

Nausea, Jaundice in Burn Patients: Early Cholestasis Recognition Critical

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Patients with severe burns often present with complex systemic responses. The emergence of nausea and jaundice in this population can signal the development of cholestasis, a critical complication that demands immediate clinical attention. Early recognition and intervention are essential to mitigate adverse outcomes.

KEY TAKEAWAYS

- **The Pivot:** Nausea and jaundice in burn patients should prompt investigation for cholestasis, a distinct complication from typical burn-related systemic inflammation.
- **The Data:** Cholestasis in burn patients is associated with elevated serum bilirubin, alkaline phosphatase, and gamma-glutamyl transferase, indicating impaired bile flow.
- **The Action:** Clinicians should monitor liver function tests closely in burn patients presenting with gastrointestinal symptoms or icterus, considering ursodeoxycholic acid or other supportive measures for confirmed cholestasis.

Severe thermal injury initiates a profound systemic inflammatory response, leading to widespread physiological alterations. While many complications are directly attributable to the burn wound and subsequent sepsis, the development of nausea and jaundice warrants specific consideration for cholestasis. Cholestasis in burn patients is characterized by impaired bile formation or flow, resulting in the accumulation of bilirubin and other bile components in the blood. This condition is distinct from other forms of liver dysfunction that may arise in critically ill patients and carries its own set of management challenges.

The pathophysiology of cholestasis in burn patients is multifactorial. It is believed to involve a combination of factors including systemic inflammatory mediators, sepsis, total parenteral nutrition (TPN), and certain medications. The inflammatory cascade triggered by extensive burns can directly impair hepatocyte function and bile canalicular transport. Furthermore, sepsis, a common complication in severe burn cases, can exacerbate liver injury and contribute to cholestasis. Prolonged TPN, often necessary for nutritional support in these hypermetabolic patients, is also a recognized risk factor for cholestatic liver disease. Medications such as antibiotics and analgesics, frequently administered in burn units, may also contribute to hepatic dysfunction or drug-induced cholestasis.¹

Clinical Presentation and Diagnosis

The clinical presentation of cholestasis in burn patients typically includes nausea, vomiting, and jaundice. Jaundice, characterized by yellowing of the skin and sclera, is a direct consequence of elevated serum bilirubin levels. Pruritus may also be present due to the accumulation of bile salts. Laboratory investigations are crucial for diagnosis and monitoring. Elevated serum total and direct bilirubin levels are hallmark indicators. Liver enzymes, specifically alkaline

phosphatase (ALP) and gamma-glutamyl transferase (GGT), are typically significantly elevated, reflecting impaired bile flow. Aspartate aminotransferase (AST) and alanine aminotransferase (ALT) may also be mildly to moderately elevated, but disproportionately less so than ALP and GGT, distinguishing cholestasis from hepatocellular injury.¹

Imaging studies, such as abdominal ultrasonography, can be employed to rule out extrahepatic biliary obstruction. While intrahepatic cholestasis is more common in burn patients, it is important to exclude mechanical obstruction of the bile ducts, which would require different management. The differential diagnosis for jaundice in burn patients is broad and includes hemolytic anemia, drug-induced liver injury, viral hepatitis, and pre-existing liver disease. A thorough clinical assessment, coupled with appropriate laboratory and imaging studies, is necessary to arrive at an accurate diagnosis.¹

Management Strategies

Management of cholestasis in burn patients focuses on identifying and addressing underlying causes, providing supportive care, and preventing complications. If TPN is implicated, strategies to reduce its duration or modify its composition, such as cycling TPN or initiating enteral nutrition as early as feasible, should be considered. Discontinuation or modification of potentially hepatotoxic medications, if clinically appropriate, may also be necessary. Treatment of sepsis is paramount, as resolution of infection can often lead to improvement in liver function.¹ Pharmacological interventions may include ursodeoxycholic acid (UDCA), which can improve bile flow and protect hepatocytes. The dosage and duration of UDCA therapy should be individualized based on the patient's clinical response and liver function test trends. Nutritional support remains critical, and efforts should be made to transition to enteral feeding as soon as the patient's condition allows, as this can help stimulate bile flow and reduce the risk of TPN-associated cholestasis. Close monitoring of liver function tests, nutritional status, and overall clinical condition is essential throughout the patient's recovery. Complications of prolonged cholestasis, such as fat-soluble vitamin deficiencies and malabsorption, should be anticipated and managed with appropriate supplementation.¹

Early recognition of cholestasis is crucial to mitigate its impact on patient outcomes. Delayed diagnosis can lead to prolonged hospital stays, increased morbidity, and potentially contribute to overall mortality in this already vulnerable population. Therefore, a high index of suspicion for cholestasis should be maintained in all burn patients presenting with nausea, vomiting, or jaundice, especially in those with extensive burns, prolonged TPN use, or sepsis.

Future Directions and Research

Further research is needed to fully elucidate the complex interplay of factors contributing to cholestasis in burn patients. Prospective studies investigating the efficacy of various pharmacological interventions, including different dosages and durations of UDCA, are warranted. Additionally, research into novel therapeutic strategies aimed at modulating the inflammatory response or enhancing hepatocyte function could offer new avenues for prevention and treatment. Understanding the genetic predispositions that may increase susceptibility to cholestasis in burn patients could also lead to personalized management approaches.

CLINICAL IMPLICATIONS

The appearance of nausea and jaundice in a burn patient is not merely another symptom to manage; it is a red flag for cholestasis, a condition often overlooked amidst the myriad complications of severe thermal injury.

Clinicians must move beyond a reactive approach to these symptoms and integrate proactive liver function monitoring into their standard protocols for burn care. Relying solely on general sepsis markers risks delaying diagnosis and intervention, potentially prolonging hospital stays and increasing morbidity. The evidence points to a clear need for heightened vigilance and a lower threshold for investigating liver function in this vulnerable population.

For the pharmaceutical industry, the prevalence of cholestasis in critically ill patients, particularly those with burns, highlights an unmet need for targeted therapies. While ursodeoxycholic acid is a mainstay, its efficacy in this specific, complex patient group could be further explored. Investment in research for novel hepatoprotective agents or strategies to mitigate the inflammatory cascade's impact on bile flow could yield significant clinical benefits. Current guidelines, while comprehensive for general critical care, often lack specific, detailed recommendations for managing cholestasis in the unique context of severe burns, suggesting an opportunity for expert consensus statements or dedicated guideline development.

Ultimately, the patient experience is profoundly impacted by complications like cholestasis. Persistent nausea, pruritus, and the visible distress of jaundice add significantly to the burden of recovery from burns. Early and effective management of cholestasis can alleviate these symptoms, improve nutritional status, and potentially shorten recovery times. This underscores the importance of a multidisciplinary approach, where intensivists, burn surgeons, and clinical pharmacists collaborate to optimize medication regimens and nutritional support, ensuring that liver health is not an afterthought but an integral part of comprehensive burn care.

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REFERENCES

1. Green J, et al. Cholestasis in critically ill patients. Crit Care Med. 2007;35(11):2693-2700.

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