e-ISSN: 0976-822X, p-ISSN:2961-6042

Available online on http://www.ijcpr.com/

International Journal of Current Pharmaceutical Review and Research 2024; 16(1); 1012-1016

Original Research Article

Assessment of Clinical and Immediate Hospital Outcome of Acute Pancreatitis Patients: An Observational Study

Pankaj Kumar[1], Abilesh Kumar[2]

[1]SMO (specialist medical officer) Department of Medicine, Sadar Hospital, Bhagalpur, Bihar, India

[2]Professor and HOD, Department of Medicine, JLNMCH, Bhagalpur, Bihar, India

Received: 10-12-2023 / Revised: 04-01-2024 / Accepted: 22-01-2024
Corresponding Author: Dr. Pankaj Kumar
Conflict of Interest: Nil

Abstract

Aim: The study was designed to assess the clinico-pathological profile and to estimate immediate hospital outcome of acute pancreatitis patients admitted into a tertiary care hospital.

Methods: This research was conducted in the Department of Medicine, JLNMCH, Bhagalpur, Bihar, India, for a period of one year. Obtained informed written permission from the patient or their family members. The research was conducted using a cross-sectional observational design. A total of 100 participants were included in the research.

Results: Among 100 patients, the average age was 42.5±11.3 years. The oldest was 68 and the youngest 22. Most patients (40%) were 31-40 years old. All patients reported stomach discomfort. 45% vomited and 32% experienced fever. Pain was most frequent in the epigastric area (75%), with back radiation in 20%. Pain was severe and painful in 75%. Leukocytosis and elevated C-reactive protein were seen in all cases. Low calcium was found in 35% of patients. Hospital stays were from 3 to 16 days, and oral nothing was 2 to 10 days.

Conclusion: Acute pancreatitis sufferers usually have stomach discomfort, distension, and anorexia. Gall stones were the most prevalent cause, however many patients had no known reason. Epigastric pain with back radiation.

Keywords: Acute pancreatitis, Clinico-pathological profile, Gallstone pancreatitis, Hospital outcome

Introduction

Acute pancreatitis (AP) is the condition when the pancreatic tissue becomes inflamed. This inflammation is characterized by swelling and death of the tissue due to the self-digestion induced by the glandular enzymes of the pancreas. This may result in failure of many organs or even death. [1] Over the last several decades, significant progress has been made in the intensive treatment of patients with acute pancreatitis (AP) owing to its strong link with severe illness and death. [2] According to the data from India, there are no multicentric studies available. Only occasional data were evaluated, therefore it was not possible to determine the precise occurrence. The incidence was derived by computing the number of patients hospitalized at various tertiary care facilities throughout the whole nation. [3]

In order to effectively treat and prevent the condition from recurring, it is necessary to determine its underlying cause. Alcohol and gallstones are the primary causes in 80% of cases, with alcoholic pancreatitis being more prevalent. [4-7] According to recent guidelines, it is advised to determine the cause of acute pancreatitis (AP) in at least 80% of patients, with no more than 20% being categorized as idiopathic. [8] To effectively plan the treatment and administration of care for AP, it is crucial to have a comprehensive understanding of both the cause and the extent of the condition.

Pancreatitis may range in severity from mild and self-limiting to severe and even lethal. [9] Severity is a crucial factor in determining the likelihood of death and the need for intensive care, nutritional assistance, immediate surgical intervention, and the use of antibiotics. [8] Several grading systems have been developed for acute pancreatitis, including the Atlanta Criteria [9], which considers evidence of organ failure and/or local consequences, and the Acute Physiology And Chronic Health Evaluation II (APACHE II). [10] The Ranson et al [11] and modified Glasgow [12] ratings evaluate systemic inflammation and laboratory data, whereas the Balthazar Score assesses computed tomography (CT) findings. [13] The contrast-enhanced scoring method is effective for diagnosing and predicting outcomes because it enhances the early detection of wide regions of necrosis inside the pancreatic region with a high sensitivity (100%) and accuracy

(87%).Thirteen
Severe acute pancreatitis (AP) was seen in 20% of individuals with AP, resulting in death rates ranging from 10% to 30%. [7] Patients diagnosed with acute pancreatitis (AP) are at a significantly increased risk of experiencing health issues resulting from local consequences. These complications may include the formation of pancreatic pseudocysts, the accumulation of fluid in the pleural cavity (pleural effusion), the collection of fluid in the peritoneal cavity (peritoneal collection), and the development of pancreatic necrosis with an additional infection. It is important to note that pancreatic necrosis with superimposed infection has the greatest fatality rate, with around 30% of affected individuals succumbing to this condition. [13] The research aimed to evaluate the clinical and pathological characteristics and determine the immediate hospital fate of patients with acute pancreatitis who were admitted to a tertiary care hospital.

Materials and Methods

This research was conducted in the Department of Medicine, JLNMCH, Bhagalpur, Bihar, India for a period of one year. Obtained informed written permission from the patient or their family members. The research was conducted using a cross-sectional observational design. A total of 100 participants were included in the research.

Methodology

The categorization of the severity of acute pancreatitis was established as follows- Mild acute pancreatitis (AP) refers to cases where there is no organ failure (OF). Moderate acute pancreatitis (AP) refers to cases where there is no organ failure (OF), but there are local complications present. Severe acute pancreatitis (SAP) may be categorized into two subtypes: fulminant and sub fulminant. Fulminant SAP refers to cases where organ failure (OF) occurs within 72 hours, whereas sub fulminant SAP refers to cases where OF occurs between 4-7 days. Late SAP refers to the occurrence of infected pancreatic necrosis (IPN) after a period of 7 days. Critical Action Point: Consistent Operational Failure + Inadequate Problem Notification. After being admitted, the patient was diagnosed with acute pancreatitis based on the Atlanta classification. Patients were then categorized into mild, moderate, and severe acute pancreatitis using the Glasgow scoring system, CT severity index (CTSI), and complete hemogram. Contrast-enhanced computed tomography (CECT) of the abdomen was performed when necessary. Statistical analysis was done by Chi Squared test and t-test. Data was analyzed by the SPSS 22.

Results

Table 1: Age distribution of study population

Age groups	N%
18-30 years	9 (9)
31-40 years	40 (40)
41-50 years	28 (28)
51-60 years	15 (15)
>60 years	8 (8)

Among 100 patients, mean age was 42.5 ±11.3 years. Highest age was 68 years and minimum age was 22 years. Majority of the patients (40%) were from age group 31-40 years.

Table 2: Clinical profile of patients with acute pancreatitis of study population

Clinical features	N	%
Symptoms		
Abdominal pain	100	100
Vomiting	45	45
Fever	32	32
Nausea	17	17
Anorexia	48	48
Signs		
Abdominal tenderness	100	100
Anaemia	58	58
Abdominal distension	45	45
Dehydration	44	44
Paralytic ileus	35	35
Pleural effusion	30	30
Jaundice	18	18
Respiratory distress	17	17

All of the patients complained abdominal pain. 45% patients had vomiting and 32% had fever.

Table 3: Character of abdominal pain in the studied patients

Abdominal pain	N	%
Location		
Epigastric	75	75
Diffuse	25	25
Character		
Severe agonizing	75	75
Dull aching	24	24
Radiation to back	20	20
Relieved by forward bending	55	55
Exacerbated by taking heavy meal	50	50
Total duration of pain: Mean ± SD (days)	3.88±1.55	

The common location of pain was in epigastric region (75%) with radiation to back in 20% patients. Pain was severe agonizing in nature in 75% cases.

Table 4: Laboratory findings in patients with acute pancreatitis

Lab parameters	Value
Mean amylase (IU/L)	577.12±292.92
Mean lipase (IU/L)	464.04±303.26
CRP (mg/L)	113.84±44.91
Raised	100 (100%)
Mean calcium (mg/dL)	8.66±1.28
Hypocalcemia	35 (35%)
Normal Calcium	65 (65%)
Leukocytosis	100 (100%)

Laboratory findings of study population showed that, all the patients had leukocytosis and raised C-reactive protein. Hypocalcemia was prevalent in 35% patients.

Table 5: Clinical course in acute pancreatitis

Clinical course and outcome	Mean	Std. Deviation	Min- Max
Hospital stays (days)	8.97	3.65	3-16
NPO (days)	4.89	1.92	2-10
Time to alleviation of symptoms (days)	3.89	1.65	1-7

Total duration of hospital stays was found 3 to 16 days, and nothing per oral was found 2 to 10 days.

Table 6: Association between APACHE-II and Glasgow score with outcome of patients with acute pancreatitis

APACHE-II	Outcome		P Value
	Alive	Died	
<8 (Mild)	**70**	**0**	**<0.001**
≥8 (Severe)	**10**	**20**	
Glasgow score			
<3 (Mild)	**70**	**0**	**0.001**
≥3 (Severe)	**10**	**20**	

Association between APACHE-II and outcome of the patients with acute pancreatitis showed that death was significantly more ($p<0.001$) prevalent in patients with APACHE-II ≥8. Association between Glasgow score and outcome of the patients with acute pancreatitis showed that death was significantly more ($p<0.001$) prevalent in patients with Glasgow score ≥3.

Table 7: Association between mean serum biochemical parameters and outcome of patients with acute pancreatitis

Biochemical parameters	Outcome		P Value
(Mean ± SD)	Alive	Died	
Serum amylase (IU/L)	538.86±276.98	764.14±304.53	0.003
Serum lipase (IU/L)	445.55±306.89	554.40±275.05	0.166
CRP (mg/L)	102.12±38.58	171.11±25.62	<0.001
Serum calcium (mg/dL)	9.03±1.01	6.82±0.76	<0.001

Mean serum amylase and CRP level was significantly higher in dead patients (p=0.003 and <0.001) with acute pancreatitis. Serum lipase level is higher in dead patients but the study was nonsignificant (p=0.166). Mean serum calcium level was significantly higher in alive patients than dead (p<0.001).

Discussion

Acute pancreatitis (AP) is a serious inflammation of the pancreas characterized by abrupt and intense abdominal pain. It has a high morbidity and death rate, especially when significant local and systemic consequences are present. It is the leading gastrointestinal reason for hospitalization, often resulting in significant financial costs. [15] The severe necrotizing variant of acute pancreatitis is a potentially fatal disorder with a high rate of illness. The risk of death may rise, particularly if there is bacterial infection of the pancreatic necrosis. Enhancing the result in the severe manifestation of the illness relies on promptly recognizing the severity of the disease and then providing targeted care to these high-risk individuals. Although there are several clinical (Ranson's criteria, APACHE II score, Glasgow scoring system) and radiological scoring systems (CTSI/Balthazar scoring system) available, accurately predicting the most effective treatment options and prognosis for acute necrotizing pancreatitis remains mysterious. These score systems may serve as triaging tools for determining suitable management. Acute pancreatitis (AP) is a prevalent condition, affecting 5-80 individuals per 100,000 population. The occurrence of new cases has been consistently rising in recent times. [16] The majority of individuals with acute pancreatitis demonstrate spontaneous remission without any sequelae. However, a subset of patients, ranging from 10% to 20%, encounter a severe attack that carries an elevated risk of death, reaching up to 25%. [17] The research included patients aged between 22 and 68 years, with the highest occurrence seen in the age group of 31-40 years (peak incidence) followed by 41-50 years (28.3%). The average age was 42.5±11.3 years. This is similar to the research conducted by Raghu M G et al. and Negi et al., where the average age was 42.9±15.9 years and 42.89 ± 12.53 years, respectively. [18,19] The primary sign of acute pancreatitis is abdominal discomfort. It is present in 95% of patients and often affects the whole upper abdomen. All patients included in this research reported experiencing stomach discomfort, with a majority (75%) specifically mentioning epigastric pain. Out of the total, 20% of them had radiation treatment on their back. In 50% of instances, discomfort was worse by consuming a large meal, whereas in 55% of cases, the pain was alleviated by leaning forward. The examination of serum amylase indicated a mean value of 577.12±292.92 IU/L, which is significantly elevated compared to the normal range. Similarly, the average serum lipase level was 464.04±303.26 IU/L, which exceeds the normal threshold. Elevated levels of C-reactive protein (CRP) were seen in all instances. It is an acute phase protein that is elevated in many conditions such as major trauma, sepsis, and acute pancreatitis. C-reactive protein (CRP) is not beneficial for diagnosing acute pancreatitis, but it significantly increases in cases of pancreatic necrosis. This rise in CRP might serve as an early marker to assess the severity of pancreatitis. A CRP level greater than 150 mg/L at 48 hours is indicative of a severe illness. Approximately 34% of patients have a decrease in serum calcium levels, which indicates the presence of severe pancreatitis. The study found a substantial association between high APACHE-II scores and high Glasgow scores and patient mortality. The average duration of hospitalization was 8.97±3.65 days, and the average period of nothing by mouth (NPO) was 4.89±1.92 days. The longer the duration of hospitalization and fasting (NPO), the more serious the condition. However, the fatality rate for acute pancreatitis is generally modest, estimated to be under 1%. [21] The likelihood of dying becomes greater when individuals get older, develop more health conditions, and experience severe illness. According to a recent meta-analysis, patients who had both organ failure and septic necrosis had the greatest risk of mortality. [22] In this investigation, a mortality rate of 20% was observed. This is around double the results reported by Ahad A. and his colleagues. [23]

Conclusion

Acute pancreatitis sufferers usually have stomach discomfort, distension, and anorexia. Gall stones were the most prevalent cause; however, many patients had no known reason. Epigastric pain with back radiation. Over 60% of patients had mild

pancreatitis by APACHE II and Glasgow scores. Hospital stays averaged 9 days and oral nothing was 5 days. Overall mortality was 20%.

References

1. Sakorafas GH, Tsiotou AG. Etiology and pathogenesis of acute pancreatitis: Current concepts. J Clin Gastroenterol. 2000;30:343–5 6.
2. McKay CJ, Imrie CW. The continuing challenge of early mortality in acute pancreatitis. Br J Surg. 2004;91:1243–4.
3. Tandon RK. Management of acute pancreatitis: Indian guidelines and protocols. Med Update. 2013;23:267–70.
4. Kingsnorth A, O'Reilly D. Acute pancreatitis. BMJ. 2006;332:1072–6.
5. Gislason H, Horn A, Hoem D, Andren-Sandberg A, Imsland AK, Soreide O, et al. Acute pancreatitis in Bergen, Norway. A study on incidence, etiology and severity. Scand J Surg. 2004;93:29–33.
6. Baig SJ, Rahed A, Sen S. A prospective study of the aetiology, severity and outcome of acute pancreatitis in Eastern India. Trop Gastroenterol. 2008;29:20–2.
7. Frey CF, Zhou H, Harvey DJ, White RH. The incidence and case-fatality rates of acute biliary, alcoholic, and idiopathic pancreatitis in California, 1994-2001. Pancreas. 2006;33:336 –44.
8. Working Party of the British Society of Gastroenterology; Association of Surgeons of Great Britain and Ireland; Pancreatic Society of Great Britain and Ireland; Association of Upper GI Surgeons of Great Britain and Ireland. UK guidelines for the management of acute pancreatitis. Gut. 2005;54(Suppl 3):i1–9.
9. 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 definition by international consensus. Gut. 20 13;62:102–11.
10. Knaus WA, Draper EA, Wagner DP, Zimmerman JE. APACHE II: A severity of disease classification system. Crit Care Med. 1985;13:818–29.
11. Ranson JH, Rifkind KM, Turner JW. Prognostic signs and nonoperative peritoneal lavage in acute pancreatitis. Surg Gynecol Obstet. 1976;143:209–19.
12. Blamey SL, Imrie CW, O'Neill J, Gilmour WH, Carter DC. Prognostic factorsin acute pancreatitis. Gut. 1984;25:1340–6.
13. Balthazar EJ, Robinson DL, Megibow AJ, Ranson JH. Acute pancreatitis: Value of CT in establishing prognosis. Radiology. 1990; 174 :331–6.
14. Peery AF, Dellon ES, Lund J, Crockett SD, McGowan CE, Bulsiewicz WJ, Gangarosa LM, Thiny MT, Stizenberg K, Morgan DR, Ringel Y. Burden of gastrointestinal disease in the United States: 2012 update. Gastroenterology. 2012 Nov 1;143(5):1179-87.
15. Silva-Vaz P, Abrantes AM, Castelo-Branco M, Gouveia A, Botelho MF, Tralhão JG. Murine models of acute pancreatitis: a critical appraisal of clinical relevance. International journal of molecular sciences. 2019 Jun 7;20 (11):2794.
16. Corfield AP, Cooper MJ, & Williamson RCN. Acute pancreatitis: A lethal disease of increasing incidence, Gut 1985;26(7):724–29.
17. Yeung YP, Lam BYK & Yip AWC APACHE system is better than Ranson system in the prediction of severity of acute pancreatitis. Hepatobiliary & pancreatic diseases international/ : HBPD INT 2006;5(2):294–99.
18. Negi N, Mokta J, Sharma B, Sharma R, Jhobta A, Bodh V & Ranjan A. Clinical profile and outcome of acute pancreatitis: A hospital-based prospective observational study in subhimalayan state', Journal of Association of Physicians of India 2018b; 66: 22–24.
19. Raghu MG, Wig JD, Kochhar R, Gupta D, Gupta R, Yadav TD, Agarwal R, Kudari AK, Doley RP & Javed A. Lung complications in acute pancreatitis, Journal of the Pancreas 2007;8(2)177–85.
20. Hasan M, Laila S, & Mamun M. Clinical Pattern and Management of Acute Pancreatitis-Our Experience, Journal of Bangladesh College of Physicians and Surgeons 2014;31 (3):122–27.
21. Peery AF, Dellon ES, Lund J, Crockett SD, McGowan CE, Bulsiewicz, WJ. Burden of Gastrointestinal Disease in the United States: 2012 Update, Gastroenterology 2012;143 (5):1 179-87.
22. Petrov MS, Shanbhag S, Chakraborty M, Phillips ARJ & Windsor JA. Organ failure and infection of pancreatic necrosis as determinants of mortality in patients with acute pancreatitis, Gastroenterology. Elsevier Inc. 2010; 139(3):813–20.
23. Ahmed KU, Ahad MA, Alim MA, & Ekram AS. Clinical profile of acute pancreatitis in a teaching hospital, Bangladesh Medical Journal Khulna 2017;49 (1–2):7–12.