile, Lactate Dehydrogenase (LDH) and arterial blood gases (ABGs). A detailed review of CT scan films and ERCP findings was also carried out. A further thorough enquiry into the past medical history (including the previous history of abdominal trauma, surgery or ERCP), drug history and personal habits (alcohol/smoking/ Gutka/Pan/charas) was made in cases where no cause was found after routine laboratory and radiological investigations. The information was put in a specially designed proforma, and data were analyzed using SPSS version 17. A thorough literature search was done regarding IAP's causes and risk factors, and the results were compared.

RESULTS

A total of 70 cases of acute pancreatitis were included in the study using the inclusion criteria. The mean age of patients was 36.2 years, and the male to female ratio was 1:2. The leading cause of acute pancreatitis was gall

stones, found in 38/70 patients (54.3%). Alcohol consumption was found only in 5 patients (7.1%). Three patients (4.3%) had undergone ERCP, while one patient (1.4%) developed acute pancreatitis after abdominal trauma. All of the patients had a standard lipid profile and serum calcium levels. No cause was identified based on routine laboratory and radiological examination in 23 patients (32.8%), the so-called acute idiopathic pancreatitis (AIP) [table-1]. After a thorough search of the history notes including patient's dietary habits, personal history of addiction and medications, it was revealed that at least seven patients with AIP were addicted to Gutka/Pan, and another 3 were heavy smokers (consuming 20 cigarettes or more per day)

[table-2]. In the group of 7 patients with Gutka/Pan addition, further analysis of age, gender, clinical presentation and severity of disease according to Ranson criteria was done. All seven patients were male and belonged to a younger age group. The ages (in years) were as follows: 20, 28, 34, 22, 21, 15, and 23). Four (4) of them had mild acute pancreatitis (Ranson's score 02), while 3 had severe acute pancreatitis (Ranson's score three or more) requiring prolonged hospital stay (12 to 22 days). Patients with mild acute pancreatitis stayed at the hospital for 5-7 days. All received conservative management and discharged. Only one patient presented with reoccurrence. No mortality was recorded in these patients.

Table 1: Causes of acute pancreatitis.

Causes	No of cases	Percentage %
Gall stones	38	53.4
Alcohol	05	7.1
Post ERCP	03	4.3
Abdominal Trauma	01	1.4
Idiopathic	23	32.8
Total	70	100

DISCUSSION

Many studies have shown that tobacco smoking is an independent and important risk factor for developing chronic pancreatitis (CP).^[9,10] It is also proven to be a strong risk factor for the development of pancreatic cancer.^[11,12] More recent studies have shown an association between tobacco smoking and acute pancreatitis as well.^[1,8] But what is the underlying pathophysiology in developing acute pancreatitis is unknown. Studies have suggested that nicotine, the major component of cigarette smoke, plays a central role. Chowdhry P et al. concluded in one of his experimental studies on Dowary rats that nicotine affects the calcium (Ca⁺) activated events, which regulate the pancreas' exocytic secretion and plays an important role in promoting enhanced calcium levels inside the acinar cell.^[13] Similarly, Lau PP et al. concluded that nicotine increases the biosynthesis of pancreatic enzymes, which accumulate within the pancreas and alter the responsiveness to secretagogues with evidence of morphological damage.^[14] Another experimental study also suggests that nicotine can induce pancreatic injury by enhancing intracellular calcium release, which results in cytotoxicity and, eventually, cell death.^[15]

The nicotine is also an important and major constituent of Gutka/Pan/naswar (also known as smokeless tobacco), widely used in Asian countries, especially India, Pakistan and Bangladesh. Its use is growing worldwide, and Changrani J has termed paan and Gutka an emerging threat for the USA, especially among South Asian immigrants.^[16] Gutka/Pan is commercially available in bright pouches/ sachets and is popular among people of

all ages [Figure 1]. It particularly attracts the young because of cheap rates, bright, colourful packets, easy accessibility and sweet taste. There are also widespread misconceptions that smokeless tobacco is a safe product through advertisements reporting "positive" physiological effects, such as relaxation, increased concentration and diminished hunger.^[17] Gutka/Pan is consumed by placing it between the gum and cheeks, followed by sucking or chewing. A population-based case control study by Alguacil J et al. suggested that heavy use of smokeless tobacco may increase pancreatic cancer risk.^[18] Other well-known adverse health effects of Gutka/Pan include periodontitis, oral pre-cancerous lesions (leukoplakia/erythroplakia), (oral submucosal fibrosis removed) gastrointestinal abnormalities,^[19,20] oropharyngeal, esophageal and stomach cancers.^[21-23] In our study, we found an association between Gutka/Pan chewing and acute pancreatitis development, especially in young male patients with atypical presentations, i.e. presenting with a tense and tender abdomen mimicking peritonitis instead of epigastric pain radiating to back.

Table-2: Risk factors for Acute Idiopathic Pancreatitis.

Causes	No of cases	Percentage %
Tobacco chewing (Gutka/Pan)	07	30.4
Tobacco smoking (Cigarette)	03	13.1
No-Risk factor Unidentified	13	56.5
Total	23	100

Apart from tobacco, Gutka/Pan consists of betel nut/areca nut, slaked lime (Calcium Hydroxide) with some food additives and flavourings. The role of calcium in pancreatic pathophysiology is well known, and hypercalcemia is an important trigger of acute pancreatitis.^[6] Studies have suggested that calcium-activated events within the acinar cells are adversely affected by increased concentration of ionized calcium [Ca²⁺], which lead to cytotoxicity, enzyme release and development of acute pancreatitis.^[13-15,24,25]

Gutka/Pan chewing may be associated with acute pancreatitis by various mechanisms, including the toxicological effects of nicotine or hypercalcemia caused by slaked lime (CaOH), which is contained in Gutka/Pan in considerable amount. The results of our study suggest that Gutka/Pan chewing is a risk factor for many cases of acute idiopathic pancreatitis, especially in young male patients. Unfortunately, the role of Gutka/Pan in the development of acute pancreatitis has not been studied in the past, and there are no clinical trials or population-based studies to support the idea that Gutka/Pan may be an important and avoidable risk factor for acute pancreatitis. Furthermore, the amount of tobacco used in Gutka/Pan cannot be quantified as it is a locally made product. There are no government legislations and regulations on the manufacture, sale and use of this product. The amount of various ingredients used is highly variable, and its consumption is also highly variable ranging from 6-12 packets a day. So when dealing with acute idiopathic pancreatitis or recurrent attacks of pancreatitis, the physician must take a detailed history of personal habits and addiction to rule out this significant risk factor of acute pancreatitis, especially in the poor low middle-class population.

CONCLUSION

We conclude that Gutka/Pan chewing has many adverse health effects on the pancreas. Apart from its role in developing pancreatic cancer, it may directly or indirectly associate with acute pancreatitis and may be responsible for recurrent attacks of acute pancreatitis, especially among adolescents and young adults. We recommend that other population-based and experimental studies be done to determine the pathophysiological effects of Gutka/Pan in the causation of acute pancreatitis.

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