



Predictive accuracy of the revised Atlanta Classification against CT severity index in determining prognosis of acute pancreatitis

Dr. Kailash Mogal, Dr. Sanket Palikondawar

Department of General Surgery, Dr. Vasantrao Pawar Medical College, Hospital & Research Centre, Nashik, Maharashtra, India

DOI: <https://doi.org/10.66856/ijsr.2026.8.4.8018>

Abstract

Introduction: The Revised Atlanta Classification is the standard clinical framework for grading severity in acute pancreatitis, while the CT Severity Index provides an objective radiological measure of pancreatic inflammation and necrosis. This study evaluates the predictive accuracy of the former against the latter as reference standard.

Methods: Patients with acute pancreatitis presenting to a tertiary care teaching hospital were included on accrual over two years. Eighty-nine patients meeting inclusion criteria (age above 18 years, Ranson score of 3 or more, available contrast-enhanced CT) were studied. Severity was graded by both systems, and diagnostic performance of the Revised Atlanta Classification for severe disease was calculated using the CT Severity Index as reference standard.

Results: The 41-50-year age group was most represented (29.2%), with male predominance (65.2%). Abdominal pain (47.2%) was commonest, and alcohol use (25.8%) and gallstones (21.3%) were leading risk factors. By the Revised Atlanta Classification, 49.4% had mild, 34.8% moderately severe, and 15.7% severe disease, concordant with CT Severity Index grading (chi-square 58.72, $p < 0.001$). The Revised Atlanta Classification predicted severe disease with sensitivity 73.3%, specificity 95.9%, positive predictive value 78.6%, negative predictive value 94.7%, and accuracy 92.1% (area under curve 0.85, 95% CI 0.76-0.94, $p < 0.001$). Increasing severity correlated significantly with ICU admission, organ failure, hospital stay, and mortality ($p < 0.001$ -0.002).

Conclusion: The Revised Atlanta Classification correlates strongly with the CT Severity Index and reliably predicts severe acute pancreatitis and adverse outcomes, supporting its use as a practical bedside prognostic tool, with the CT Severity Index as a valuable confirmatory measure.

Keywords: Acute pancreatitis, Revised Atlanta Classification, CT Severity Index, prognosis, sensitivity and specificity, organ failure, ROC curve

Introduction

Acute pancreatitis is an acute inflammatory disorder of the pancreas, diagnosed when at least two of three features are present: characteristic abdominal pain, elevation of serum amylase or lipase to more than three times the upper limit of normal, and radiological findings consistent with pancreatic inflammation^[1]. The disease ranges from mild, self-limiting inflammation to a severe, life-threatening illness with multi-organ failure, and continues to account for a substantial share of acute gastrointestinal hospital admissions worldwide, with a rising trend attributed to increasing rates of gallstone disease, alcohol consumption, and obesity^[2].

Reliable severity stratification is central to management, since early identification of patients likely to progress to severe disease allows timely escalation of care, while most patients with mild disease can be managed conservatively with a short hospital stay. The original Atlanta Classification of 1992 was the first attempt at standardising severity terminology but suffered from unclear definitions of local complications and did not distinguish transient from persistent organ failure^[3]. These shortcomings were addressed by the Revised Atlanta Classification of 2012, which stratifies acute pancreatitis into mild, moderately severe, and severe categories based principally on the presence and persistence of organ failure^[4], and which also standardised the terminology for local complications such as acute peripancreatic fluid collections, pancreatic necrosis,

pseudocysts, and walled-off necrosis^[5]. Persistent organ failure involving the respiratory, cardiovascular, or renal systems for more than 48 hours is the key determinant separating severe from moderately severe disease and is strongly associated with mortality^[5].

Because the Revised Atlanta Classification is a clinical system, it may not fully capture the extent of pancreatic parenchymal damage seen on imaging. Contrast-enhanced computed tomography remains the most reliable modality for visualising pancreatic inflammation, necrosis, and peripancreatic involvement^[6], and is generally recommended after 72 hours from symptom onset in patients who fail to improve, since earlier imaging may underestimate the extent of necrosis. The CT Severity Index, first described in 1985, combines a pancreatic inflammation grade with the percentage of pancreatic necrosis into a single radiological severity score^[7]. Being derived directly from cross-sectional imaging, the CT Severity Index and its modified form are widely used as an objective reference standard against which clinical severity systems are validated^[8].

Although the Revised Atlanta Classification and CT Severity Index are each individually well validated, comparative data on how accurately the bedside Revised Atlanta Classification predicts the CT Severity Index-defined severity grade, particularly from Indian tertiary-care settings, remain limited, and the two systems are not always

concordant in an individual patient [9]. A clinical score with good sensitivity and specificity for severe disease can guide early triage and resource allocation without awaiting or repeating imaging. This study was therefore undertaken to describe the clinical profile of patients with acute pancreatitis and to determine the sensitivity, specificity, and overall diagnostic accuracy of the Revised Atlanta Classification in predicting severe acute pancreatitis, using the CT Severity Index as the radiological gold standard.

Patients and Methods

Study Design and Setting

This study was conducted in the Department of General Surgery, Dr Vasantrao Pawar Medical College, Hospital & Research Centre, Nashik, a tertiary care teaching institution that provides specialised surgical and radiological services. Patients presenting with acute pancreatitis were included on accrual over a two-year period. Institutional Ethics Committee approval was obtained (Dr VPMCH & RC/IEC/89/2024-25), and the study was conducted in accordance with the ethical standards of the 1964 Declaration of Helsinki and its later amendments. Written informed consent was obtained from all participants before inclusion.

Sample size

The sample size was calculated to estimate the sensitivity of the CT Severity Index in predicting disease severity, assuming an expected sensitivity of 75%, absolute precision of 9%, and a 95% confidence level (Z=1.96). Using the standard formula for sensitivity studies, $n = Z^2S(1-S)/d^2$, a minimum of 89 patients was required, and this sample size was achieved.

Patients

Patients above 18 years of age with a clinical diagnosis of acute pancreatitis, a Ranson score of 3 or more at admission, and available contrast-enhanced CT data were included after providing written informed consent. Patients with chronic pancreatitis, those presenting more than 48 hours after onset of pain, and those with pancreatic malignancy were excluded. The diagnosis of acute pancreatitis required at least two of three features: characteristic abdominal pain suggestive of pancreatitis, serum amylase or lipase more than three times the upper limit of normal, and radiological findings consistent with pancreatitis.

Data collection

Demographic details, presenting symptoms, and past medical history were recorded at admission. Serum amylase and lipase were estimated by standard laboratory methods. Contrast-enhanced CT of the abdomen and pelvis was performed in all patients, and findings, including pancreatic

size, peripancreatic inflammation, and acute fluid collections, were documented by the reporting radiologist. Patients were followed for up to six weeks after admission for requirement of ICU admission, development of organ failure, length of hospital stay, and mortality.

Severity classification

Disease severity was graded independently by two systems. The Revised Atlanta Classification categorised patients as having mild, moderately severe, or severe acute pancreatitis on the basis of the presence and persistence of organ failure and local or systemic complications [4]: mild disease was defined by the absence of organ failure and complications, moderately severe disease by transient organ failure or local complications without persistent organ dysfunction, and severe disease by organ failure persisting beyond 48 hours. The CT Severity Index was calculated from contrast-enhanced CT findings by combining the grade of pancreatic inflammation (0-4 points) with the extent of pancreatic necrosis (0-6 points) [7, 8], and patients were correspondingly classified as having mild, moderate, or severe disease on the basis of the total score. The CT Severity Index was used as the reference standard against which the diagnostic performance of the Revised Atlanta Classification for predicting severe disease was assessed.

Statistical analysis

Data were coded and entered into a Microsoft Excel spreadsheet and analysed using Statistical Package for the Social Sciences software. Categorical variables were summarised as frequencies and percentages, and continuous variables as mean and standard deviation. The association between Revised Atlanta Classification and CT Severity Index grades, and between severity and clinical outcomes, was tested using the chi-square test; mean length of hospital stay across severity groups was compared using one-way ANOVA. Sensitivity, specificity, positive predictive value, negative predictive value, and overall diagnostic accuracy of the Revised Atlanta Classification for severe acute pancreatitis were calculated using the CT Severity Index as the reference standard, and receiver operating characteristic curve analysis was performed to determine the area under the curve with its 95% confidence interval. A p value less than 0.05 was considered statistically significant.

Results

A total of 89 patients with acute pancreatitis were enrolled over the study period. Most patients, 26 (29.2%), were in the 41-50-year age group, followed by 22 (24.7%) in the 31-40-year group; 17 (19.1%) were aged 51-60 years, 14 (15.7%) were aged 18-30 years, and 10 (11.3%) were older than 60 years. Men outnumbered women, comprising 58 (65.2%) of the cohort against 31 (34.8%) women (Table 1).

Table 1: Demographic and clinical profile of patients with acute pancreatitis (N = 89)

Variable	Category	n	%
Age group (years)	18-30	14	15.7
	31-40	22	24.7
	41-50	26	29.2
	51-60	17	19.1
	>60	10	11.3
Sex	Men	58	65.2
	Women	31	34.8
Presenting symptom	Abdominal pain	42	47.2

	Abdominal pain with nausea/vomiting	31	34.8
	Abdominal pain with fever	16	18.0
Past medical history	Alcohol use	23	25.8
	Gallstones	19	21.3
	Diabetes mellitus	9	10.1
	Hypertension	8	9.0
	No significant history	30	33.7

n: number of patients; %: percentage of total cohort (N = 89).

Abdominal pain was the most frequent presenting complaint, seen in 42 (47.2%) patients, followed by abdominal pain with nausea or vomiting in 31 (34.8%) and abdominal pain with fever in 16 (18.0%). A history of alcohol use was present in 23 (25.8%) patients and gallstone disease in 19 (21.3%); 9 (10.1%) patients had diabetes mellitus and 8 (9.0%) had hypertension, while 30 (33.7%) had no significant past medical history (Table 1).

Mean serum amylase was 478.6 SD152.4 U/L

(range 210-865 U/L) and mean serum lipase was 812.3 SD295.7 U/L (range 320-1480 U/L), both markedly elevated. On contrast-enhanced CT, peripancreatic inflammation was the commonest finding, in 26 (29.2%) patients, followed by focal or diffuse pancreatic enlargement in 21 (23.6%), a single acute fluid collection in 18 (20.2%), two or more fluid collections in 12 (13.5%), and a normal pancreatic appearance in 12 (13.5%) (Table 2).

Table 2: Laboratory and radiological findings (N = 89)

Parameter	Category / Mean SD	n	%
Serum amylase (U/L)	478.6 SD152.4 (range 210-865)	-	-
Serum lipase (U/L)	812.3 SD295.7 (range 320-1480)	-	-
CECT finding	Normal pancreas	12	13.5
	Focal/diffuse pancreatic enlargement	21	23.6
	Peripancreatic inflammation	26	29.2
	Single acute fluid collection	18	20.2
	Two or more acute fluid collections	12	13.5

CECT: contrast-enhanced computed tomography; SD: standard deviation.

By the Revised Atlanta Classification, 44 patients (49.4%) had mild, 31 (34.8%) had moderately severe, and 14 (15.7%) had severe acute pancreatitis. By the CT Severity Index, 41 patients (46.1%) were graded mild, 33 (37.1%) moderate, and 15 (16.9%) severe (Table 3). On cross-tabulation,

38 of 44 patients (86.4%) classified as mild by the Revised Atlanta Classification were also mild by the CT Severity Index, and 11 of 14 (78.6%) classified as severe were also severe by the CT Severity Index, with a statistically significant association between the two systems (chi-square 58.72, $p < 0.001$) (Table 4).

Table 3: Severity distribution by Revised Atlanta Classification and CT Severity Index (N = 89)

Severity grade	Revised Atlanta Classification, n (%)	CT Severity Index, n (%)
Mild	44 (49.4)	41 (46.1)
Moderate / moderately severe	31 (34.8)	33 (37.1)
Severe	14 (15.7)	15 (16.9)
Total	89 (100)	89 (100)

Table 4: Cross-tabulation of Revised Atlanta Classification against CT Severity Index (N = 89)

Revised Atlanta grade	CTSI Mild, n (%)	CTSI Moderate, n (%)	CTSI Severe, n (%)	Total, n (%)
Mild	38 (42.7)	5 (5.6)	1 (1.1)	44 (49.4)
Moderately severe	3 (3.4)	25 (28.1)	3 (3.4)	31 (34.8)
Severe	0 (0.0)	3 (3.4)	11 (12.4)	14 (15.7)
Total	41 (46.1)	33 (37.1)	15 (16.9)	89 (100)

CTSI: CT Severity Index. Chi-square 58.72, $p < 0.001$

Using the CT Severity Index as the reference standard, the Revised Atlanta Classification identified severe acute pancreatitis with a sensitivity of 73.3%, specificity of 95.9%, positive predictive value of 78.6%, negative

predictive value of 94.7%, and overall diagnostic accuracy of 92.1%. Receiver operating characteristic analysis confirmed good discriminative performance, with an area under the curve of 0.85 (95% CI 0.76-0.94, $p < 0.001$) (Table 5).

Table 5: Diagnostic performance of the Revised Atlanta Classification for severe acute pancreatitis, using CT Severity Index as reference standard

Parameter	Value
Sensitivity	73.3%
Specificity	95.9%
Positive predictive value	78.6%

Negative predictive value	94.7%
Diagnostic accuracy	92.1%
Area under ROC curve (95% CI)	0.85 (0.76-0.94)
p value	<0.001

Increasing severity on the Revised Atlanta Classification was significantly associated with adverse clinical outcomes. ICU admission was required in 2 of 44 (4.5%) patients with mild disease, 6 of 31 (19.4%) with moderately severe disease, and 10 of 14 (71.4%) with severe disease (chi-square 34.86, $p<0.001$). Organ failure developed in 1 (2.3%), 6 (19.4%), and 11 (78.6%) patients respectively across these

three groups (chi-square 41.57, $p<0.001$). Mean length of hospital stay increased progressively with severity: 4.2 SD1.3 days in mild disease, 7.6 SD2.1 days in moderately severe disease, and 12.8 SD3.4 days in severe disease ($F=52.84$, $p<0.001$). Mortality was 0% in mild disease, 3.2% (1 of 31) in moderately severe disease, and 28.6% (4 of 14) in severe disease, an overall mortality of 5.6% for the cohort (chi-square 12.73, $p=0.002$) (Table 6).

Table 6: Association between disease severity (Revised Atlanta Classification) and clinical outcomes (N = 89)

Outcome	Mild (n=44)	Moderately severe (n=31)	Severe (n=14)	Statistic	p value
ICU admission, n (%)	2 (4.5)	6 (19.4)	10 (71.4)	chi-sq=34.86	<0.001
Organ failure, n (%)	1 (2.3)	6 (19.4)	11 (78.6)	chi-sq=41.57	<0.001
Mean hospital stay, days (SD)	4.2 (1.3)	7.6 (2.1)	12.8 (3.4)	$F=52.84$	<0.001
Mortality, n (%)	0 (0.0)	1 (3.2)	4 (28.6)	chi-sq=12.73	0.002

ICU: intensive care unit; SD: standard deviation.

Discussion

This study evaluated 89 patients with acute pancreatitis and found that the disease predominantly affected men in their fifth decade of life, with alcohol use and gallstone disease as the leading identifiable risk factors, a pattern broadly consistent with regional epidemiological data showing that male predominance in acute pancreatitis largely reflects a higher prevalence of alcohol-related disease, while gallstone-related pancreatitis is comparatively more frequent among women [10,11]. The clinical presentation in the present cohort, dominated by abdominal pain with variable accompanying nausea, vomiting, or fever, mirrors the typical clinical profile reported from other Indian and regional tertiary-care cohorts, in which abdominal pain, alcohol use, and biliary disease were similarly the leading presenting complaint and risk factors [12, 18]. Elevated serum amylase and lipase in the present cohort are consistent with their established diagnostic sensitivity for acute pancreatitis reported elsewhere [19, 20], and the predominance of peripancreatic inflammation and pancreatic enlargement on contrast-enhanced CT corresponds with CT-based findings from other tertiary-care series that similarly used CT grading to characterise disease severity [21, 23].

The principal finding of this study was the strong concordance between the Revised Atlanta Classification and the CT Severity Index, with 86.4% of Revised-Atlanta-mild and 78.6% of Revised-Atlanta-severe patients receiving matching CT Severity Index grades (chi-square 58.72, $p<0.001$). The Revised Atlanta Classification predicted CT Severity Index-defined severe disease with a sensitivity of 73.3%, specificity of 95.9%, and an overall diagnostic accuracy of 92.1% (area under the curve 0.85, 95% CI 0.76-0.94). These figures are broadly comparable to a previous report in which the Revised Atlanta Classification correlated strongly with the CT Severity Index and modified CT Severity Index, with diagnostic accuracies of 98.3% and 96.7% respectively [24], although the sensitivity reported there (97.1%) was higher than in the present study, possibly reflecting differences in cohort composition and the proportion of moderately severe disease. Another study similarly evaluated the modified CT Severity Index against the Revised Atlanta Classification as the reference standard

and reported high sensitivity (100%) but comparatively lower specificity (58.4%) and accuracy (63.0%) [25], illustrating that the relative performance of clinical versus radiological indices can vary considerably with which system is treated as the reference standard and with the population studied. In a large British cohort, Revised-Atlanta-based severity grading achieved an area under the curve of 0.955 for predicting in-hospital mortality [26], while another study found that the area under the curve of the Revised Atlanta Classification for predicting organ failure (0.86) exceeded that of both the CT Severity Index (0.80) and modified CT Severity Index (0.81) [27]. The CT Severity Index has likewise been reported to demonstrate high precision in predicting moderately severe disease as defined by the Revised Atlanta Classification, emphasising the complementary rather than competing relationship between the two systems [28]. Taken together with the present findings, these data support the Revised Atlanta Classification as a clinically robust, imaging-independent tool for early severity stratification, while the CT Severity Index retains its role as an objective, reproducible reference standard, particularly for quantifying the extent of pancreatic necrosis.

Increasing severity on the Revised Atlanta Classification was strongly associated with ICU admission, organ failure, longer hospital stays, and mortality in the present cohort, consistent with previous reports linking severity grade to systemic complications. In one cohort, all deaths occurred among patients with severe disease on the Revised Atlanta Classification, with organ failure present in the great majority of these patients [29], closely mirroring the concentration of mortality (28.6%) and organ failure (78.6%) within the severe group in the present study. Higher modified CT Severity Index grades have similarly been reported to correlate with greater ICU requirement and longer hospital stay [30], and CT-based severity indices have been shown to be significantly associated with persistent organ failure, need for intervention, and mortality [31]. In a Thai cohort of 250 patients, overall mortality was 6.0%, rising sharply to 42.0% among patients with severe disease on the Revised Atlanta Classification [32], figures numerically close to the overall mortality (5.6%) and

severe-group mortality (28.6%) observed in the present study, reinforcing that Revised-Atlanta-defined severe disease identifies a subgroup at genuinely elevated risk regardless of geographic setting. The consistent, near-linear rise in length of hospital stay across severity groups in the present cohort further underscores that a single bedside classification, applied at admission, can meaningfully anticipate the resource burden of an individual patient's illness.

These findings have practical implications for surgical and gastroenterology units where round-the-clock contrast-enhanced CT is not always immediately available. Because the Revised Atlanta Classification relies only on clinical and laboratory parameters obtainable at the bedside, it can be applied at first assessment to identify patients likely to need higher-level monitoring, with the CT Severity Index reserved for confirming severity and quantifying necrosis once imaging is performed, generally after 72 hours in stable patients. A combined approach, using the Revised Atlanta Classification for early triage and the CT Severity Index for subsequent confirmation and monitoring of local complications, is likely to be more practical in resource-limited settings than reliance on imaging alone.

This study has certain limitations. It was conducted at a single tertiary care centre, which may limit generalisability, and the sample of 89 patients, though adequate for the primary sensitivity-based calculation, limits the precision of subgroup comparisons, particularly for the moderately severe category. Follow-up was restricted to six weeks and may not capture late complications such as pancreatic insufficiency or recurrence. The CT Severity Index, used here as the reference standard, itself depends on the availability and correct timing of contrast-enhanced CT and is subject to inter-observer variation in image interpretation. Multicentric studies with larger cohorts, longer follow-up, and models that combine clinical, laboratory, and radiological parameters, potentially including emerging biomarkers such as C-reactive protein and the neutrophil-to-lymphocyte ratio, are needed to refine prognostication further.

Conclusion

In this cohort of patients with acute pancreatitis, the Revised Atlanta Classification showed strong concordance with the CT Severity Index and predicted CT Severity Index-defined severe disease with good sensitivity, high specificity, and an overall diagnostic accuracy of 92.1%. Increasing severity on the Revised Atlanta Classification was consistently associated with ICU admission, organ failure, prolonged hospital stay, and mortality. These findings support the Revised Atlanta Classification as a reliable, readily applicable bedside tool for early risk stratification in acute pancreatitis, particularly in settings where immediate CT imaging may not be available, while the CT Severity Index remains valuable for objective confirmation of severity and extent of necrosis. Combined clinical and radiological assessment is likely to offer the most accurate prognostic evaluation in routine surgical practice.

References

1. Wang CF, Tariq A, Chandra S. *Acute pancreatitis*. StatPearls Publishing, Treasure Island (FL), 2026.
2. Ouyang G, Pan G, Liu Q, Wu Y, Liu Z, Lu W, *et al*. The global, regional, and national burden of pancreatitis

- in 195 countries and territories, 1990-2017: a systematic analysis for the Global Burden of Disease Study 2017. *BMC Med*,2020;18:388.
3. Mao L, Qiu Y. The classification of acute pancreatitis: current status. *Intractable Rare Dis Res*,2012;1:134-137.
4. Banks PA, Bollen TL, Dervenis C, Gooszen HG, Johnson CD, Sarr MG, *et al*. Classification of acute pancreatitis-2012: revision of the Atlanta classification and definitions by international consensus. *Gut*,2013;62:102-111.
5. Sureka B, Bansal K, Patidar Y, Arora A. Imaging lexicon for acute pancreatitis: 2012 Atlanta Classification revisited. *Gastroenterol Rep (Oxf)*,2016;4:16-23.
6. Busireddy KK, Alobaidy M, Ramalho M, Kalubowila J, Baodong L, Santagostino I, *et al*. Pancreatitis-imaging approach. *World J Gastrointest Pathophysiol*,2014;5:252-270.
7. Balthazar EJ, Ranson JH, Naidich DP, Megibow AJ, Caccavale R, Cooper MM. Acute pancreatitis: prognostic value of CT. *Radiology*,1985;156:767-772.
8. Banday IA, Gattoo I, Khan AM, Javeed J, Gupta G, Latief M. Modified computed tomography severity index for evaluation of acute pancreatitis and its correlation with clinical outcome: a tertiary care hospital based observational study. *J Clin Diagn Res*,2015;9:TC01-TC05.
9. Smeets X, Bouhouch N, Buxbaum J, Zhang H, Cho J, Verdonk R, *et al*. The revised Atlanta criteria more accurately reflect severity of post-ERCP pancreatitis compared to the consensus criteria. *United European Gastroenterol J*,2019;7:557-564.
10. Akca S, Ocal S, Koc SG, Kaya R, Buldukoglu OC, Koker G, *et al*. Epidemiology of acute pancreatitis: the influence of age and gender in a regional population. *BMC Gastroenterol*,2025;25:627.
11. Niroula P, Sanipini SL, Yadav PK, Mautsa RM, Kumar RSV, Vineela P. An observational study on incidence of acute pancreatitis in different age groups and associated risk factors. *J Med Pharm Allied Sci*,2025;14:6936-6944.
12. Subhashini B. Clinical study of acute pancreatitis. *J Med Sci Clin Res*, 2017, 5.
13. Ahmed KU, Ahad MA, Alim MA, Ekram ASM. Clinical profile of acute pancreatitis in a teaching hospital. *Bangladesh Med J Khulna*,2017;49:7-12.
14. Jain JK, Enam SK, Yadav AK. To study the clinical profile of patients with acute pancreatitis and to study its aetiology: a hospital based cross sectional study. *Int J Surg Sci*,2021;5:137-139.
15. Kishore GK. Retrospective analysis of etiological factors and clinical presentation of pancreatitis in patients of a tertiary care hospital. *Int Surg J*,2022;9:327-330.
16. Islam MS, Hossain A, Islam MD, Bala CS, Abira M, Rahman A. Clinical profile, etiology, and in-hospital outcome of acute pancreatitis: experience at a tertiary care centre, Bangladesh. *Bangla J Med*,2024;36:32-36.
17. Dogra V, Ahmed RN, Gilkar IA, Mir IA. A tertiary care prospective study of epidemiology and aetiopathogenesis of acute pancreatitis. *Int Surg J*,2022;9:378-382.
18. Sivaramakrishna V, Purushotham G, Babu YA, Aditya P. A study on clinicoetiology and outcome in patients

- with acute pancreatitis. *Asian J Pharm Clin Res*,2023;16:208-212.
19. Ali Esmaili H. Diagnostic value of amylase and lipase in diagnosis of acute pancreatitis. *Biomed Pharmacol J*,2017;10:389-394.
 20. Kumar A, Kapoor S. Diagnostic accuracy of serum lipase and amylase as biomarkers for acute pancreatitis. *Int J Res Med Sci*,2018;6:1721-1725.
 21. Kumar SA. Analysing the role of computed tomography in the diagnosis of acute pancreatitis and in grading its severity. *J Med Sci Clin Res*, 2017, 5.
 22. Sharif MM, Ferdousi MA, Rahman MT, Rahman N, Ullah MN, Mohiuddin A. Role of computed tomography in the evaluation of severity of acute pancreatitis. *KYAMC J*,2017;7:738-744.
 23. Hariharan M, Chail V, Mudda A, Modi P, Rangari M. A comparative study of ultrasound and computed tomography in evaluation of acute and chronic pancreatitis, associated complications and predicting severity and prognosis. *Asian J Pharm Clin Res*,2024;17:160-165.
 24. Sahu B, Abbey P, Anand R, Kumar A, Tomer S, Malik E. Severity assessment of acute pancreatitis using CT severity index and modified CT severity index: correlation with clinical outcomes and severity grading as per the Revised Atlanta Classification. *Indian J Radiol Imaging*,2017;27:152-160.
 25. Khattak MB, Ali Khan RS, Khan RZA, Din RU, Shabbir K, Karim R, *et al*. Diagnostic accuracy of bedside index for severity in acute pancreatitis and modified computed tomography severity index in determining the severity of acute pancreatitis using Revised Atlanta Classification as the gold standard. *Pak Armed Forces Med J*,2023;73:933-937.
 26. Bansal SS, Hodson J, Sutcliffe RS, Marudanayagam R, Muiesan P, Mirza DF, *et al*. Performance of the revised Atlanta and determinant-based classifications for severity in acute pancreatitis. *Br J Surg*,2016;103:427-433.
 27. Naik K, Choudhary A, Baser SC. Severity assessment of acute pancreatitis using severity indices, Revised Atlanta Classification, and correlating with clinical outcomes. *Int J Sci Res*,2021;10:1-4.
 28. Koziel D, Gluszek S, Matykiewicz J, Lewitowicz P, Drozdak Z. Comparative analysis of selected scales to assess prognosis in acute pancreatitis. *Can J Gastroenterol Hepatol*,2015;29:299-303.
 29. Raghuwanshi S, Gupta R, Vyas MM, Sharma R. CT evaluation of acute pancreatitis and its prognostic correlation with CT severity index. *J Clin Diagn Res*,2016;10:TC06-TC11.
 30. Kapali A. Correlation of modified CT severity index with complications of acute pancreatitis. *Int J Contemp Med Surg Radiol*,2019;4:D8-D12.
 31. Alberti P, Pando E, Mata R, Vidal L, Roson N, Mast R, *et al*. Evaluation of the modified computed tomography severity index (MCTSI) and computed tomography severity index (CTSI) in predicting severity and clinical outcomes in acute pancreatitis. *J Dig Dis*,2021;22:41-48.
 32. Pongprasobchai S, Vibhatavata P, Apisarnthanarak P. Severity, treatment, and outcome of acute pancreatitis in Thailand: the first comprehensive review using Revised Atlanta Classification. *Gastroenterol Res Pract*,2017;2017:3525349.