



ACUTE CHOLANGITIS: A NARRATIVE REVIEW

Germán David Guerrero Gómez

MD. Universidad Libre

ABSTRACT

Acute cholangitis is a potentially life-threatening infection resulting from bile duct obstruction, commonly caused by gallstones, tumors, or strictures. This condition manifests through the classic Charcot's triad of fever, jaundice, and right upper quadrant pain, seen in approximately 50-70% of patients. In severe cases, Reynold's pentad may also be observed, indicating a progression to septic shock, characterized by hypotension and altered mental status. This review highlights the importance of early and accurate diagnosis and intervention to prevent complications such as cholangiosepsis and liver abscesses. Diagnostic approaches largely rely on clinical assessment, laboratory tests showing leukocytosis and elevated bilirubin levels, and imaging studies like ultrasound and ERCP to confirm biliary obstruction. Treatment strategies include prompt administration of broad-spectrum antibiotics to control infection and procedures such as ERCP for obstruction relief. Supportive care and, if necessary, surgical interventions form part of comprehensive management to address severe manifestations and complications. This study underscores the critical need for rapid treatment response and tailored therapeutic strategies to improve outcomes in patients with acute cholangitis.

KEYWORDS : Acute Cholangitis, Charcot's Triad, ERCP, Biliary Obstruction, Septic Shock

INTRODUCTION

Acute cholangitis is a serious infection of the bile ducts that typically results from an obstruction within the biliary system. Commonly precipitated by gallstones blocking the bile flow, it can also be caused by tumors or strictures[1]. The infection is primarily due to bacteria ascending from the intestine, leading to inflammation and infection that, if left untreated, can escalate into systemic sepsis and become life-threatening[2]. The classic presentation of acute cholangitis includes Charcot's triad: fever, jaundice, and right upper quadrant abdominal pain. However, not all patients will present all three symptoms, and some may exhibit additional signs such as hypotension and mental confusion, which are part of Reynold's pentad indicating a more severe form of the disease[3].

Timely diagnosis and treatment are crucial to manage acute cholangitis effectively and to prevent severe complications such as cholangiosepsis, liver abscesses, and bile duct injuries[4]. Treatment strategies usually involve both the eradication of the infection using targeted antibiotics and the resolution of the biliary obstruction through endoscopic or surgical methods[5]. The approach to managing this condition must be swift and precise to ensure the best possible outcomes for the patient. As acute cholangitis can vary widely in its presentation and severity, healthcare providers must be vigilant and responsive to the evolving needs of each patient, making adjustments to treatment plans as necessary based on the clinical progression and response to initial therapies[6].

METHODS

This narrative review was conducted by systematically searching major databases including PubMed, Embase, BVSI, LILACS and the Cochrane Library for relevant studies published up to March 2024. The search strategy employed the use of keywords such as "acute cholangitis," "biliary infection," and "bile duct obstruction." Inclusion criteria were set to select studies that focused on adult human subjects, both retrospective and prospective, including randomized controlled trials, cohort studies, and case series that reported on the diagnosis, management, or outcomes of acute cholangitis. Exclusion criteria included studies on pediatric populations, animal research, and articles not available in English.

text articles were retrieved and reviewed for detailed evaluation. The references of selected articles were also reviewed to identify additional relevant studies that may not have been captured in the original database search. The quality of the studies was assessed using standard criteria, focusing on study design, sample size, rigor of outcome measurement, and the appropriateness of conclusions.

Finally, a total of 15 studies were included in this review after applying inclusion and exclusion criteria strictly. These selected studies provided a comprehensive overview of current knowledge on the clinical presentations, diagnostic approaches, and treatment modalities for acute cholangitis. Each study was summarized and critically appraised to highlight significant findings, strengths, and limitations, contributing to a nuanced understanding of the condition. The integration of these studies provides the basis for the discussions and recommendations presented in the subsequent sections of this review.

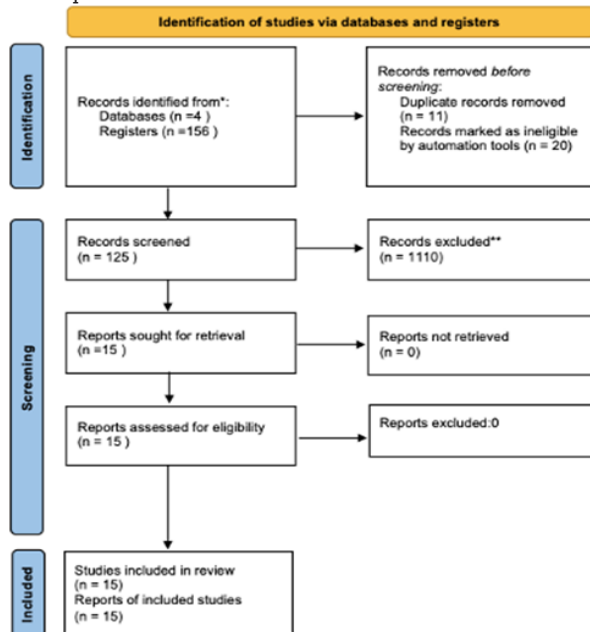


Figure 1. PRISMA.

Clinical Manifestations of Acute Cholangitis

Acute cholangitis presents a range of clinical symptoms that

The initial search yielded 150 articles, from which abstracts were screened for relevance to the topic. Following this, full-

reflect the severity and progression of the infection within the biliary system. The classic presentation, known as Charcot's triad, consists of fever, jaundice, and right upper quadrant pain. This triad is observed in about 50-70% of patients and serves as a critical diagnostic clue, particularly in the setting of known biliary disease or recent biliary manipulation[7].

Fever is usually one of the first symptoms and is caused by the body's immune response to the bacterial infection in the bile ducts. It may be accompanied by chills and rigors, indicating systemic infection. Jaundice results from the obstruction of bile flow, leading to the accumulation of bilirubin in the bloodstream. It manifests as yellowing of the skin and sclerae and is often a later sign compared to fever. The right upper quadrant pain is typically constant and may radiate to the back or right shoulder, reflecting irritation and inflammation of the diaphragm[8].

In more severe cases, patients may exhibit additional symptoms that constitute Reynold's pentad, which includes the three elements of Charcot's triad plus hypotension and altered mental status[9]. This pentad suggests the development of septic shock, a serious complication that requires immediate medical intervention. Hypotension in these patients is particularly concerning as it indicates systemic vasodilation and reduced organ perfusion, which can lead to multiple organ dysfunction if not promptly and effectively treated[10].

Other clinical manifestations may include a distended abdomen due to the inflamed gallbladder or bile duct, pruritus from bile salts depositing in the skin, and dark urine due to excess bilirubin excretion. Some patients may also experience pale stools if bile flow into the intestine is significantly obstructed. In cases of prolonged obstruction, patients might exhibit signs of vitamin K deficiency, such as easy bruising or bleeding, due to the malabsorption of fat-soluble vitamins[15].

Diagnosis of Acute Cholangitis

The diagnosis of acute cholangitis is primarily clinical, supported by laboratory findings and imaging studies that confirm the presence of biliary obstruction and infection[11]. Effective diagnosis hinges on recognizing the classic symptoms along with employing appropriate diagnostic tools to evaluate the underlying causes and complications of the condition.

Laboratory Tests:

Blood tests play a pivotal role in the diagnosis. Common findings include leukocytosis with a left shift, elevated bilirubin levels, and abnormal liver function tests, particularly alkaline phosphatase and gamma-glutamyl transpeptidase (GGT), which are indicative of cholestasis. C-reactive protein (CRP) and erythrocyte sedimentation rate (ESR) are typically elevated due to inflammation. Blood cultures are essential to identify the causative organism and guide antibiotic therapy, especially in severe cases where sepsis is suspected[12].

Imaging Studies:

Imaging is indispensable for confirming the diagnosis of acute cholangitis and identifying the cause of biliary obstruction. Ultrasound is the first-line imaging modality, offering a quick and non-invasive method to detect dilated bile ducts, stones, or a thickened gallbladder wall. However, it may not always pinpoint the exact location or nature of the obstruction. Therefore, further imaging with Magnetic Resonance Cholangiopancreatography (MRCP) or Endoscopic Retrograde Cholangiopancreatography (ERCP) may be warranted[13]. MRCP provides detailed images of the biliary and pancreatic ducts without the need for invasive techniques and is particularly useful in planning therapeutic

approaches. ERCP, while invasive, has the dual benefit of enabling both diagnosis and therapeutic intervention, such as stone removal or stenting[14].

Prompt and accurate diagnosis of acute cholangitis is essential for initiating timely treatment to alleviate symptoms, resolve the underlying obstruction, and prevent serious complications such as sepsis or chronic liver damage.

Treatment of Acute Cholangitis

The treatment of acute cholangitis aims to manage the infection and relieve the biliary obstruction. An effective therapeutic strategy typically includes antibiotics, drainage procedures, and supportive care[15].

Antibiotics:

Prompt initiation of broad-spectrum antibiotics is crucial to control the infection. The choice of antibiotics should cover common pathogens found in biliary infections, primarily gram-negative enteric bacteria and anaerobes. Empirical therapy often includes combinations such as a third-generation cephalosporin (e.g., ceftriaxone) plus metronidazole, or a fluoroquinolone plus metronidazole. Antibiotic therapy should be adjusted based on culture results and patient response to treatment. In severe cases, more potent antibiotics may be required, and the duration of therapy could extend beyond the initial treatment period until signs of infection have resolved.

Drainage Procedures:

Addressing the underlying cause of biliary obstruction is fundamental to treatment. ERCP is the preferred method for both diagnosis and treatment, allowing for the removal of obstructions such as stones, and the placement of stents if necessary. ERCP provides immediate relief of obstruction and reduces the risk of complications associated with persistent blockage. In cases where ERCP is not feasible, alternative procedures like percutaneous transhepatic cholangiography (PTC) or surgical intervention may be necessary.

Supportive Care:

Management also includes supportive care measures such as hydration to maintain adequate blood pressure and organ perfusion, correction of electrolyte imbalances, and pain management. In cases of severe cholangitis leading to septic shock, critical care support may be required, including vasopressors and intensive monitoring.

Surgical Treatment:

Although less common due to the effectiveness of endoscopic and percutaneous techniques, surgical intervention may be necessary if these methods fail or are not feasible. Surgical options include biliary decompression, cholecystectomy (if gallstones are the cause), and repair or reconstruction of the bile duct.

CONCLUSION

Acute cholangitis is a serious medical condition that requires prompt diagnosis and comprehensive management to prevent severe complications and ensure patient survival. The cornerstone of treatment involves the use of appropriate antibiotics to combat infection and procedures to relieve biliary obstruction. Advances in imaging and interventional techniques have significantly improved the outcomes of patients with acute cholangitis, allowing for more precise interventions and less invasive options. Continued vigilance and timely intervention remain critical to managing this potentially life-threatening condition effectively.

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