ORIGINAL ARTICLE

Frequency of Gall Stones in Patients with Acute Pancreatitis at Tertiary Care Hospital of Karachi, Pakistan

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Abstract

Background: In developed countries, the adult population has a 20% incidence of gallstones, with a rise of 0.60 to 1.39% yearly. Our study aimed to determine the frequency of gallstones in Acute Pancreatitis (AP) patients.

Methods: A cross-sectional study was conducted at Abbasi Shaheed Hospital, Karachi, recruited all patients fulfilling inclusion criteria presented in the general surgery department from 3rd Oct 2020 to 3rd Oct 2021. After ethical approval and consent, a brief history was taken, and clinical examination, laboratory investigations, and ultrasound of the upper abdomen were done to ascertain the frequency of gallstones.

Results: A total of 93 patients diagnosed with AP were included in this study. Of these, 70 (50.6%) were male patients, and 23 (49.4%) were females, with a mean age of 40.752±11.764 years. The gallstones were found in 42 (45.2%) patients.

Conclusion: The frequency of gallbladder stones was high in patients with AP. A prompt or a late diagnosis can directly affect a patient's mortality and morbidity.

Keywords

Abdomen, Acute Pancreatitis, Gallstones, Prevalence.

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Cite as: Iqbal F, Majeed S, Islam OS, Khan IA, Din MJ, Zia MK. Frequency of Gall Stones in Patients with Acute Pancreatitis at Tertiary Care Hospital of Karachi, Pakistan. Allied Med Res J. 2024;2(1):213-220. Available from: https://ojs.amrj.net/index.php/1/article/view/115/68.

DOI: https://doi.org/10.59564/amrj/02.01/024 **Received:** 8th September 2023, **Revised:** 10th November 2023, **Accepted:** 28th December 2023

Introduction

Gallstones and alcohol consumption have been identified as the two main etiological factors of Acute Pancreatitis (AP), a complex inflammatory condition affecting the pancreas[1-2]. Due to the serious consequences of AP, which can progress to severe pancreatitis by 25% and have higher mortality rates, adequate patient management requires a thorough understanding of the condition[3-5]. With death rates ranging from 50 to 90% in cases without prompt cholecystectomy, Acute Biliary Pancreatitis (ABP), a severe side effect of gallbladder stones, is especially concerning[6]. The risk increases to 19.3% in patients whose gallstone treatments are delayed by ≤5 mm[7], emphasizing the need for prompt intervention research.

The escalating incidence of gallstones and the concurrent rise in metabolic illnesses like insulin resistance and metabolic syndrome complicate the dynamics of AP development[8]. Gallstones and alcohol together account for 80% of cases of AP; however, little is known about the complex effects of their underlying etiology on prognosis, particularly in severe cases [9–10]. For instance, moderate gallstone pancreatitis may be treated with an early cholecystectomy performed while the patient is in the hospital to address recurrent gallstone-related issues. The necessity for a more thorough investigation of the variables controlling AP progression is highlighted by the fact that the persistence of underlying causes raises concerns about possible illness recurrence[11–12.]

As AP may have potentially devastating effects like chronic pancreatitis and an increased risk of pancreatic cancer, thus it may be crucial to understand its extent and to manage the risk of its recurrence. As our national healthcare system may face a number of challenges in implementing interventions in certain health conditions due to high rates of infections, non-communicable diseases, inaccessible resources and lower fiscal amounts., therefore it is essential for specialists to provide more accurate diagnoses and disease-specific treatment to patients suffering from AP. Our study aimed to determine the frequency of gallstones in AP. Thus, it will enable us to intricate the association between these two conditions to address and prevent their consequences. The study will also serve as a basis for future studies to design tailored interventions for these debilitating conditions and to give policymakers, medical professionals, and academics useful information to aid in the more thorough management of acute pancreatitis.

Methodology

Study Design and Enrollment of Participants

This study employed a cross-sectional design, which was conducted at Abbasi Shaheed Hospital, a tertiary care facility, at which a total no. ninety-three patients with a diagnosis of AP were recruited from a general surgery department for assessment and intervention from the 3rd of October 2020 to 2021. All the patients aged 18 to 60 years were included who had been admitted to the hospital for more than one day after AP diagnosis. Those who revocate the consent to treatment or who have been diagnosed with pancreatic cancer were excluded.

Intervention Strategies

All eligible patients admitted to the general surgery department were included in the study after meeting the inclusion criteria. A comprehensive clinical history was obtained, covering the duration of the signs and symptoms as well as the assessment of any comorbid conditions such diabetes mellitus and hypertension. Clinical evaluations were completed.

A certified staff nurse took blood samples from registered patients and sent them to the institutional laboratory for a complete analysis, including serum lipase, serum amylase, serum hepatic function tests, and a complete blood count. An upper abdominal ultrasound was also carried out to find echogenic foci in the gallbladder and ascertain the quantity and size of gallstones. This data and demographic information were thoroughly entered into the study proforma.

Ethical Consideration

The Research Evaluation Unit approved the study (Ref # CPSP/REU/SGR-2018-174—9938) and closely followed the human subjects guidelines outlined in the Belmont Report. Throughout the entire study, all participant data was kept private. Before the participants were included in the study, they were fully informed of the goals and purpose of the research, and their informed consent was obtained. The participants' rights and well-being were protected by strictly following ethical guidelines.

Results

A total of 93 patients with AP were included in this study with mean age was 40.75±11.76 years and BMI was 24.36±5.32 kg/m2. The mean duration of signs and symptoms of acute pancreatitis was 4.86±1.63 days, while mean serum amylase and lipase was 825.05±665.53 U/L and 2012.04±1419.87 U/L as shown in (Table-1).

Table-1 Descriptive characteristics of participants						
Statistics	**Age (years)**	**Height (meters)**	**Weight (kilograms)**	**BMI (kg/m^2)**	**Duration of sign and symptoms of AP (days)**	**Lipase levels (U/L)**
Minimum	20	1.30	43	17	2	350
Maximum	60	2.15	105	35	10	5000
Mean	40.75	1.64	65.05	24.36	4.86	2012.04
Std. Deviation	11.76	0.23	21.06	5.25	1.63	1419.87

The mean size of gallstones was 0.65±0.21 cm, total bilirubin (4.25±1.72 µmol/L), mean Alanine Transaminase (ALT) (219.54 ±80.76 U/L), Alkaline Phosphatase (ALK) (334.23 ±79.67 IU/L) and GGT (230.08 ±53.09 U/L). In our study, 70 patients (50.6%) were males, and 23 patients (49.4%) were females, out of which more males had gallstones with a value of 27 (29%) than 15 (16.1%) females. Diabetes mellitus was seen in 27 (29%) patients, and hypertension was seen in 29 (31.2%) patients. The outcome of gallstones was seen in 42 (45.2%) patients, and the number of gallstones was single in 30 (32.3%) and multiple in 12 (12.9%) (Table-2).

Table-2 Frequency distribution of gall stones (n=93)	
Gallstones	**n (%)**
Yes	42 (45.2%)
No	51 (54.8%)
Total	93 (100%)
Number of gall stones	**n (%)**
Single	30 (32.3%)
Multiple	12 (12.9%)
Total	42 (45.2%)

The provisional diagnosis was AP in 52 (55.9%) patients and acute cholecystitis in 41(44.1%) patients, while the final diagnosis was AP in all patients (Table-3).

Table-3 Frequency distribution of provisional diagnosis and final diagnosis (n=93)	
Provisional Diagnosis	**n (%)**
Acute Pancreatitis	52 (55.9%)
Acute Cholecystitis	41 (44.1%)
Total	93 (100%)
Final Diagnosis	**n (%)**
Acute Pancreatitis	93 (100%)

Discussion

The risk of death and more significant morbidity make early detection of acute biliary pancreatitis imperative. Approximately 1% of admissions for AP are related to this illness, which is significant because it serves as an early indicator of pancreatic cancer[13]. ABP can manifest in a variety of ways. It can cause pain that is sometimes localized or on the left side, lasts for many days, and peaks in intensity in about 20-minutes[14]. Common symptoms include back discomfort that radiates and frequently has band-like qualities. Relief can be achieved by leaning forward. The agitation may be accompanied by nausea and vomiting, and the illness may develop following biliary colic[15]. With 30–40% of individuals having gallstones, especially those with smaller gallstones, being at higher risk, gallstones constitute a significant cause of acute pancreatitis[16]. Gallstones are the most common cause in approx. 40–60% of AP patients, according to global statistics[17]. In our investigation, abdominal ultrasonography revealed silent gallstones in 35% of patients with acute pancreatitis.

Contrary to specific earlier research, our investigation revealed a higher prevalence of gallstones in men. Gallstone prevalence varies by gender and age, as evidenced by numerous studies showing distinct trends in various populations[18]. Compared to Khan et al. results, which showed that biliary pancreatitis accounted for 84% of cases of AP, our investigation found gallstones in 45.2% of patients. Infections, hypercalcemia, hypertriglyceridemia, and other medications are other frequent reasons. Surprisingly, abdominal ultrasonography revealed silent gallstones in 21% of our patients with AP, highlighting the importance of careful evaluation in this group.

Strengths and Limitations

Our study offers important insights into a high-risk population and advances knowledge about the frequency of gallstones in acute pancreatitis. Abdominal ultrasonography was utilized to detect silent gallstones, which aided in the early detection of possible problems. However, the study has certain limitation such as modest sample size and single-center methodology that restricted the generalizability of results.

Recommendations

Future research should consider multi-center partnerships to increase sample size and diversity. Longitudinal research may show how silent gallstones and their related problems develop over time.

Conclusion

It was concluded that the frequency of gallbladder stones was high in patients with AP. Our study's result highlights the need for early detection and thorough evaluation by confirming the high occurrence of gallstones in patients with acute pancreatitis. Although our results add to the current body of knowledge, our limitations underscore the necessity of larger-scale research endeavors to enhance our comprehension of the complex correlation between gallstones and AP.

Acknowledgments

None.

Conflict of Interest

None.

Grant Support and Funding Disclosure

None.

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AUTHORS' CONTRIBUTION

The following authors have made substantial contributions to the manuscript as under:

Conception or Design: Iqbal F, Majeed S, Islam OS

Acquisition, Analysis or Interpretation of Data: Iqbal F, Khan IA

Manuscript Writing & Approval: Iqbal F, Majeed S, Din MJ, Zia MK

All the authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.