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A STUDY ON RISK FACTOR, ETIOLOGY AND OUTCOMES OF ACUTE PANCREATITIS

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Abstract

A prospective observational study was conducted on 80 patients with acute pancreatitis to assess clinical presentation, management, and outcomes. Abdominal pain (93.75%) was the most common symptom, followed by vomiting (37.5%) and constipation (10%). All patients received supportive treatment with intravenous fluids, and most required analgesics (97.5%), nutritional support (56.25%), antibiotics (25%), or insulin therapy (12.5%). Interventional procedures such as ERCP or drainage were performed in 6.25% of cases. Symptomatic relief was achieved in the majority, with 95% experiencing pain resolution. Complications included transient hyperglycemia (12.5%), pseudocyst formation (3.75%), and infected necrosis (2.5%). The average hospital stay ranged from 7 to 10 days in uncomplicated cases, with 18.8% experiencing prolonged admission. Overall survival was 97.5%, with mortality occurring in 2 patients due to severe necrotising pancreatitis. The study highlights that timely fluid resuscitation, effective pain management, and appropriate nutritional and interventional support are essential for favourable outcomes in acute pancreatitis.

Keywords: Acute pancreatitis, Gastrointestinal emergency, Clinical manifestations, Supportive therapy, Pancreatic pseudocyst, Necrotizing pancreatitis.

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Introduction

Acute pancreatitis (AP) is an acute inflammatory disorder of the pancreas characterised by autodigestion of pancreatic tissue and variable involvement of peripancreatic organs. It represents one of the most common gastrointestinal emergencies worldwide. It carries a broad spectrum of clinical severity, ranging from mild self-limiting disease to severe, necrotizing forms associated with systemic inflammatory response and multiorgan dysfunction [1]. The global incidence of AP has been steadily increasing over the past two decades, placing a substantial burden on healthcare systems [2]. The pathogenesis of AP is multifactorial, involving the premature activation of digestive enzymes, the release of pro-inflammatory mediators, and microcirculatory disturbances [3]. The most frequently implicated etiological factors include gallstones and chronic alcohol consumption, which together account for nearly 70–80% of cases [4]. Other causes, such as hypertriglyceridemia, post-endoscopic retrograde cholangiopancreatography (ERCP) pancreatitis, drugs, trauma, and genetic mutations, also contribute to disease onset [5]. Identifying etiology is crucial, as it influences disease recurrence, prognosis, and preventive strategies.

Risk factors for severe AP have been extensively studied. Advanced age, obesity, metabolic syndrome, and certain comorbidities significantly increase susceptibility and worsen outcomes [6]. Severity stratification systems, such as the Revised Atlanta Classification and scoring indices (Ranson's, APACHE II, BISAP), aid in predicting complications, intensive care requirements, and mortality [7]. Furthermore, systemic inflammatory response syndrome (SIRS) and persistent organ failure are established indicators of poor prognosis [8]. The outcomes of AP depend not only on aetiology and risk factors but also on timely diagnosis, supportive management, and prevention of complications [9]. While most patients recover fully with conservative treatment, a subset develop necrosis, infection, or chronic pancreatitis, emphasising the

importance of early risk assessment. Enhanced understanding of aetiology and outcomes is therefore vital for tailoring treatment, reducing recurrence, and decreasing mortality [10].

Material and Methodology

Study Design and Duration

This was a prospective observational study conducted over six months in the Department of Surgery at SVS Medical College and Hospital, Mahbubnagar. A total of 80 patients diagnosed with acute pancreatitis were enrolled.

Study Setting and Source of Data

Data were collected from inpatient and outpatient services of the surgery department. Sources included case sheets, demographic details, clinical examinations, biochemical investigations (serum lipase, amylase, full blood count), imaging studies (abdominal ultrasound/CT), and treatment records [11-14].

Sample Size and Selection

The sample size was fixed at 80 patients. Participants were recruited by purposive sampling based on predefined inclusion and exclusion criteria.

Inclusion criteria:

- Patients of all age groups and genders with a confirmed diagnosis of acute pancreatitis, based on clinical presentation, laboratory evidence (elevated serum lipase/amylase), and imaging findings.
  Patients with mild, moderate, or severe acute pancreatitis.
- Patients who provided informed consent or whose legal guardians provided consent [15,-17].

Exclusion criteria:

- Patients with chronic pancreatitis.
- Pregnant or lactating women.
- Patients with severe comorbid conditions or previous pancreatectomy [18-20]].

Data Collection

After obtaining informed consent, eligible patients were enrolled. A structured data collection proforma was designed to capture demographic details, risk factors, clinical features, laboratory/imaging results, treatment interventions, and outcomes. Patients were evaluated clinically and through various investigations, including complete blood counts, abdominal ultrasound, and other relevant biochemical and radiological studies [21-23].

Study Procedure

All patients received management in accordance with standard clinical protocols. Supportive care (IV fluids, analgesics, antibiotics when indicated, nutritional support) and interventional procedures (ERCP or drainage) were documented. Each patient was monitored throughout their hospitalisation until discharge or death. Complications, length of hospital stay, and survival outcomes were systematically recorded [24,25].

Statistical Analysis

Data were systematically entered into Microsoft Excel and subsequently analysed using SPSS version 23 and GraphPad Prism version 9. Descriptive statistics (mean ± standard deviation, frequency distributions, percentages) were calculated. Associations between categorical variables were tested using the chi-square test, while differences between means were assessed using analysis of variance (ANOVA). Statistical significance was set at $p < 0.05$ (95% CI) [26-28].

Ethical Considerations

The study was conducted after obtaining approval from the Institutional Ethics Committee, SVS Medical College and Hospital (Reference No: IEC/DHR-01/(02/04)/2025/021/4). Confidentiality of patient data was strictly maintained.

Results And Discussion

Gender-wise Distribution

In the present study, out of 80 patients diagnosed with acute pancreatitis, a slight male predominance was observed. A total of 46 patients (57.5%) were males, whereas 34 patients (42.5%) were females. The details are presented in Table 1, and the distribution is graphically represented in Figure 1.

Table 1: Gender-wise distribution of acute pancreatitis

Gender	Number of Patients	Percentage (%)
Male	46	57.5
Female	34	42.5
Total	80	100

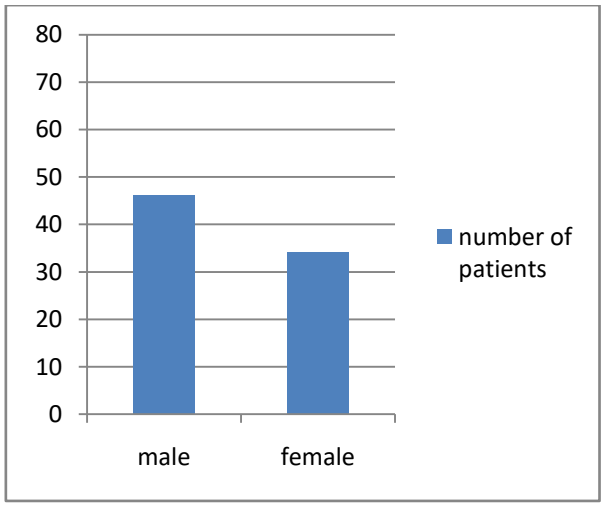

Fig.1: Bar graph showing gender-wise distribution of acute pancreatitis

Age-wise Distribution

A total of 80 patients were evaluated. The highest proportion of cases was observed in the 21–30 years age group (21.2%), followed by the 71–80 years group (15%). Patients aged 51–60 years and 61–70 years each

contributed 13.7%, while the 31–40 years and 41–50 years groups accounted for 12.5% each. Fewer patients were seen in the 81–90 years group (7.5%), with the lowest prevalence in the 10–20 years group (3.8%). These findings suggest that acute pancreatitis most commonly affects young adults to the elderly, with relatively fewer cases in adolescents and the very elderly. The data are summarised in Table 2 and presented graphically in Figure 2.

Table 2: Age-wise distribution of acute pancreatitis

Age Group (years)	Number of Patients	Percentage (%)
10–20	3	3.8
21–30	17	21.2
31–40	10	12.5
41–50	10	12.5
51–60	11	13.7
61–70	11	13.7
71–80	12	15.0
81–90	6	7.5
Total	**80**	**100**

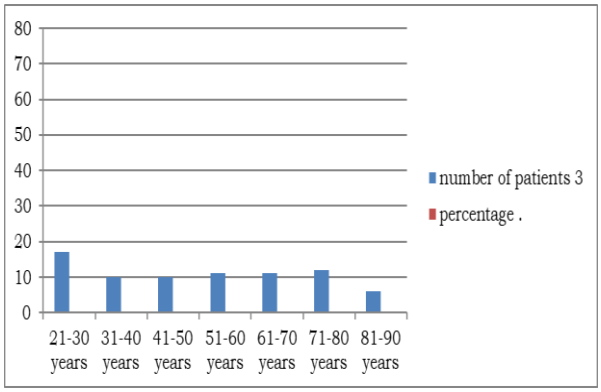

Fig.2: Bar graph showing age-wise distribution of acute pancreatitis

Distribution of Acute Pancreatitis Patients Based on Risk Factors

In this study, risk factor analysis among 80 patients showed that the most common predisposing factor was alcohol consumption, observed in 29 patients (36.25%). Gall stones accounted for 17 patients (21.25%), while hypertriglyceridemia was identified in 15 patients (18.75%). Idiopathic pancreatitis was noted in 12 patients (15%), and genetic factors contributed to 7 patients (8.75%). These findings indicate that lifestyle-related factors such as alcohol and gallstones were the predominant causes of acute pancreatitis in this cohort. The distribution is presented in Table 3 and Figure 3.

Table 3: Distribution of acute pancreatitis patients based on risk factors

Risk Factors	Number of Patients	Percentage (%)
Alcohol	29	36.25
Gall stones	17	21.25
Hypertriglyceridemia	15	18.75
Genetic	7	8.75
Idiopathic	12	15.00
Total	**80**	**100**

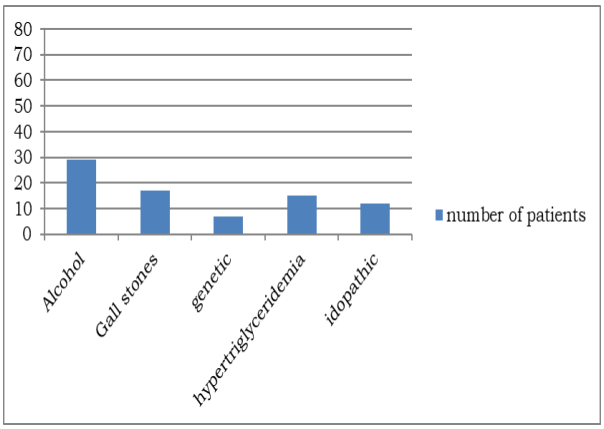

Figure 3: Bar graph showing the distribution of patients based on risk factors

Distribution of Acute Pancreatitis Patients Based on Clinical Manifestations

The clinical manifestations of acute pancreatitis among the study population are detailed in Table 5.4. The most common presenting symptom was abdominal pain, reported in 75 patients (93.75%), establishing it as the hallmark clinical feature. Vomiting was observed in 30 patients (37.5%), followed by constipation in 8 patients (10%) and burning micturition in 6 patients (7.5%). Less frequent complaints included fever (2.5%) and diarrhoea (1.25%). These results highlight abdominal pain as the predominant feature, with variable gastrointestinal and urinary symptoms in a minority of patients. The data are summarised in Table 4 and illustrated in Figure 4.

Table 4: Distribution of acute pancreatitis patients based on clinical manifestations

Clinical Manifestations	Number of Patients	Percentage (%)
Abdominal pain	75	93.75
Vomiting	30	37.50
Constipation	8	10.00
Burning micturition	6	7.50
Fever	2	2.50

Diarrhoea	1	1.25
Total	**80**	**100**

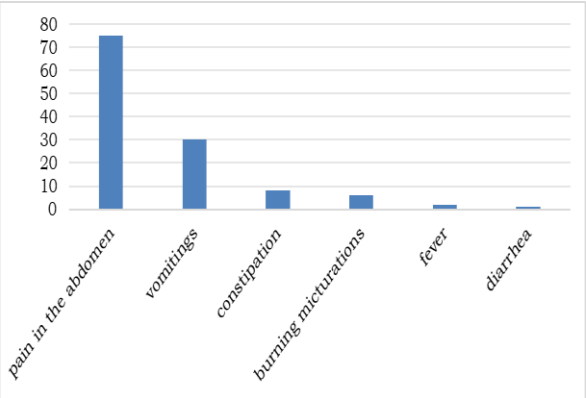

Fig.4: Bar graph showing distribution of patients based on clinical manifestations

Treatment Modalities Used in Acute Pancreatitis

The management of acute pancreatitis in this cohort of 80 patients mainly involved supportive measures (Table 5). All patients (100%) received intravenous fluid resuscitation, which served as the cornerstone of therapy. Analgesics were given to 97.5% of patients, with opioids (tramadol/morphine) used in 62.5% and NSAIDs/paracetamol in 35%, depending on pain severity. Antiemetics were prescribed to 40% of cases for symptomatic relief of vomiting, while proton pump inhibitors (PPIs) were administered to 50% of patients to decrease gastric acid secretion and prevent mucosal injury.

Nutritional support was provided in 56.25% of cases, with initial nil per oral (NPO) and intravenous fluids in 56.25%, followed by enteral feeding (25%) and parenteral nutrition (6.25%) for patients unable to tolerate oral intake. Antibiotics were used selectively in 25% of patients with suspected infection, while insulin therapy was initiated in 12.5% due to hyperglycaemia. Surgical or endoscopic interventions were required in 6.25%, including ERCP for gallstone pancreatitis (3.75%) and drainage of pseudocyst or necrosis (2.5%).

Table 5: Treatment modalities used in acute pancreatitis

Treatment Modality	Number of Patients	Percentage (%)
Intravenous fluid resuscitation	80	100
Analgesics	78	97.5
– Opioids (Tramadol/Morphine)	50	62.5
– NSAIDs (Diclofenac/Paracetamol)	28	35
Antiemetics	32	40
Proton Pump Inhibitors	40	50
Nutritional Support	45	56.25
– NPO with IV fluids	45	56.25
– Enteral feeding (nasojejunal)	20	25
– Parenteral nutrition	5	6.25
Antibiotics	20	25
Insulin therapy	10	12.5
Surgical/Endoscopic intervention	5	6.25
– ERCP for gallstone pancreatitis	3	3.75
– Drainage of pseudocyst/necrosis	2	2.5

Outcomes of Acute Pancreatitis

The outcomes of both clinical manifestations and therapeutic interventions are shown in Table 6. Abdominal pain, the main symptom, resolved in 96% of cases, although 4% experienced chronic or recurrent pain. Vomiting decreased in 93.3%, while constipation improved in 87.5%. Burning micturition, fever, and diarrhoea resolved entirely in all affected patients.

Analgesic therapy was effective in 97.4% of patients, with only 2.6% reporting persistent pain. Nutritional support was successful in most cases, although 11.1% required prolonged parenteral nutrition. Antibiotics controlled infections in 90%, but 10% progressed to necrosis or sepsis. Insulin therapy corrected hyperglycaemia in 80%, while 20% experienced persistent fluctuations. Both ERCP and drainage procedures were successful in all indicated cases.

Overall, 81.2% of patients were discharged within 7–10 days, while 18.8% required extended admission due to complications. The survival rate was 97.5%, with mortality in 2 patients (2.5%) from severe necrotising pancreatitis.

Table 6: Outcomes of acute pancreatitis

Category	Parameter	Patients (n)	Positive Outcome (n, %)	Negative Outcome (n, %)
Clinical Manifest	Abdominal pain	75	72 (96%)	3 (4%)

ations	Vomiting	30	28 (93.3%)	2 (6.7%)
	Constipation	8	7 (87.5%)	1 (12.5%)
	Burning micturition	6	6 (100%)	0 (0%)
	Fever	2	2 (100%)	0 (0%)
	Diarrhoea	1	1 (100%)	0 (0%)
Treatment Outcomes	Pain relief (analgesics)	78	76 (97.4%)	2 (2.6%)
	Nutritional tolerance	45	40 (88.9%)	5 (11.1%)
	Antibiotic therapy	20	18 (90%)	2 (10%)
	Insulin therapy	10	8 (80%)	2 (20%)
	ERCP	3	3 (100%)	0 (0%)
	Drainage procedures	2	2 (100%)	0 (0%)
Overall Outcomes	Hospital stay	80	65 (81.2%)	15 (18.8%)
	Mortality	80	78 (97.5%)	2 (2.5%)

Conclusion

This study demonstrated that acute pancreatitis is most commonly associated with alcohol consumption, gallstone disease, and hypertriglyceridemia, with abdominal pain being the hallmark symptom. Supportive management, particularly early intravenous fluid resuscitation, adequate analgesia, nutritional support, and selective use of antibiotics and endoscopic interventions, resulted in favorable outcomes. The majority of patients recovered within 7–10 days, and the overall mortality rate was low (2.5%), indicating that adherence to guideline-based practices significantly improves prognosis in acute pancreatitis.

Limitations and Recommendations

This single-center study with a small sample size and exclusion of certain patient groups limits generalizability and may introduce bias. Still, the findings highlight the importance of early diagnosis, supportive care (fluids, analgesia, nutrition), and restricting antibiotics to proven infections. Lifestyle modifications such as alcohol abstinence, dietary control, and metabolic management are vital to prevent recurrence, while larger multi-center studies with long-term follow-up are needed to strengthen treatment strategies

Funding

Nil

Conflict of Interest

The authors declare that there are no conflicts of interest regarding the publication of this paper.

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Ethical Statement

The study was approved by the Institutional Ethics Committee of SVS Medical College and Hospital, Mahabubnagar (Reference No.: IEC/DHR-01/(02/04)/2025/021/4).

Author Contributions

Rumana Khanam conceptualized and designed the study. Gajjala Sahithya, Musangi Sai Chandana, Errolla Jayanthi, Kattambai Hareesh, Shazia Tanvi, and Amena Firdouse contributed to data collection, literature review, and manuscript drafting. Rumana Khanam supervised the research, performed data interpretation, and critically revised the manuscript. All authors read and approved the final version of the manuscript.

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