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Cardiac Cirrhosis: A Consequence of Chronic Heart Failure- A Case Report

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Abstract

This case report discusses the clinical presentation, diagnostic evaluation, and management of a patient diagnosed with cardiac cirrhosis, a condition secondary to chronic congestive heart failure. The report highlights the importance of recognizing the relationship between cardiac and hepatic dysfunction in managing patients with heart failure. Cardiac cirrhosis, also known as congestive hepatopathy, is a condition characterized by liver dysfunction secondary to chronic heart failure. This case report aims to present a comprehensive overview of cardiac cirrhosis, including its etiology, pathophysiology, clinical manifestations, diagnostic criteria, and management strategies. We also discuss a representative case to highlight the challenges in diagnosis and management.

Case study:

A 62yr old male, Mr. J.S. presented to the hospital with a history of worsening fatigue, abdominal distension, and lower extremity edema over the past several months. He

reported a history of hypertension and coronary artery disease. Mr. J.S. had a history of chronic heart failure, with New York Heart Association (NYHA) class III symptoms despite optimal medical therapy. His cardiac medications included beta-blockers, ACE inhibitors, and diuretics.

On examination, Mr. J.S. was noted to have jugular venous distension, hepatomegaly, and ascites. Laboratory investigations revealed elevated liver enzymes, hypoalbuminemia, and prolonged prothrombin time. An abdominal ultrasound demonstrated an enlarged liver with signs of chronic congestion.

Conclusion:

In conclusion, cardiac cirrhosis represents a complex interplay between heart failure and liver dysfunction. Early recognition and appropriate management are essential for improving patient outcomes. This case report contributes to the existing literature on cardiac cirrhosis, emphasizing the need for a holistic approach in the care of these patients.

Keywords: Cardiac Cirrhosis, Heart Failure, Congestive Hepatopathy

Introduction

Cardiac cirrhosis, also known as congestive hepatopathy, is a liver condition that arises as a consequence of chronic congestive heart failure (CHF). It is characterized by liver damage and dysfunction resulting from prolonged venous congestion within the liver due to impaired cardiac function. While not a primary liver disease, cardiac cirrhosis can significantly impact liver function and present with symptoms similar to those seen in other forms of cirrhosis.

Cardiac cirrhosis is a consequence of prolonged congestive heart failure, leading to hepatic venous congestion and subsequent liver damage. The relationship between heart failure and liver dysfunction is intricate, involving hemodynamic alterations, inflammation, and fibrotic processes. The prevalence of cardiac cirrhosis is expected to rise with the increasing incidence of heart failure worldwide.

Case report

A 62yr old male, Mr. J.S. presented to the hospital with a history of worsening fatigue, abdominal distension, and lower extremity edema over the past several months. He reported a history of hypertension and coronary artery disease.

Clinical History:

Mr. J.S. had a history of chronic heart failure, with New York Heart Association (NYHA) class III symptoms despite optimal medical therapy. His cardiac medications included beta-blockers, ACE inhibitors, and diuretics.

Physical Examination:

On examination, Mr. J.S. was noted to have jugular venous distension, hepatomegaly, and ascites. Laboratory investigations revealed elevated liver enzymes, hypoalbuminemia, and prolonged prothrombin time. An abdominal ultrasound demonstrated

an enlarged liver with signs of chronic congestion.

Diagnostic Evaluation:

1. Echocardiography: Showed reduced ejection fraction (EF) of 25%, consistent with severe systolic dysfunction.
2. Liver Function Tests: Indicated elevated liver enzymes (ALT, AST), low albumin, and prolonged prothrombin time.
3. Imaging: Abdominal ultrasound confirmed hepatomegaly and signs of portal hypertension.

Diagnosis:

Based on the clinical presentation and diagnostic findings, Mr. J.S. was diagnosed with cardiac cirrhosis secondary to chronic heart failure.

Management:

1. Optimization of Heart Failure Therapy: Mr. J.S.'s heart failure medications were adjusted to optimize cardiac function.
2. Diuretic Therapy: Intensified diuretic therapy to manage ascites and lower extremity edema.
3. Nutritional Support: Given the presence of hypoalbuminemia, nutritional support and dietary modifications were implemented.
4. Regular Follow-up: Close monitoring of both cardiac and hepatic parameters with regular follow-up visits.

The treatment of cardiac cirrhosis is based on the management of the underlying cardiac condition causing a hemodynamic imbalance. Determination of the volume status and adequate management of fluids for these patients is important. Clinical features of cardiac cirrhosis may improve dramatically with adequate diuresis. Close monitoring of cardiac output is important to prevent ischemic hepatitis. Usual management of liver cirrhosis as indicated in the setting of liver dysfunction irrespective of the etiology, such as beta-blockers to reduce portal hypertension, diuretics for recurrent ascites, spontaneous bacterial peritonitis prophylaxis in the setting of GI bleed, etc [5, 6]. In patients who are on chronic warfarin anticoagulation, dosage adjustment needs to be considered.

Differential Diagnosis

- Alcoholic liver cirrhosis
- Primary biliary cirrhosis
- Chronic viral hepatitis
- Wilson disease
- Venous-occlusive disease
- Nonalcoholic steatohepatitis (NASH)
- Autoimmune hepatitis
- Ischemic hepatitis

Outcome: Mr. J.S. showed improvement in symptoms, including reduction in abdominal distension and edema, with optimized heart failure management. Liver function tests gradually normalized over subsequent follow-up visits.

Discussion

This section explores the pathophysiological mechanisms underlying cardiac cirrhosis, emphasizing the role of hepatic venous congestion, impaired perfusion, and systemic inflammation. Diagnostic modalities, including laboratory tests, imaging studies, and liver biopsy, are discussed. Differential diagnoses and challenges in distinguishing

cardiac cirrhosis from other liver diseases are also addressed.

There are several mechanisms that create unbalance in the circulatory system and will cause hepatic injury. The main mechanism causing hepatic dysfunction due to heart dysfunction is either an increase in cardiac filling pressures or low cardiac output and impaired perfusion. An increase in the preload or central venous pressure due to right ventricular dysfunction may cause direct liver damage due to increasing retrograde pressure to the venous and capillaries into the liver. This generates an elevation in liver enzymes. The elevated pressure is transmitted from the right heart chambers (right ventricle and atrium) to the hepatic veins and sinusoids, leading to intrahepatic edema, decreased perfusion and oxygen diffusion, as well as hemorrhagic injury and modification on the hepatocyte architecture and atrophy with associated collagen deposition, and fibrosis to the hepatic veins and sinusoids. Another mechanism that can cause hepatic injury, especially when the left side of the heart is affected, is impaired perfusion and tissue hypoxia from decreased cardiac output. This may be associated with acute hepatocellular necrosis with marked elevation of serum alanine aminotransferase (ALT), aspartate aminotransferase (AST), lactic dehydrogenase (LDH), and prolongation of coagulation studies as thrombin and prothrombin time [7].

Conclusion

Cardiac cirrhosis is a consequential condition in patients with chronic heart failure. Timely recognition, appropriate diagnostic evaluation, and optimization of heart failure therapy are crucial for improving both cardiac and hepatic outcomes. This case emphasizes the importance of an integrated approach in managing patients with complex cardiovascular and hepatic comorbidities.

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