



INSIGHTS INTO THE CLINICAL SPECTRUM AND DIAGNOSTIC DILEMMAS OF ACUTE PANCREATITIS: A NARRATIVE REVIEW

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ABSTRACT

Acute pancreatitis (AP) is a severe inflammatory disorder of the pancreas, precipitated predominantly by gallstones or excessive alcohol consumption. It manifests with intense upper abdominal pain, nausea, vomiting, and fever, potentially escalating to systemic inflammation and severe complications like organ failure. The urgency of timely management is crucial to mitigate life-threatening scenarios and prevent long-term consequences such as chronic pancreatitis or pancreatic necrosis. Management strategies focus on immediate supportive care, including hydration, pain control, and nutritional support, complemented by interventions to address blockages. Early diagnosis and targeted treatment protocols are vital to improve patient outcomes and reduce morbidity and mortality associated with this acute condition.

KEYWORDS : Acute Pancreatitis, Gallstones, Alcohol Consumption, Pancreatic Inflammation, Systemic Complications.

INTRODUCTION

Acute pancreatitis, a severe inflammatory condition of the pancreas, often arises suddenly and can be life-threatening if not managed promptly. It primarily occurs due to gallstones blocking the pancreatic duct or excessive alcohol consumption. Characterized by symptoms such as severe upper abdominal pain that radiates to the back, nausea, vomiting, and fever, the condition can escalate to systemic inflammation and other severe complications. Effective treatment involves hydration, pain management, and interventions to remove blockages, alongside monitoring and managing potential complications like organ failure. Early diagnosis and comprehensive management are essential to improve outcomes and prevent long-term effects such as chronic pancreatitis or pancreatic necrosis (1,2).

METHODS

This narrative review on acute pancreatitis involved a systematic search across four major databases: PubMed, Scopus, Embase, and Web of Science. We utilized specific keywords such as "acute pancreatitis," "pancreatic inflammation," "gallstone pancreatitis," and "alcohol-induced pancreatitis" to capture relevant studies published up to March 2024.

The inclusion criteria focused on articles that provided insights into the pathophysiology, clinical management, and outcomes of acute pancreatitis. Initially, we identified 156 articles, which were then screened based on their titles and abstracts to ensure relevance and rigor. Based on criteria such as study design and focus, leaving 15 high-quality articles that were included in the final review. This methodology allowed for a comprehensive analysis of contemporary diagnostic approaches and therapeutic interventions for acute pancreatitis, offering a broad perspective on effective management strategies and patient care advancements.

Clinical manifestations

Acute pancreatitis manifests primarily as sudden and severe abdominal pain, typically centered in the upper abdomen and often radiating to the back.

This pain, which can vary in intensity, is usually accompanied by nausea and vomiting, significantly impacting patient comfort and hydration status. The abdomen may feel tender upon examination, and patients often report an increase in pain intensity upon eating, leading to anorexia and weight loss in prolonged cases (3).

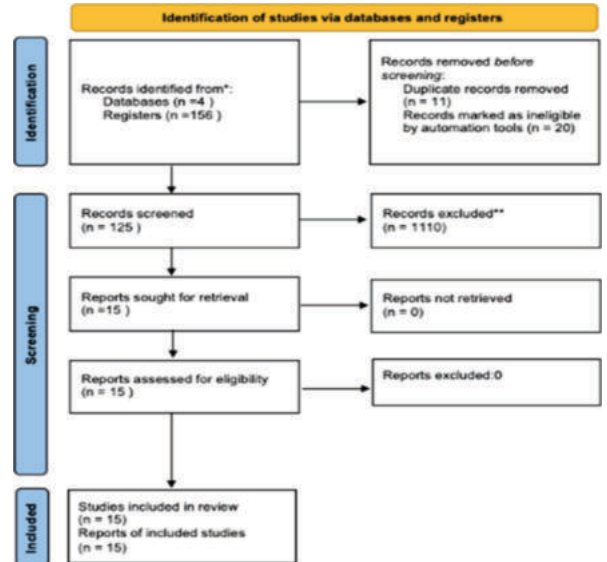


Figure 1. PRISMA

Fever is another common symptom, indicative of the inflammatory process within the pancreas. As the condition progresses, patients may develop signs of systemic inflammation, including tachycardia, hypotension, and respiratory distress. In severe cases, acute pancreatitis can lead to the development of systemic inflammatory response syndrome (SIRS), which can further escalate into septic shock if bacterial infection occurs (4).

Jaundice may also appear, particularly if the inflammation or associated swelling impinges on the common bile duct, leading to obstructive jaundice. In advanced stages, patients might exhibit Cullen's sign (bluish discoloration around the umbilicus) or Grey Turner's sign (bluish discoloration along the flanks), which are indicative of severe pancreatitis with retroperitoneal or intra-abdominal bleeding (5).

Laboratory findings typically show elevated levels of pancreatic enzymes in the blood, such as amylase and lipase, which serve as diagnostic markers for the condition. Elevated white blood cell counts, increased C-reactive protein levels, and abnormalities in liver function tests might also be observed, reflecting the severity of inflammation and its systemic effects (6).

These clinical presentations highlight the need for prompt diagnosis and management to prevent complications such as pancreatic necrosis, pseudocysts, and chronic pancreatitis, which can have long-term implications on patient health and quality of life.

Diagnosis

The diagnosis of acute pancreatitis is primarily clinical but relies heavily on laboratory tests and imaging studies to confirm the presence of inflammation and assess its severity. The initial diagnostic step usually involves evaluating the patient's symptoms and medical history, particularly focusing on factors like recent excessive alcohol consumption, history of gallstones, or medication use that could precipitate the condition (7).

Laboratory Tests

Serum Amylase and Lipase:

The most crucial diagnostic tests are serum amylase and lipase levels. An elevation in these enzymes, particularly lipase, which is more specific to the pancreas, is indicative of pancreatitis. Levels more than three times the upper limit of normal are generally considered diagnostic (8).

Liver Function Tests (LFTs):

These are conducted to check for elevated bilirubin levels and other liver enzymes that might indicate gallstone-related complications or assess for alcoholic pancreatitis (8).

Blood Tests:

Complete blood count (CBC) may show an increased white blood cell count, a common sign of inflammation. C-reactive protein (CRP) and erythrocyte sedimentation rate (ESR) can also be elevated and are useful for assessing the severity of inflammation (8).

Imaging Techniques

Abdominal Ultrasound:

This is typically the first imaging test used to identify gallstones, biliary sludge, or other causes of ductal obstruction that could lead to pancreatitis. It can also help in assessing the pancreas indirectly (9).

Computed Tomography (CT) Scan:

A CT scan of the abdomen is more detailed and can visualize the extent of pancreatic inflammation, detect pancreatic necrosis, and other complications such as pseudocysts. It is crucial for planning further management, especially in severe cases (9,10).

Magnetic Resonance Imaging (MRI):

MRI, including MR Cholangiopancreatography (MRCP), is beneficial for visualizing the biliary tree and pancreatic ducts without the need for invasive procedures. It is particularly useful if there is a suspicion of choledocholithiasis or in chronic pancreatitis to assess ductal anatomy (10).

Endoscopic Evaluation

Endoscopic Retrograde Cholangiopancreatography (ERCP):

While therapeutic in nature, ERCP can be diagnostic in identifying obstructions within the bile or pancreatic ducts and is employed when there is a high suspicion of obstructive jaundice or biliary pancreatitis (11).

A comprehensive approach combining clinical assessment with these diagnostic tools allows for accurate diagnosis, severity assessment, and the formulation of an effective management plan for patients with acute pancreatitis. This holistic diagnostic approach ensures that complications can be anticipated and managed promptly, improving patient outcomes.

Treatment of Acute Pancreatitis

The management of acute pancreatitis (AP) focuses on supportive care, addressing complications, and treating the underlying cause. The initial approach includes several non-invasive methods aimed at stabilizing the patient and mitigating the effects of pancreatic inflammation.

Initial Management and Supportive Care

Fluid Resuscitation:

Early aggressive hydration with intravenous fluids within the first 24 to 48 hours is crucial, especially for preventing hypovolemia and supporting organ perfusion, which can be compromised by fluid shifts in severe pancreatitis (12).

Pain Management:

Pain in AP can be severe and requires effective analgesia. Non-opioid analgesics are first-line; however, opioids may be necessary for adequate pain control (12,13).

Nutritional Support:

Enteral nutrition is preferred over parenteral nutrition and should be initiated early, typically within 48 hours of admission if the patient cannot tolerate oral intake. This approach has been shown to reduce the risk of infections and maintain gut integrity (13).

Monitoring and Managing Complications

Necrotizing Pancreatitis:

About 20% of AP cases can progress to necrotizing pancreatitis, where parts of the pancreas die due to severe inflammation. This condition may require surgical intervention to remove necrotic tissue or drainage of associated fluid collections (14).

Infection Control:

Antibiotics are not recommended routinely in AP unless there is evidence of infection (e.g., infected pancreatic necrosis). In such cases, culture-specific antibiotic therapy is initiated (14).

Endoscopic and Surgical Interventions

Endoscopic Retrograde Cholangiopancreatography (ERCP):

This is indicated for patients with gallstone pancreatitis who have concurrent cholangitis or persistent biliary obstruction (15).

Cholecystectomy:

For patients with gallstone pancreatitis, cholecystectomy is typically recommended during the same hospital admission or soon after recovery to prevent recurrence (15).

Drainage Procedures:

In cases of large pseudocysts or abscesses, endoscopic or percutaneous drainage may be required.

Addressing Underlying Causes

Alcohol Cessation:

In alcohol-induced pancreatitis, cessation of alcohol intake and referral to alcohol cessation programs are essential to prevent recurrence (15).

Management of Hypertriglyceridemia:

If AP is due to hypertriglyceridemia, lipid-lowering strategies are implemented (15).

CONCLUSION

Acute pancreatitis requires a multidimensional approach to treatment, emphasizing rapid clinical assessment, supportive care, and specific interventions based on the underlying cause. Timely fluid resuscitation, pain management, and nutritional support form the cornerstone of initial management, while monitoring for complications dictates the

subsequent steps in patient care. Advanced interventions like ERCP and cholecystectomy are reserved for specific cases such as gallstone pancreatitis. Ultimately, addressing the root cause, whether it be gallstones or lifestyle factors like alcohol use, is essential for preventing recurrence and improving long-term outcomes. This comprehensive treatment protocol ensures that the severity of AP is managed effectively, reducing the risk of chronic complications and mortality.

REFERENCES

1. Neoptolemos JP, Kemppainen EA, Mayer JM, Fitzpatrick JM, Raraty MG, Slavin J, Beger HG. Early prediction of severity in acute pancreatitis by urinary trypsinogen activation peptide: a multicentre study. *Lancet*. 2000;355(9219):1955-1960. doi:10.1016/S0140-6736(00)02324-0.
2. Frossard JL, Steer ML, Pastor CM. Acute pancreatitis. *Lancet*. 2008;371(9607):143-152. doi:10.1016/S0140-6736(08)60107-5.
3. Banks PA, Bollen TL, Dervenis C, et al. Classification of acute pancreatitis—2012: revision of the Atlanta classification and definitions by international consensus. *Gut*. 2013;62(1):102-111. doi:10.1136/gutjnl-2012-302779
4. Peery AF, Crockett SD, Barritt AS, et al. Burden of gastrointestinal, liver, and pancreatic diseases in the United States. *Gastroenterology*. 2015;149(7):1731-1741.e3. doi:10.1053/j.gastro.2015.08.045.
5. Whitcomb DC. Clinical practice. Acute pancreatitis. *N Engl J Med*. 2006;354(20):2142-2150. doi:10.1056/NEJMcp054958.
6. Yadav D, Lowenfels AB. The epidemiology of pancreatitis and pancreatic cancer. *Gastroenterology*. 2013;144(6):1252-1261. doi:10.1053/j.gastro.2013.01.068.
7. Tenner S, Baillie J, DeWitt J, Vege SS. American College of Gastroenterology guideline: management of acute pancreatitis. *Am J Gastroenterol*. 2013;108(9):1400-1415. doi:10.1038/ajg.2013.218.
8. Yadav D, Agarwal N, Pitchumoni CS. A critical evaluation of laboratory tests in acute pancreatitis. *Am J Gastroenterol*. 2002;97(6):1309-1318. doi:10.1111/j.1572-0241.2002.05802.x.
9. Bollen TL, Singh VK, Maurer R, Repas K, van Es HW, Banks PA. Comparative evaluation of the modified CT severity index and CT severity index in assessing severity of acute pancreatitis. *AJR Am J Roentgenol*. 2011;197(2):386-392. doi:10.2214/AJR.10.4340.
10. Forsmark CE, Baillie J. AGA Institute technical review on acute pancreatitis. *Gastroenterology*. 2007;132(5):2022-2044. doi:10.1053/j.gastro.2007.03.055.
11. Adler DG, Lichtenstein D, Baron TH, et al. The role of endoscopy in patients with acute pancreatitis. *Gastrointest Endosc*. 2015;81(5):1138-1151. doi:10.1016/j.gie.2014.09.048.
12. Vege SS, DiMagno MJ, Forsmark CE, Martel M, Barkun AN. Initial medical treatment of acute pancreatitis: American Gastroenterological Association Institute Technical Review. *Gastroenterology*. 2018;154(4):1103-1139. doi:10.1053/j.gastro.2018.01.032.
13. Warndorf MG, Kurtzman JT, Bartel MJ, et al. Early fluid resuscitation reduces morbidity among patients with acute pancreatitis. *Clin Gastroenterol Hepatol*. 2011;9(8):705-709. doi:10.1016/j.cgh.2011.04.026.
14. Working Group IAP/APA Acute Pancreatitis Guidelines. IAP/APA evidence-based guidelines for the management of acute pancreatitis. *Pancreatol*. 2013;13(4 Suppl 2):e1-15. doi:10.1016/j.pan.2013.07.063.
15. Gardner TB, Vege SS, Chari ST, Petersen BT, Topazian MD, Clain JE. The role of endoscopic therapy in the management of acute pancreatitis. *Gastrointest Endosc*. 2014;79(6):973-982. doi:10.1016/j.gie.2013.10.039.