Role of Gram-Negative Bacterial Infections in Acute-On-Chronic Liver Failure

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Autoren

Camilla Cadoli Volker Müller Christoph Welsch

Heiko Mühl **Jonel Trebicka** Volkhard A. J. Kempf

Abstract

Acute-on-chronic liver failure (ACLF) is a systemic disease characterised by an acute clinical deterioration of pre-existing liver cirrhosis leading to multiple organ failure due to systemic inflammation. It may be triggered by the translocation of bacteria and bacterial compounds across the gut barrier. The transmigration of Gram-negative bacteria from the gut to the liver, along with the development of bacterial multidrug resistance, drives the progression of chronic liver disease from a compensated or stable decompensated state to acute organ failure associated with high mortality rates. Furthermore, bacterial infections such as peritonitis, pneumonia, urinary tract infections, and skin infections contribute to the onset of ACLF in affected patients. In this review, we examine how bacteria, their metabolites, and antimicrobial resistance contribute to the pathogenesis and outcomes of ACLF, independently of the ACLF definition.