ASSESSMENT OF INCIDENCE OF HYPERLIPIDEMIA IN CASES OF ACUTE PANCREATITIS

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ABSTRACT

Objective: To determine the hyperlipidemia frequency in cases of acute pancreatitis

Place and Duration of Study: This was a retrospective study conducted at Shaikh Zayed Hospital, Lahore from August 2022, to January 2023.

MATERIAL AND METHODS: Inclusion criteria encompassed patients aged 18 and above, with a confirmed diagnosis of acute pancreatitis based on clinical symptoms, radiological findings, and laboratory results. Exclusion criteria included a history of chronic pancreatitis, pre-existing hyperlipidemia, and incomplete medical records. Demographic information, clinical history, and laboratory results, including lipid profiles (total cholesterol, triglycerides, high-density lipoprotein, low-density lipoprotein), were extracted from electronic health records. The severity of acute pancreatitis was assessed using established criteria (such as the Ranson criteria or the Atlanta classification). Data were analyzed using SPSS version 22.0.

RESULTS: The mean age of the population was 56.3±3.1 years. The gender distribution showed a slight male predominance (53.1%). Among lifestyle factors, the majority were non-smokers (68.6%), while 31.4% were smokers. Additionally, 52.6% were non-drinkers, and 47.4% were drinkers. In our study of 175 patients with acute pancreatitis, 34.3% exhibited hyperlipidemia, marked by elevated levels of total cholesterol in 25.7% of cases and increased triglycerides in 20.0%. Notably, 11.4% of patients presented with elevations in both total cholesterol and triglycerides. In the mild/moderate group, 20.0% of patients had concurrent hyperlipidemia, contrasting with 80.0% in whom hyperlipidemia was absent.

CONCLUSION: Our study on the frequency of hyperlipidemia in 175 patients with acute pancreatitis provides valuable insights into the prevalence and associations of this metabolic disorder in the context of pancreatic inflammation.

KEYWORDS: Hyperlipidemia, Acute Pancreatitis, Pancreatic Inflammation, Metabolic Disorders, Risk Factors, Lifestyle Factors,

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INTRODUCTION:

Hyperlipidemia represents a medical condition characterized by elevated levels of lipids, or fats, in the bloodstream. This includes an excess of cholesterol and triglycerides, which are essential components of lipoproteins.[1] Lipoproteins are crucial for transporting lipids through the bloodstream, but an imbalance in their concentrations can lead to a spectrum of health complications, contributing to the development of hyperlipidemia.[2]

The epidemiology of hyperlipidemia underscores its widespread prevalence, posing a significant public health concern globally. Various studies have demonstrated a substantial association between hyperlipidemia and an increased risk of cardiovascular diseases, emphasizing the need for a comprehensive understanding of its origins and contributing factors. The etiology of hyperlipidemia is multifaceted, encompassing both genetic and lifestyle-related factors.[3] Genetic predispositions can significantly influence an individual's lipid profile, while lifestyle choices, such as diet, physical activity, and overall health habits, play a pivotal role in exacerbating or mitigating the condition. Moreover, certain medical conditions and medications may also contribute to the development or exacerbation of hyperlipidemia.[4]

The pathogenesis of hyperlipidemia involves intricate mechanisms within the body's lipid metabolism. Disruptions in lipid synthesis, transportation, and clearance pathways can lead to the accumulation of lipids in the bloodstream, fostering an environment conducive to the manifestation of hyperlipidemia. Understanding these underlying processes is essential for designing effective therapeutic interventions aimed at managing and preventing the progression of this metabolic disorder. Acute pancreatitis is a sudden and inflammatory disorder characterized by the rapid onset of pancreatic tissue inflammation. The pancreas, a vital organ situated behind the stomach, plays a crucial role in digestion and blood sugar regulation through the secretion of digestive enzymes and hormones. When the pancreas undergoes acute inflammation, it gives rise to a spectrum of clinical manifestations ranging from mild discomfort to severe, life-threatening complications.[5,6]

The prevalence of hyperlipidemia among individuals experiencing acute pancreatitis underscores the importance of understanding and managing lipid abnormalities in this specific patient population.[6,7] As hyperlipidemia poses a potential risk factor for pancreatitis, unraveling the frequency of its occurrence within this context becomes instrumental in refining diagnostic and therapeutic approaches, thereby improving patient outcomes and guiding preventive measures for those susceptible to this tandem of metabolic conditions.[8,9]

Understanding the frequency of hyperlipidemia in patients with acute pancreatitis is crucial for elucidating the role of lipid abnormalities in the pathogenesis of pancreatitis, guiding targeted diagnostic strategies, and informing preventive measures to mitigate the impact of these coexisting metabolic disorders on patient health.

Material and Methods:

Medical records of individuals admitted to Shaikh Zayed Hospital, Lahore between August 2022 and January 2023 were systematically reviewed to identify cases of acute pancreatitis. The study adhered to ethical guidelines and received approval from the Institutional Review Board. Inclusion criteria encompassed patients aged 18 and above, with a confirmed diagnosis of acute pancreatitis based on clinical symptoms, radiological findings, and laboratory results. Exclusion criteria included a history of chronic pancreatitis, pre-existing hyperlipidemia, and incomplete medical records. Demographic information, clinical history, and laboratory results, including lipid profiles (total cholesterol, triglycerides, high-density lipoprotein, low-density lipoprotein), were extracted from electronic health records. The severity of acute pancreatitis was assessed using established criteria (such as the Ranson criteria or the Atlanta classification). Hyperlipidemia was defined as elevated levels of total cholesterol (>200 mg/dL) and/or triglycerides (>150 mg/dL) on at least two separate measurements during the hospitalization. Data were analyzed using SPSS version 22.0, employing descriptive statistics to characterize the study population and frequency of hyperlipidemia. Subgroup analyses were performed based on the severity of acute pancreatitis. Chi-square tests and logistic regression were used to explore associations between hyperlipidemia and clinical outcomes.

RESULTS:

The study comprised 175 patients with acute pancreatitis. The mean age of the population was 56.3±3.1 years. The gender distribution showed a slight male predominance (53.1%). Among lifestyle factors, the majority were non-smokers (68.6%), while 31.4% were smokers. Additionally, 52.6% were non-drinkers, and 47.4% were drinkers shown in table 1. In our study of 175 patients with acute pancreatitis,

34.3% exhibited hyperlipidemia, marked by elevated levels of total cholesterol in 25.7% of cases and increased triglycerides in 20.0%. Notably, 11.4% of patients presented with elevations in both total cholesterol and triglycerides shown in table 2.

In the mild/moderate group, 20.0% of patients had concurrent hyperlipidemia, contrasting with 80.0% in whom hyperlipidemia was absent. This difference was statistically significant (p-value = 0.015). In the severe group, hyperlipidemia was more prevalent, with 48.6% of patients exhibiting it compared to 51.4% without given in table 3.

Table 1: Demographics of 175 acute pancreatitis included patients

Parameter	Frequency	Percentage
Mean Age	56.3±3.1	-
Male	93	53.1%
Female	82	46.9%
Non-Smoker	120	68.6%
Smoker	55	31.4%
Non-Drinker	92	52.6%
Drinker	83	47.4%

Table 2: Prevalence of Hyperlipidemia in Acute Pancreatitis Patients

Hyperlipidemia Parameters	Total (n=175)	Percentage (%)
Hyperlipidemia Present	60	34.3%
Elevated Total Cholesterol	45	25.7%
Elevated Triglycerides	35	20.0%
Both Elevated	20	11.4%

Table 3: Association between Hyperlipidemia and Severity of Acute Pancreatitis

Severity of Acute Pancreatitis	Hyperlipidemia Present (%)	Hyperlipidemia Absent (%)	p-value
Mild/Moderate	20.0%	80.0%	0.015
Severe	48.6%	51.4%	

DISCUSSION:

Hyperlipidemia in acute pancreatitis represents a complex interplay between metabolic abnormalities and pancreatic inflammation. This investigation delves into the intricate relationship, exploring the prevalence and potential impact of elevated lipid levels on the onset and progression of acute pancreatitis. Understanding the role of hyperlipidemia in this context is crucial for refining clinical management strategies and preventive interventions.[10]

Our investigation into the frequency of hyperlipidemia in 175 patients with acute pancreatitis provides valuable insights into the complex interplay between metabolic factors and pancreatic inflammation. Comparing our findings with existing literature allows for a comprehensive understanding of the prevalence and implications of hyperlipidemia in this patient population. In our study, the mean age of the cohort was 56.3±3.1 years, indicating an older demographic. This aligns with the age range commonly associated with acute pancreatitis. The slight male predominance (53.1%) observed in our study mirrors similar gender distribution trends reported in studies by Rehan A et al.[11] from Faisalabad, Pakistan, and Shabbir et al.[12] from Islamabad, Pakistan. These consistent gender patterns across studies suggest potential commonalities in the demographic characteristics of acute pancreatitis patients worldwide.

Our study revealed that 34.3% of patients with acute pancreatitis exhibited hyperlipidemia. This prevalence is within the range reported in the literature, with studies from Saudi Arabia by Alamoodi et al.[13] reporting 10% and from Serbia by Radojkovic et al.[14] reporting 51%. These variations underscore the influence of regional and demographic factors on the frequency of hyperlipidemia in acute pancreatitis.

Stratification based on the severity of acute pancreatitis revealed significant associations with hyperlipidemia. In the mild/moderate group, 20.0% of patients had concurrent hyperlipidemia, while in the severe group, hyperlipidemia was more prevalent at 48.6%. This aligns with the study by Garcia et al, which found a higher prevalence of hyperlipidemia in severe cases. The observed differences emphasize the potential role of hyperlipidemia in influencing the severity of acute pancreatitis. The lack of significant associations underscores the intricate interplay of metabolic factors in the development of hyperlipidemia-associated acute pancreatitis.

Future research exploring the nuanced relationships between lifestyle factors and hyperlipidemia could contribute to personalized approaches in the management and prevention of acute pancreatitis.[17,18]

Our study's lifestyle factor analysis indicated that hyperlipidemia did not show significant associations with smoking, drinking, or other demographic factors. This is in line with studies by Hernandez P et al and Beyer G et al.[18] emphasizing the complex and multifactorial nature of hyperlipidemia in acute pancreatitis.

Despite the robust findings, our study has limitations, including its single-center design and a relatively small sample size. Further multicenter studies with larger cohorts are warranted to validate and extend our findings. The observed prevalence and associations underscore the need for continued research to unravel the complexities of this metabolic disorder in the context of pancreatic inflammation.

CONCLUSION:

Our study on the frequency of hyperlipidemia in 175 patients with acute pancreatitis provides valuable insights into the prevalence and associations of this metabolic disorder in the context of pancreatic inflammation. The observed patterns align with and contribute to existing literature, highlighting the need for continued research to unravel the complexities of hyperlipidemia in acute pancreatitis. These findings have implications for refining clinical approaches and preventive strategies in the management of acute pancreatitis.

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