RESEARCH PAPER

"A Study of Clinical Profile of Gall Stone Induced Pancreatitis and Its Correlation with Severity Indices"

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ABSTRACT

Background: One of the most frequent causes of severe abdominal pain is gallstone-induced pancreatitis, which is characterized by acute exocrine pancreatic inflammation associated with acinar cell damage and both local and systemic inflammatory reactions. Significant morbidity and mortality are linked to it.

Aim: The purpose of this study is to assess the clinical characteristics of pancreatitis caused by gallstones and to measure and correlate the levels of serum lipase, lactate dehydrogenase (LDH), and C-reactive protein (CRP).

Methodology: This prospective study was carried out in the general surgery department of the Maharishi Markandeshwar Institute of Medical Sciences and Research (MMIMSR), Mullana from September 2024 to April 2026. 55 individuals with pancreatitis caused by gallstones were enrolled. For every patient, a thorough clinical history and examination results were documented. Complete blood counts, liver and renal function tests, serum lipase, serum amylase, serum lactate dehydrogenase (LDH), and C-reactive protein (CRP) were among the laboratory testing. SPSS version 21 was used to analyze the data. Pearson's chi-square test was utilized for statistical analysis, and $p < 0.05$ was deemed statistically significant. Descriptive statistics were presented as mean and percentage.

Results: A total of 55 patients with gallstone-induced pancreatitis were included in the study. The majority of patients belonged to the 31–40 years age group (36.3%), with a mean age of 37 years. Males constituted 61.8% of cases, showing a male predominance. Diabetes mellitus (43.6%) and hypertension (29%) were the most common associated comorbidities. Pain abdomen was the most common presenting symptom and showed strong association with elevated serum lipase and CRP levels. Fever, nausea, vomiting, and abdominal distension were also frequently observed, while jaundice showed comparatively weaker correlation with severity markers. Elevated serum lipase (>390 IU/L) and CRP (>10 mg/L) were observed in 98.2% of patients each, while raised LDH (>350 IU/L) was present in 52.7% of cases. Serum lipase demonstrated the highest diagnostic sensitivity (98.2%), followed by CRP (98.2%), whereas LDH showed a sensitivity of 52.7%. The mean serum lipase, CRP, and LDH levels were 1332.94 IU/L, 138 mg/L, and 418.93 IU/L respectively. Among the study subjects, 80% of patients were discharged successfully, while mortality was observed in 20% of cases. Elevated LDH levels showed the highest association with mortality (37.9%), followed by elevated serum lipase and CRP levels (20.4% each), indicating the prognostic significance of LDH in predicting severe disease and poor outcomes in gallstone-induced pancreatitis.

Conclusion: Serum lipase was found to be the most sensitive diagnostic marker, while elevated LDH and CRP showed significant association with disease severity and mortality in gallstone-induced pancreatitis. Clinical features such as pain abdomen, fever, and abdominal distension were strongly associated with severe disease. Early assessment using routine biochemical markers may help in timely diagnosis, risk stratification, and improved patient outcomes.

Keywords: Gallstone-induced pancreatitis, Serum lipase, Lactate dehydrogenase, C-reactive protein, Severity markers.

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Introduction:

One of the most frequent causes of acute abdominal pain is gallstone-induced pancreatitis, which has a high morbidity and fatality rate. Pancreatic

autodigestion and a systemic inflammatory response result from the premature activation of digestive enzymes within pancreatic tissue, which causes inflammation of the exocrine pancreas. Multiple organ dysfunction syndrome (MODS), pancreatic necrosis, and systemic inflammatory response syndrome (SIRS) might develop in severe cases.

Common symptoms include acute epigastric pain, fever, and hypovolemia. Clinical presentation ranges from minor abdomen pain to severe systemic sickness. Gallstones are the primary cause of acute pancreatitis, with alcohol usage accounting for roughly 70% of cases globally. The diagnosis is based on radiographic evidence from contrast-enhanced computed tomography (CECT) or ultrasonography, increased pancreatic enzymes, and distinctive abdominal pain.

The prognostic indicators and severity evaluation methods for acute pancreatitis have been assessed in a number of research.Ranson JHC (1974) established LDH as a significant early biochemical predictor of disease severity by demonstrating that higher Ranson's scores were linked to greater severity and mortality in acute pancreatitis (1).In a similar vein, Imrie CW (1978) found a correlation between severe disease and rising biochemical derangements and confirmed the value of clinical grading systems (2).

Another important factor in determining the severity of an illness is radiological evaluation. The CT Severity Index (CTSI) was developed by Balthazar EJ et al. (1990), who demonstrated that greater CTSI scores were linked to increased pancreatic necrosis, complications, and death, thereby validating CT imaging as a trustworthy predictor of severity (3).

Subsequently, Banks PA (2013) noted in the Revised Atlanta Classification that approximately 20% of patients experience severe pancreatitis, which is linked to higher mortality and organ failure (4).

CRP and LDH are examples of inflammatory and biochemical markers that have been extensively researched for early disease severity prediction. CRP levels more than 150 mg/L were found to be significantly linked to severe pancreatitis, pancreatic necrosis, and increased mortality (5) by Mayer AD (1984).Similar studies by Wilson C (1989) and De Campos T (2002) also showed a strong correlation between high LDH levels and tissue necrosis, severe pancreatitis, multiorgan failure, and higher mortality (6,7).According to more recent research by Cardoso FS (2013) and Wu H (2024) (8,9) elevated CRP levels have been linked to ICU hospitalization, comorbidities, severe inflammatory response, and poor clinical outcomes.

The combination of biomarkers and grading systems for increased prognosis accuracy is also supported by recent data.According to Thimmappa D (2023) (10) BISAP and serum LDH together shown good sensitivity and specificity for predicting severe pancreatitis. Similarly, strong associations between CRP, LDH, pancreatic necrosis, and disease severity were found by Zengin O (2025) and a Cureus study (2025), highlighting the fact that these biomarkers work best when combined with clinical scoring systems (11,12).Significant correlations between increased CRP and LDH levels and severe acute pancreatitis were also found in Tamil Nadu tertiary care research from 2023 (13).

Taking all factors into considerations, these studies demonstrate the significance of radiological evaluation, clinical grading systems, and biochemical markers like CRP and LDH in the early prediction of acute pancreatitis severity and prognosis.

Aim: To determine Clinical Features in gall stone induced pancreatitis patients. To determine CRP, LDH and Serum Lipase levels in gall stone induced pancreatitis patients and its correlation with clinical features and outcome.

Materials and Methodology: This prospective study was conducted in the Department of General Surgery, Maharishi Markandeshwar Institute of Medical Sciences (MMIMSR), Mullana, over a period of 18 months from September 2024 to April 2026. A total of 55 patients diagnosed with gallstone-induced pancreatitis (GSIP) were included in the study after obtaining informed written consent and fulfilling the predefined inclusion and exclusion criteria.

Patients presenting with acute abdomen and diagnosed with GSIP on the basis of clinical evaluation, raised serum amylase levels, ultrasonography (USG), and contrast-enhanced computed tomography (CECT) abdomen were enrolled in the study. Patients with normal amylase levels or isolated acute cholecystitis without evidence of pancreatitis were excluded.

A detailed clinical history, demographic profile, associated comorbidities, and presenting symptoms were recorded for all patients. Laboratory investigations including complete blood count (CBC), renal function test (RFT), liver function test (LFT), serum amylase, serum lipase, serum lactate dehydrogenase (LDH), and C-reactive protein (CRP) were performed. The normal reference values considered were LDH: 150–350 IU/L, CRP: 0–10 mg/L, and serum lipase: 70–390 IU/L.

The study primarily evaluated the diagnostic and prognostic significance of serum lipase, LDH, and

CRP in gallstone-induced pancreatitis and correlated these biochemical markers with clinical presentation and patient outcomes. Patients were managed according to standard institutional treatment guidelines.

Statistical analysis was performed using SPSS version 21 for Windows. Data were compiled using Microsoft Excel and expressed as mean and percentage values where appropriate. The confidence interval was set at 95% with a level of significance of 5%. Pearson's Chi-square test was used for comparison of variables and assessment of correlation between severity markers and clinical outcomes.

Results: A total of 55 patients with gallstone-induced pancreatitis were included in the study. Among them, 34 patients (61.8%) were males, while 21 patients (38.2%) were females. The findings indicate a male predominance among patients presenting with gallstone-induced pancreatitis in the present study population as shown in table 1.

Table 1:Gender distribution among the patient study Group

Sex	Number (%)
Male	34(61.8%)
Female	21(38.2%)

The majority of patients belonged to the 31–40 years age group (36.3%), followed by 41–50 years (23.6%) and 21–30 years (21.8%). Patients aged less than 20 years constituted 5.5%, while those above 60 years accounted for 10% of cases. The mean age of patients was 37 years as depicted in Table 2.

Table 2: Age Distribution among patient Study Group

AGE(INYEARS)	Numberof patients	Percentage
<20	3	5.5%
21-30	12	21.8%
31-40	20	36.3%
41-50	13	23.6%
51-60	5	9.1%
>60	2	3.6%
Total	**55**	**100%**

Among the study participants, 29% were hypertensive and 43.6% had type-2 diabetes mellitus, while 25.4% had both hypertension and diabetes. COPD and hypothyroidism were present in 5.4% and 3.6% of patients, respectively. Nearly half of the patients (47.2%) had no associated comorbidities as mentioned in Table 3.

Table 3: Distribution of Comorbidities among patient Study Group

Comorbidities	Numberofpatients	Percentage
HYPERTENSION	16	29%
DIABETES	24	43.6%
HTN &DM	14	25.4%
COPD	3	5.4%
HYPOTHYROIDISM	2	3.6%
NIL	26	47.2%

Our study also demonstrated the correlation of clinical features with elevated serum lipase, CRP, and LDH levels in gallstone-induced pancreatitis. Pain abdomen, nausea, vomiting, and fever were more commonly associated with raised lipase and CRP levels, while comparatively fewer patients with elevated LDH showed these symptoms. Jaundice and abdominal distension were less frequently observed. Overall, clinical features demonstrated a stronger association with elevated lipase and CRP than with LDH levels as shown in Table 4.

Table 4: Distribution of Clinical features in gallstone-induced pancreatitis patients

Clinical Features	S.Lipase> 390 IU/L	S.LDH>350 IU/L	S.CRP> 10 MG/L
PAININ ABDOMEN	54/55=98%	29/55=53%	54/55=98%
NAUSEA	52/55=94%	26/55=47%	50/55=91%
VOMITING	46/55=84%	24/55=44%	48/55=87%
FEVER	50/55=91%	28/55=51%	53/55=96%

JAUNDICE	26/55=47 %	22/55=40%	26/55=47%
DISTENSION OF ABDOMEN	32/55=58 %	20/55=36%	30/55=55%

The distribution of serum LDH levels among the study subjects showed that 29 patients (52.7%) had elevated LDH levels (>350 IU/L), while 26 patients (47.3%) had LDH levels within the normal range (≤350 IU/L). The mean serum LDH level was 418.93 IU/L.

The sensitivity of serum LDH in diagnosing gallstone-induced pancreatitis was calculated using true positive and false negative cases. The sensitivity of LDH (>350 IU/L) was found to be 52.7%, indicating that elevated LDH was present in nearly half of the patients with gallstone-induced pancreatitis as shown in Table 5.

Table 5: Elevated LDH levels among the patients' study Group

LDH LEVELS	NUMBEROF PATIENTS	PERCENTAGE
LDH <350 IU/L	**26**	**47.3%**
LDH >350 IU/L	**29**	**52.7%**
TOTAL	**55**	**100.0%**

It was also observed that serum lipase levels were elevated (>390 IU/L) in 54 patients (98.2%), while only 1 patient (1.8%) had normal lipase levels (≤390 IU/L). The mean serum lipase level was 1332.94 IU/L as shown in Table 6.

The sensitivity of serum lipase for diagnosing gallstone-induced pancreatitis was calculated to be 98.2%, demonstrating that serum lipase is a highly sensitive biochemical marker for gallstone-induced pancreatitis.

Table 6: Serum Lipase levels among patient study group

LIPASELEVELS	Numberof patients	Percentage
LIPASE<390IU/L	1	1.8%
LIPASE>390IU/L	54	98.2%
Total	**50**	**100%**

Similarly CRP levels (>10 mg/L) were observed in 54 patients (98.2%), whereas only 1 patient (1.8%) had CRP levels within the normal range (≤10 mg/L). The mean serum CRP level was 138 mg/L as shown in table 7.

The sensitivity of CRP (>10 mg/L) was found to be 98.2%, suggesting that CRP is a highly sensitive inflammatory marker associated with gallstone-induced pancreatitis and disease severity.

Table 7: Distribution for CRP Levels among patients Study Group

CRP LEVELS	Numberof patients	Percentage
CRP<10mg/L	1	1.8%
CRP> 10mg/L	54	98.2%
Total	**50**	**100%**

Our study also illustrates the clinical outcome among the study subjects (N=55). A majority of patients, 44 (80%), were discharged successfully from the hospital, while mortality was observed in 11 patients (20%).

The prognostic significance of serum LDH levels in relation to patient outcomes. Patients with elevated LDH levels (>350 IU/L) showed a mortality rate of 37.9%, indicating a strong association between raised LDH and poor clinical outcome. In contrast, no mortality was observed among patients with LDH levels ≤350 IU/L. These findings suggest that elevated serum LDH may serve as an important predictor of disease severity and mortality in gallstone-induced pancreatitis as shown in table 8 and figure 1.

Table 8: Corelation of LDH Levels with Patient Outcomes

LDH levels	Death	Discharged	Total	Mortality (%)
<350	0	26	26	0
>350	11	18	29	37.9
Total	11	44	55	20%

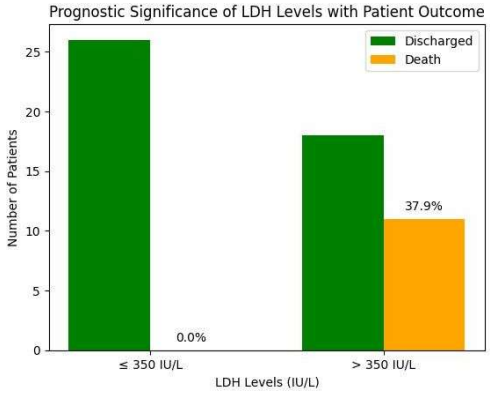


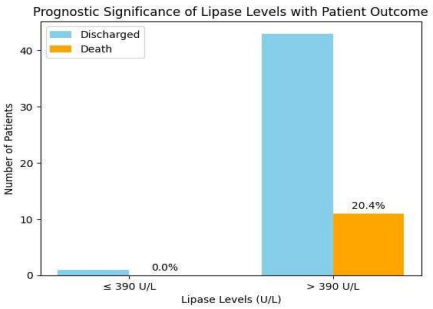
Figure 1: Significance of LDH Levels with patient Outcomes

Our study also revealed the prognostic significance of serum lipase levels in relation to patient outcomes. Patients with serum lipase levels >390 U/L showed a mortality rate of 20.4%, whereas no mortality was observed among patients with lipase levels ≤390 U/L. These findings suggest that elevated serum lipase levels may be associated with increased disease severity and poorer clinical outcomes in gallstone-induced pancreatitis as shown in Table 9 and Figure 2.

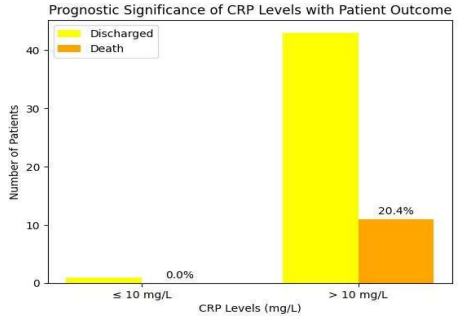
Table 9: Corelation of Serum lipase levels with patients Outcomes

Lipase levels	Death	Discharged	Total	Mortality (%)
< 390 IU/L	0	1	1	0 %
>390IU/L	11	43	54	20.4%
Total	11	44	55	**20%**

Figure 2: Significance of Lipase levels with Patient Outcomes.



Similarly, when prognostic significance of serum CRP levels was compared in relation to patient outcomes. Patients with CRP levels >10 mg/L showed a mortality rate of 20.4%, whereas no mortality was observed among patients with CRP levels ≤10 mg/L. These findings suggest that elevated CRP levels are associated with increased disease severity and poorer clinical outcomes in gallstone-induced pancreatitis as depicted in table



10 and Figure 3.

Table 10: Corelation of CRP levels with Clinical patient Outcomes

CRPLevel	Death	Discharged	Total	Mortality (%)
<10 mg/L	0	1	1	0 %
>10 mg/L	11	43	54	20.4%
Total	11	44	55	**20%**

Figure 3: Prgnostic Significance of CRP levels with patient Outcomes

Discussion:

Gallstone-induced pancreatitis (GSIP) is one of the most common causes of acute pancreatitis requiring emergency surgical management. Early assessment of disease severity is essential to reduce complications, organ failure, and mortality. The present study evaluated the clinical profile of GSIP and correlated common clinical features with biochemical severity markers including serum lipase, CRP, and LDH.

In the present study, males constituted 61.8% of cases, while females accounted for 38.2%, showing a male predominance. Although gallstone disease is traditionally more common in females, progression to pancreatitis may be influenced by metabolic disorders, smoking, alcohol exposure, and regional sociocultural factors.Similar findings were reported by Akca et al. (14), who observed male predominance in younger patients with biliary pancreatitis. Song et al. (15) also demonstrated that although gallstones are more prevalent in women, the transition to pancreatitis varies with age and metabolic factors.

The majority of patients in the present study belonged to the 31–40 years age group (36.3%), followed by 41–50 years (23.6%). These findings suggest that GSIP predominantly affects middle-aged adults, likely due to prolonged exposure to metabolic and biliary risk factors. Similar observations were reported by Akca et al. (14) and Song et al. (15), who demonstrated increasing prevalence of gallstone disease and biliary pancreatitis with advancing age.

Among comorbidities, diabetes mellitus was the most common (43.6%), followed by hypertension (29%). Combined diabetes and hypertension were present in 25.4% of our patients study group.These findings are consistent with studies by Chang et al. and Chakraborty et al. (16), which reported metabolic disorders as common associated conditions in biliary pancreatitis.

Pain abdomen was the most common presenting symptom and showed strong association with elevated serum lipase and CRP levels. Similar findings were reported by Vengadakrishnan et al. (17) and Kumar et al. (18), who identified abdominal pain as the cardinal symptom of acute pancreatitis and correlated it with elevated inflammatory markers.Nausea and vomiting were also common symptoms and showed greater correlation with raised lipase and CRP levels than with LDH. Previous studies by Vengadakrishnan et al. (17) and Bollen et al. (19) similarly observed

that these symptoms were more frequent in moderate to severe pancreatitis.
Fever demonstrated a strong association with severity markers, particularly CRP and LDH. Comparable findings were reported by Vengadakrishnan et al. (17) and Chakraborty et al. (16), who found fever to be associated with severe pancreatitis, pancreatic necrosis, prolonged hospital stay, and increased ICU admissions. Abdominal distension also showed significant correlation with elevated lipase and CRP levels, supporting earlier observations by Bollen et al. (19) that it is an important clinical indicator of severe disease.
Jaundice showed comparatively weaker association with severity markers, suggesting that it reflects biliary obstruction rather than severity of pancreatic inflammation. Similar conclusions were drawn by Chang et al. (20), who associated jaundice primarily with persistent common bile duct obstruction.Thus, jaundice may indicate retained CBD stones and the possible need for ERCP rather than severe pancreatitis.

Among the biochemical markers evaluated, serum lipase showed high diagnostic sensitivity, whereas LDH and CRP demonstrated stronger prognostic significance. Elevated LDH was associated with higher mortality and severe disease, consistent with studies by Vengadakrishnan et al. (17) and Chakraborty et al. (16), which highlighted LDH as a superior predictor of severe pancreatitis, necrosis, ICU admission, and mortality. CRP also showed strong association with disease severity and inflammatory response.
Abdominal distension demonstrated a stronger association with severity indices, showing correlation with elevated lipase (58%), CRP (55%), and LDH (36%). Vengadakrishnan et al. (17) reported abdominal distension as an important indicator of severe pancreatitis associated with paralytic ileus, pancreatic necrosis, and local complications. Similar observations were made by Bollen et al. (19), who linked abdominal distension with severe inflammatory response and prolonged hospital stay. The findings of the present study support the importance of abdominal distension as a reliable bedside indicator of severe GSIP.
Previous studies by Gumaste et al. (21) and Chase et al. (22) reported limited prognostic value of lipase alone, whereas Hong et al. (23) suggested that persistently elevated lipase levels may indicate ongoing pancreatic inflammation and complications.

Overall, the present study supports the role of routine biochemical markers, particularly LDH and CRP, in early assessment of disease severity and prognosis in gallstone-induced pancreatitis. Combined with clinical examination, these markers can aid in early risk stratification and timely management without exclusive dependence on complex scoring systems.
Conclusion:
The present study concludes that pain abdomen is the most common clinical feature of gallstone-induced pancreatitis and shows strong association with elevated serum lipase, CRP, and LDH levels. Fever and abdominal distension were also found to be important indicators of severe disease. Among the biochemical markers evaluated, elevated LDH emerged as the strongest predictor of disease severity and mortality, while serum lipase proved to be the most sensitive diagnostic marker.
The study highlights the importance of combining clinical assessment with routine biochemical markers such as serum lipase, CRP, and LDH for early diagnosis, severity prediction, and prognostic evaluation in gallstone-induced pancreatitis. Early identification of high-risk patients may help in timely intervention and improved clinical outcomes.

References:

1. Ranson JHC, Rifkind KM, Roses DF, Fink SD, Eng K, Spencer FC. Prognostic signs and the role of operative management in acute pancreatitis. SurgGynecol Obstet. 1974;139:69-81

2. ImrieCW,BenjaminIS,FergusonJC,McKay AJ,MackenzieI,O'Neill J,etal.Asingle-centredouble-blindtrialofTrasyloltherapyinprimary acute pancreatitis. Br J Surg. 1978;65(5):337–341.

3. Balthazar EJ, Robinson DL, Megibow AJ, Ranson JHC. Acute pancreatitis: value of CT in establishing prognosis. Radiology. 1990;174:331-336.

4. BanksPA,BollenTL,DervenisC,GooszenH G,JohnsonCD,SarrMG, et al. Classification of acutepancreatitis—2012: revision ofthe Atlanta classification and definitions by international consensus. Gut. 2013;62(1):102–111.

5. Mayer AD, McMahon MJ, Bowen M, Cooper EH. C reactive protein: anaidtoassessmentandmonitoringofacutepancreatitis.JClinPathol. 1984;37(2):207–211.

6. Wilson C, Heads A, Shenkin A, Imrie CW. C-reactive protein, antiproteases and complement factors as objective markers of severity in acute pancreatitis. Br J Surg. 1989 Feb;76(2):177–181. doi:10.1002/bjs.1800760224.

7. De Campos T, Cerqueira C, Kuryura L, Parreira JG, Soldá SC, PerlingeiroJAG.Morbimortalityindicatorsi nsevereacutepancreatitis. Rev Hosp Clin Fac Med Sao Paulo. 2002;57(2):63–68.

8. CardosoFS,Ricardo LB, OliveiraAM,CanenaJM,HortaDV,Papoila AL, et al. C-reactive protein prognostic accuracy in acute pancreatitis: timing of measurement and cutoff points. Eur J Gastroenterol Hepatol. 2013 Jul;25(7):784–789. doi:10.1097/MEG.0b013e32835.

9. Wu H, Zhang S, Li S, Zhang Y, Li M, XieC, Wu H.Serum albumin, a good indicator of persistent organ failure in acute pancreatitis. BMC Gastroenterol. 2017;17(1):59. doi:10.1186/s12876-017-0615-8.

10. ThimmappaDetal.,2023-Reference: ThimmappaD,etal.BISAP The epidemiology of pancreatitis and pancreatic cancer. Gastroenterology. 2013;144:1252-1261.

11. Zengin O et al., 2025-Reference: Zengin O, et al. Evaluation of acute pancreatitisseverityandprognosisusingbio markers.JournalofClinical Medicine. 128:586-590.

12. Cureus Study, 2025-Reference: Role of inflammatory markers and radiological profile in predicting acute pancreatitis severity. Cureus. 2025.

13. Tamil Nadu Tertiary Care Study, 2023-Reference:Assessment of severity of acute pancreatitis using inflammatory markers CRP and LDH. IJDMSR. 2023.J Clin Diagn Res. 2023;17(5):OC01–OC05.

14. AkcaS,OcalS,KocSG,KayaR,Buldukoglu OC,KokerG,etal.Epidemiologyofacutepan creatitis:theinfluenceofageandgenderina regional population. BMC Gastroenterol. 2025;25:627. doi:10.1186/s12876-025-04240-z.

15. Song J, Zhong Y, Lu X, Kang X, Wang Y, Guo Z, et al. Interleukin-6 and C-reactive protein are early predictors of severity in acute pancreatitis. Pancreatology. 2017;17(4):550–554.

16. ChangMC,SuCH,SunMS,HuangSC,ChiuC T,ChenMC,etal.Rapid diagnosis of acute pancreatitis using the urinary trypsinogen-2 dipstick test. Pancreas. 2007;34(3):289–293.

17. VengadakrishnanK,KoushikAK.Astudyoft heclinicalprofileofacute pancreatitis and its correlation with severity indices. Int J Health Sci (Qassim). 2015;9(4):410–417.

18. Kumar RB, Karim T, Jain A, Arora S, Katiyar VK, Patel G. Role of seruminterleukin-6 and C-reactive proteinin earlypredictionofsevere acute pancreatitis. J West Afr Coll Surg. 2022;12(4):20–26.

19. BollenTL,vanSantvoortHC,BesselinkMG, vanEsHW,GooszenHG, van Leeuwen MS. The Atlanta classification of acute pancreatitis revisited. Br J Surg. 2008;95(1):6–21.

20. ChangMC,SuCH,SunMS,HuangSC,ChiuC T,ChenMC,etal.Rapid diagnosis of acute pancreatitis using the urinary trypsinogen-2 dipstick test. Pancreas. 2007;34(3):289–29.

21. GumasteVV,SerenyG,DaveP.Serumlipase: abettertesttodiagnose acute alcoholic pancreatitis. Am J Med. 1992;92(3):239–242.

22. Chase CW, Barker DE, Russell WL, Burns RP. Serum amylase and lipase in the evaluation of acute abdominal pain. Am Surg. 1996 Dec;62(12):1028–1033.

23. HongW,DongL,HuangQ,WuW,WuJ,Wang Y.Predictionofsevere acute pancreatitis using classification and regression tree analysis. Dig Dis Sci. 2011 Dec;56(12):3664–3671. doi:10.1007/s10620-011-1849.