

## **IMPACT OF ALCOHOL ON PANCREAS IN ALCOHOLIC PATIENTS**

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### **ABSTRACT**

**Objective:** Prolonged hazardous drinking can result in progressive and irreversible damage to the pancreas gland. This occurs on the background of pancreatic inflammation, acinar atrophy and, ultimately, fibrosis and can result in significant exocrine and endocrine insufficiency. Withdrawal of alcohol at an early stage may arrest the process and, even when the condition is established, may reduce the number of inflammatory episodes and allow for better control of both exocrine and endocrine insufficiencies. This study is aimed to identify the impact of alcohol on the pancreas and to educate the patient about the importance of alcohol cessation.

**Methods:** A retrospective study was conducted in a multispecialty clinic in the gastroenterology department for a period of one month. 60 patients were involved in the study who were diagnosed with pancreatitis (acute or chronic). The data was obtained by directly communicating with the patients which consisted of demographics and social habits.

**Results:** Among 60 patients, the male was dominant (85%) than female (15%). Majority of the patients were in the age group of 41-60 y (65%) followed by patients 21-40 y of age (25%) and patients above 60 y of age (10%). Epigastric pain was the most common presenting complaint in all patients (67%) followed by vomiting (33%). Majority of the patients involved are alcoholics (60%).

**Conclusion:** Proper attention to the health at the time of diagnosis of disease by alcohol cessation can prevent the progression of the disease and helps the patient to lead a healthy life.

**Keywords:** Acute pancreatitis, Alcohol, Chronic Pancreatitis

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### **INTRODUCTION**

Pancreatitis is inflammation in the pancreas. The pancreas produces enzymes that help digestion and hormones that help regulate the way the body processes sugar (glucose) [1]. Alcohol consumption is considered one of the major causative agents for pancreatitis) after gallstones, alcohol is the second major leading cause of AP and the most common cause of CP [2]. Acute pancreatitis (AP), defined as the acute nonbacterial inflammatory condition of the pancreas, is derived from the early activation of digestive enzymes found inside the acinar cells, with the variable compromise of the gland itself, nearby tissues and other organs. AP is a disease with extremely different clinical expressions. Most patients suffer a mild and limited disease but about one-fifth of cases develop Multiple Organ Dysfunction Syndrome (MODS), accompanied by high mortality. For the last 25 y, there has been a global increase in the incidence of AP, along with many advances in diagnosis and treatment [3]. Chronic pancreatitis (CP) is inflammation of the pancreas that does not heal or improve—it gets worse over time and leads to permanent damage. Chronic pancreatitis eventually impairs a patient's ability to digest food and make pancreatic hormones [4].

### **Pathophysiology**

The pathophysiology of acute pancreatitis can be grouped into three phases. The first phase is characterized by the premature activation of trypsin in acinar cells. The second phase is the inflammatory response of the pancreas, which is disproportionate to the response of other organs to a similar insult. In the third phase, systemic activation of the immune system and remote organ dysfunctions occur. Despite its important aetiologic role, the pathophysiology of alcoholic pancreatitis is not fully understood. One hypothesis is that ethanol sensitizes acinar cells to cholecystokinin and potentiates its effects on the activation of transcription factors such as nuclear factor κB and activating protein-1. Certain patterns of alcohol intake may further influence the pancreatic inflammatory response. Additional potential mechanisms include toxic effects of acetaldehyde on acinar cells, induction of microtubular dysfunction and oxidative stress, as well as uncoupling of mitochondrial oxidative phosphorylation [5].

### **Effect of alcohol on pancreas**

Alcoholic pancreatitis is a potentially fatal illness that may be short term (i.e., acute) or longterm (i.e., chronic) [6]. The mortality rate of patients with alcoholic pancreatitis is about 36 percent higher than that of the general population. Approximately 50 percent of patients with alcoholic pancreatitis die within 20 y of onset of the disease. Only 20 percent of deaths occurring before a patient's life expectancy are attributed to pancreatitis or its complications; most of these deaths are attributed to the effects of alcohol or smoking on other organs such as the liver [7].

### **Medical aspects**

Alcoholic pancreatitis usually occurs in men in their forties. Initial symptoms include vomiting as well as acute abdominal pain, which may be localized to the back and upper abdomen and is relieved by leaning forward. In mild cases, the pain may last 2 to 3 d; the short-term prognosis in such cases is very good. In severe cases, however, the pain may persist for several weeks and the risk of death rises to about 30 percent. Less commonly, pancreatitis can be completely painless and is only diagnosed from symptoms of insufficient pancreatic function, such as diabetes and steatorrhea (excess fat in feces).

Approximately 5 to 6 y after the onset of the disease (especially in patients who continue to drink), evidence of chronic pancreatic disease develops as a result of progressive destruction of pancreatic tissue (i.e., parenchyma). Patients seek medical attention for persistent pain (which often leads to narcotic addiction from excessive use of pain medication), weight loss, diabetes, and maldigestion of food (a result of inadequate production of digestive enzymes by the pancreas) [7].

### **Diagnosis of alcoholic pancreatitis**

A clinical diagnosis of pancreatitis is usually made on the basis of an attack of severe abdominal pain and tenderness, accompanied by a rise in the blood level of a pancreatic enzyme that digests starch (i.e., amylase) to more than three times the normal limit.

Increased amylase in the blood has been the "gold-standard" diagnostic test for acute pancreatitis for more than 50 y. However, recent studies indicate that up to one-third of patients with alcoholic pancreatitis may fail to show any significant rise in amylase levels. In such circumstances, measurement of blood levels of a pancreatic enzyme that digests fats (i.e., lipase) can be helpful, because serum lipase levels remain elevated for a longer period than do amylase levels [7].

#### Treatment

Treatment depends on the type of pancreatitis, its cause, and its severity. Patients may require a hospital stay to treat pain and allow the pancreas to rest by restricting food and fluids by mouth. Patients are rehydrated with intravenous fluids and nutrition is restored

with special feedings. Alcohol is a significant cause of pancreatitis and should be avoided completely [8].

#### MATERIALS AND METHODS

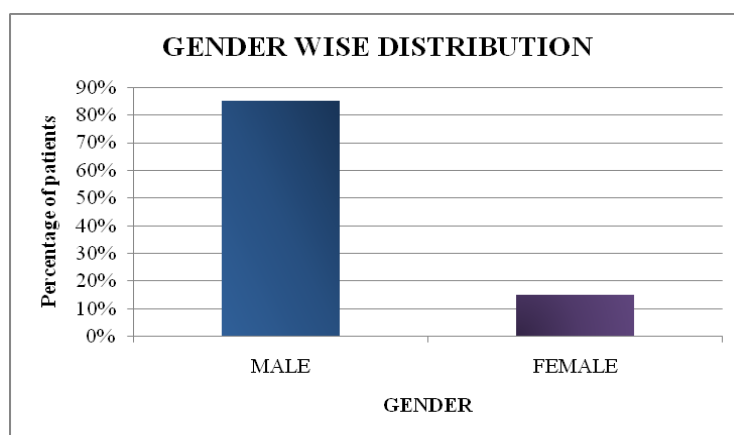
A retrospective study was conducted in a multispecialty clinic in gastroenterology department for a period of one month. 60 patients were involved in the study that was diagnosed with pancreatitis (acute or chronic). The data was obtained by direct communicating with the patients which consisted of demographics and social habits.

#### RESULTS

During the study period of 1 mo, 60 pancreatitis patients were reviewed.

**Table 1: Gender wise distribution**

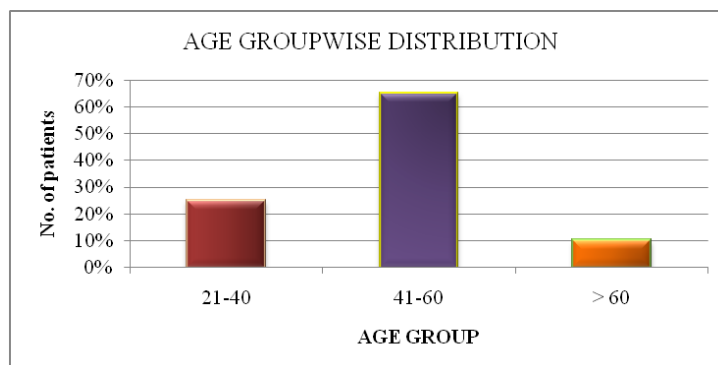
| Gender | Percentage |
|--------|------------|
| Male   | 85%        |
| Female | 15%        |



**Fig. 1: Gender wise distribution, among 60 patients, the prevalence rate of male was high (85 %) than female (15 %)**

**Table 2: Age group-wise distribution**

| Age group | Percentage |
|-----------|------------|
| 21-40     | 25%        |
| 41-60     | 65%        |
| >60       | 10%        |



**Fig. 2: Age groupwise distribution, among 60 patients, the most affected age group with pancreatitis is 41-60 y (65 %), followed by 21-40 y (25 %) and more than 60 y (10 %)**

**Table 3: Symptomatic wise classification**

| Symptoms        | %   |
|-----------------|-----|
| Epigastric pain | 67% |
| Vomiting        | 33% |

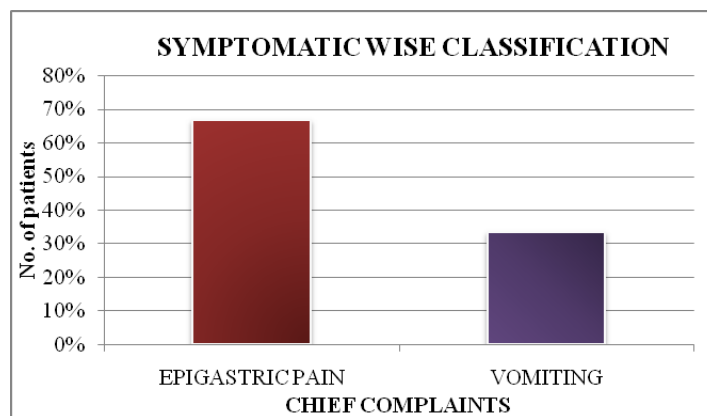


Fig. 3: Symptomatic wise classification, among 60 patients, epigastric pain was the highest reported symptom (67%) followed by vomiting (33%)

Table 4: Classification based on social habits

| Social habits | No. of patients |
|---------------|-----------------|
| Alcoholic     | 36              |
| Non-alcoholic | 24              |

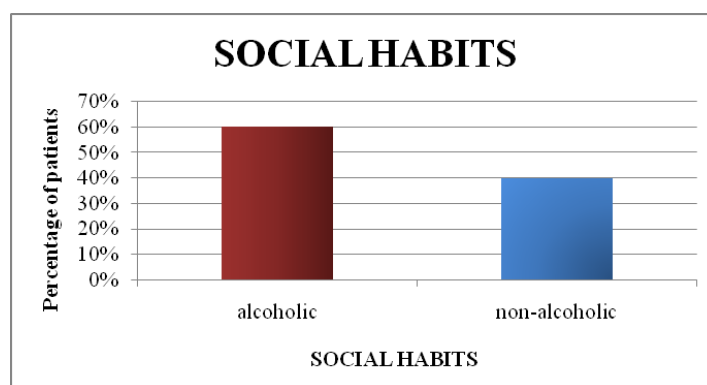


Fig. 4: Classification based on social habits, among 60 patients, majority of the patients were alcoholic (60%)

## DISCUSSION

**GENDER:** In our study, it was observed that the male was dominant (85%) than female (15%). According to the study conducted by Yamandeep *et al.*, males were dominant (58%) than females (42%) because the most common etiology was alcoholism (60%) [9].

**AGE:** Our study has been conducted in 60 patients. Of 60 patients in our study, majority of the patients were in the age group of 41-60 y (65%) followed by patients 21-40 y of age (25%) and patients above 60 y of age (10%). Our study was similar to the study conducted by Yamandeep *et al.*, where majority of the patients were in the age group of 41-60 y (44%) followed by patients 21-40 y of age (40%) and (14%) patients were above 60 y of age. This can be explained by more alcohol consumption in middle-aged male compared to other age groups. This can be explained by more alcohol consumption in middle-aged male as compared to other age [9].

**CHIEF COMPLAINTS:** In our study, epigastric pain was the most common presenting complaint in all patients (67%) followed by vomiting (33%). This correlates with the studies by Yamandeep *et al.*, where the major chief complaint was abdominal pain (100%) followed by nausea and vomiting (38%) [9].

**SOCIAL HABITS:** In our study, we have observed that alcohol is the major risk factor for pancreatitis. The majority of the patients involved are alcoholics (60%). According to Minutiet *al.*, Approximately 5 to 6 y after the onset of the disease (especially in patients who continue to drink), evidence of chronic pancreatic disease develops as a result of progressive destruction of pancreatic tissue (i.e., parenchyma). One early theory postulated that

pancreatic injury is caused by alcohol-induced spasm of the sphincter of Dodi, leading to backup of pancreatic enzymes into the unprotected tissues of the pancreas. Therefore, instead of entering the intestine to digest food, the enzymes "digest" the pancreatic cells themselves. Another theory postulated that the backflow of bile or the contents of the duodenum into the pancreatic duct led to pancreatic damage [7].

## CONCLUSION

Pancreatitis continues to be a common reason for hospitalization. The most common etiology includes the consumption of alcohol. Patients with either acute or chronic pancreatitis must receive continuous counseling and education regarding the importance of eliminating alcohol use. Overall, pharmacists can play a vital role in helping patients identify primary signs and symptoms of the disease and also assist patients in making lifestyle modifications, which may prevent disease progression, lower hospital costs, and decrease incidents of morbidity and mortality.

## ABBREVIATIONS

AP Acute Pancreatitis, CP-Chronic Pancreatitis, MODS-Multiple Organ Dysfunction Syndrome

## FUNDING

Nil

## AUTHORS CONTRIBUTIONS

All the authors have contributed equally.

**CONFLICT OF INTERESTS**

Declare none

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