

The Role of Liver Function in the Setting of Cirrhosis with Chronic Infection and Critical Illness

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KEYWORDS

• Cirrhosis • Sepsis • Hepatitis C virus • Critical illness • Nursing • Nurse practitioner

KEY POINTS

- Chronic HCV-related cirrhosis places the patient in an immunocompromised state.
- Liver function normally plays a major role in immunocompetence and the clearance of toxins in critical illness.
- The patient with HCV-related cirrhosis and critical illness is at high risk for death in contrast to patients without chronic liver dysfunction.
- The patient with sepsis in the setting of HCV-related cirrhosis can have a more rapid decline in other organ dysfunction during critical illness.
- Registered nurses and advanced practice nurses can positively impact patient outcomes in the inpatient and outpatient settings in this population.

Without the insult of chronic organ dysfunction, the nature of systemic critical illnesses acutely injures multiple organs resulting in dysfunction. The patient with cirrhosis secondary to chronic hepatitis C virus (HCV), be it untreated or unresponsive to treatment, is at high risk for death and becomes more vulnerable to a higher severity of illness when critically ill. This article discusses the role of liver function in the patient with a systemic critical illness in contrast to the worsened pathophysiology of the patient with cirrhosis secondary to chronic HCV infection and critical illness, inpatient and posthospitalization management of the critically ill patient with chronic HCV-related cirrhosis, and the nursing implications and recommendations for future research for this population.

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BACKGROUND

Prevalence of Hepatitis C Virus Cirrhosis

Chronic HCV is the most common chronic, blood-borne infection nationally and is the leading cause of advanced liver diseases including cirrhosis, hepatocellular carcinoma (HCC), and liver failure requiring the need for liver transplantation in the United States. Approximately 184 million people are infected with HCV worldwide with an estimated 3.5 million people in the United States being chronically infected. There is an estimated 20,000 HCV cases resulting in death annually, which are often associated with cirrhosis or HCC. "In 2013, for the first time, deaths associated with HCV infection surpassed the total number of deaths from 60 other nationally notifiable infectious diseases."¹

HCV is highly prevalent in specific populations including individuals born between the years of 1945 and 1965 ("baby boomers"); individuals who actively use or have a history of intravenous drug use; those who participate in high-risk behaviors (having multiple sex partners and unprotected intercourse); and socioeconomically disadvantaged and ethnic minorities including African Americans, Hispanics, and American Indian/Alaska natives. These aforementioned groups are considered to be vulnerable for reasons including a lack of access to care, inadequate disease management, a lack of awareness, and limited community and health resources. In addition to these factors, considering that HCV is silent in its course and progression, many cases are undiagnosed for years and thereby are untreated. When it is diagnosed, the cost of HCV treatment is often more than infected patients can afford leading to the decision to forego treatment and increasing their risk for the development of cirrhosis.¹

Significance of Cirrhosis in the United States

Cirrhosis, an advanced stage of liver disease, is the 12th leading cause of mortality in the United States and is a common, comorbid condition of HCV. Cirrhosis results in fibrosis/liver scarring and nodular regeneration most commonly resulting from chronic liver injury sustained from chronic infection (hepatitis B or C), alcoholic fatty liver disease, and/or excessive alcohol consumption.² The condition complicates the management of patients with HCV infection and the condition leads to increased mortality.

There are two stages of cirrhosis: compensated and decompensated. Compensated cirrhosis is described as stage 4 liver fibrosis with or without the presence of esophageal varices; in compensated cirrhosis liver function is essentially preserved. Decompensated cirrhosis is defined as stage 4 liver fibrosis with the presence of one or several complications of portal hypertension including variceal bleeding, hepatic encephalopathy, ascites, spontaneous bacterial peritonitis (SBP), and/or hepatorenal syndrome.³ Approximately 25% of individuals diagnosed with HCV infection in the United States have cirrhosis, which is often not diagnosed until there is an event resulting in decompensation.¹ Cirrhosis can significantly impact an individual's health status and quality of life predisposing the individual to multiple complications including HCC.

HCV infection and cirrhosis are commonly silent comorbid conditions. Individually these conditions have potentially severe complications associated with them. Together, these diseases increase the risk for severe complications with death being the greatest risk. The economic and patient/caregiver burdens of living with HCV-related cirrhosis are expected to significantly increase over the next 10 years despite advances in HCV treatment because of common barriers to treatment, such as a lack of access (high cost and a lack of insurance).⁴

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