CARDIAC COMPLICATIONS OF LIVER CIRRHOSIS WITH AND WITHOUT HEPATOCELLULER CARCINOMA

Essay

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In

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INTRODUCTION

Cirrhosis of the liver is a consequence of chronic liver disease characterized by replacement of a liver tissue by a fibrotic scar tissue as well as regenerative nodules, leading to progressive loss of liver function. Cirrhosis is most commonly caused by alcohol and hepatitis C virus, but has many other causes. Cirrhosis is generally irreversible once it occurs and treatment generally focuses on preventing progression and complication. In advanced stages of cirrhosis the only option is liver Transplantation ***(Rodríguez et al., 2004).***

Cirrhotic cardiomyopathy is a clinical syndrome in patients with liver cirrhosis characterized by abnormal or blunted response to physiological, pathological, or pharmacological stress but normal to increased cardiac output and contractility at rest ***(Zardi et al., 2010).***

Hepatocellular Carcinoma is a malignant tumor arising from hepatocytes. Hepatocellular carcinoma affects twice as many mens as women and is more common in those above age of 40 ***(Coon et al., 2007).***

Hepatocellular carcinoma is global health problem, although developing countries are disproportionally affected: over 80% of HCC occur in such regions. About three quarter of HCC are attributed to chronic HBV and HCV infection ***(Yang and Robert, 2010).***

AIM OF THE WORK

The aim of work is to identify cardiac complication of liver cirrhosis with or without hepatocellular carcinoma, how to prevent and treat it.

REVIEW OF LITERATURE

Cirrhosis:

The human liver is the largest single organ in the body and consists of parenchymal cells, which metabolize, detoxify, synthesize, and store nutrients. Normal functioning of these cells depends on their proper organization. Cirrhosis, the final common pathway for a variety of liver diseases ***(Foucher et al., 2006).***

Liver histology:

The liver is bounded by a connective tissue capsule which extends into its substance as highly branched septae. The afferent blood vessels and lymphatics follow this connective tissue highway throughout the liver. Efferent vessels traverse a route separate from connective tissue scaffolding.

The connective tissue septae invaginating from the capsule delineate hepatic lobules, the structural unit of the liver. Relative to other common species, the connective tissue surrounding lobules is particularly abundant and easy to

identify in pig livers, as shown below in an H&E-stained section.

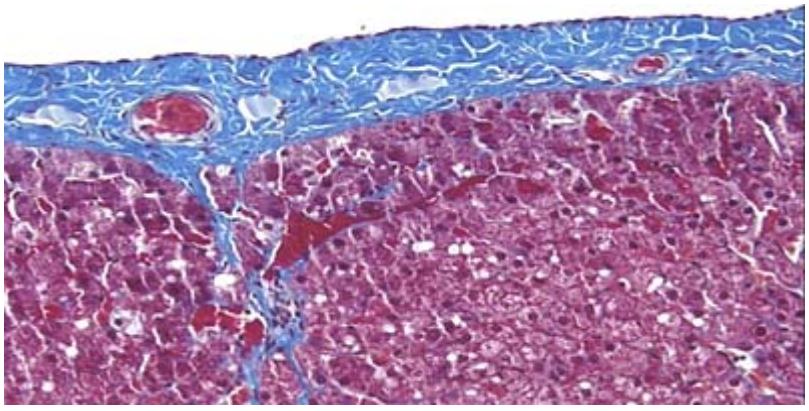

Figure (1): of equine liver (Masson's trichrome stain), the capsule and septae are stained blue, while hepatocytes are magenta. Notice how the capsule extends as a septum into the liver about one-third of the way from left, immediately below a large capsular blood vessel. ***(R.Bowen, 2010)***

At the vertices of the lobule are regularly distributed portal triads (also known as portal tracts). Examination of a triad in cross section should reveal a bile duct and branches of the hepatic artery and hepatic portal vein. As shown in **figure (2).**

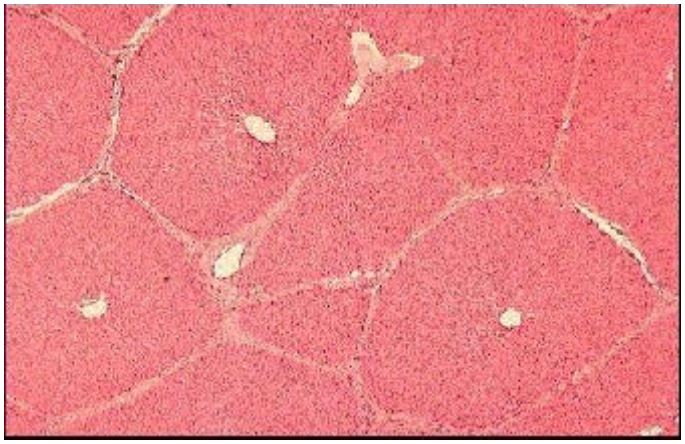

Figure (2): A lobule is a roughly hexagonal arrangement of plates of hepatocytes radiating outward from a central vein (CV) in the center. Central veins are quite prominent and provide an easy means of orientation in sections of liver ***(R.Bowen, 2010).***

Due to plane of section, one can often observe more than one of each of these structures in a given portal tract or absence of one or more structures. Lymphatic vessels are also present, but are tough to see in standard paraffin sections, which is probably why it is not called a portal tetrad.

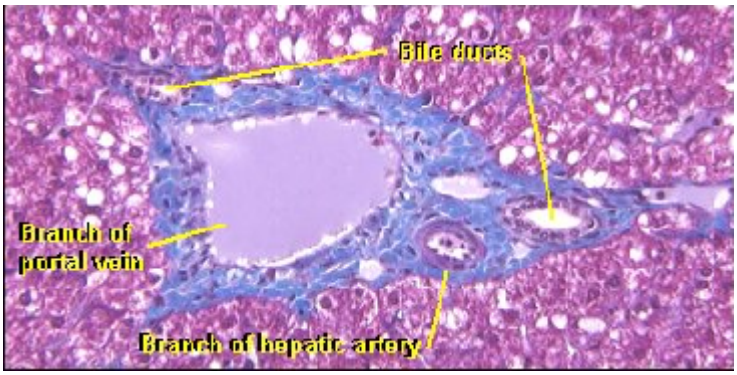

Figure (3): Portal tract in equine liver (trichrome stain) ***(R. Bowen, 2010).***

Lobules are almost impossible to miss in porcine liver, but one should also be able to recognize them in other species. Although the precise boundaries of lobules are sometimes difficult to discern, orienting on central veins and portal tracts allow "easy" identification. It is to be noted that the majority of lobules seen in a tissue section are not as "typical" as seen here and in other histology texts. ***(R. Bowen, 2010)***

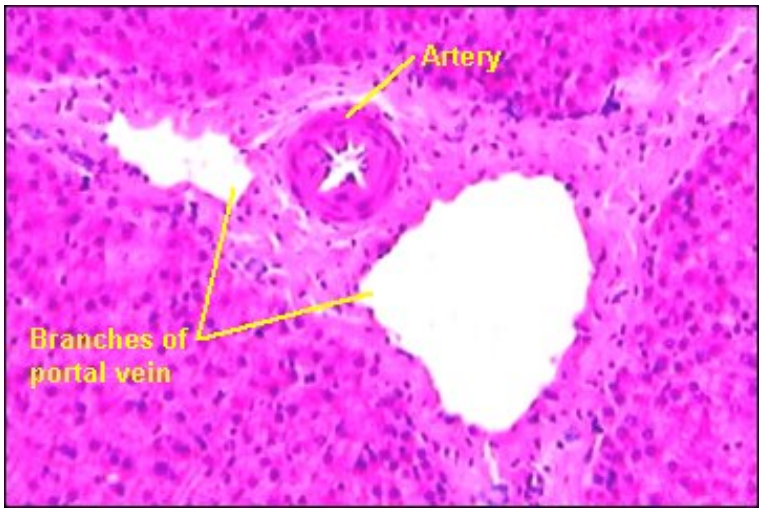

Figure (4): Portal tract in porcine liver (H&E stain) without Visible bile duct ***(R. Bowen. 2010)***

- **Definition:**

The term "cirrhosis" was first used by René Laënnec (1781–1826) to describe the abnormal liver color of individuals with alcohol-induced liver disease. The word cirrhosis comes from the Greek word *kirrhos*, the name for a

yellowish-brown color. It means degeneration of functioning liver cells and their replacement with fibrous connective tissue leading to scaring so the blood flow is restricted, metabolic and detoxification function is impaired ***(Kamath and Kim, 2007).***

- **Epidemiology**

Cirrhosis and chronic liver disease were the 10th leading cause of death for men and the 12th for women in the United States in 2001, killing about 27,000 people each year ***(Anderson and Smith, 2003).***

Also, the cost of cirrhosis in terms of human suffering, hospital costs, and lost productivity is high. Established cirrhosis has a 10-year mortality of 34-66%, largely dependent on the cause of the cirrhosis; alcoholic cirrhosis has a worse prognosis than primary biliary cirrhosis and cirrhosis due to hepatitis ***(Sorensen et al., 2003).***

Little is known on modulators of cirrhosis risk, apart from other diseases that cause liver injury (such as the combination of alcoholic liver disease and chronic viral

hepatitis, which may act synergistically in leading to cirrhosis), studies have suggested that coffee consumption may protect against cirrhosis, especially alcoholic cirrhosis ***(Klatsky et al., 2006).***

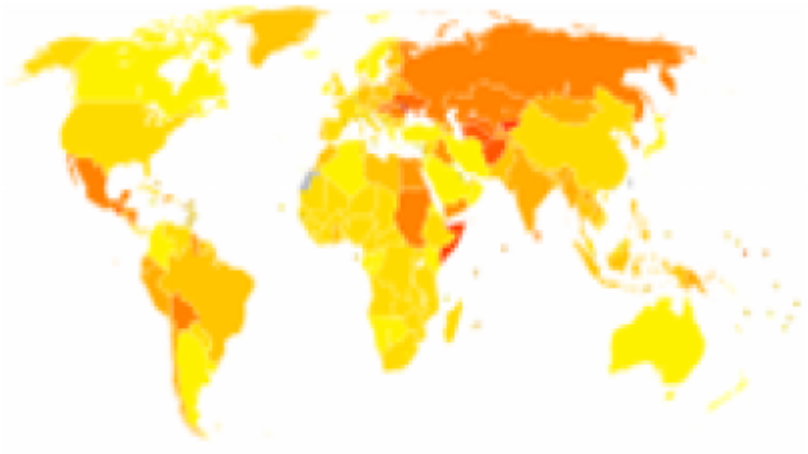

Figure (5): Epidemiology of cirrhosis allover world

Disability-adjusted life year for cirrhosis of the liver per 100,000 inhabitants in 2004.

No data less than 50 50-100 100-200 200-300 300-400 400-500 500-600 600-700 700-800 800-900 900-1000 more than 1000

(Anderson and Smith, 2003).

- **Prevalence**

The exact prevalence of cirrhosis is unknown, but it has been estimated, through autopsies, to be between 5 and 10 percent. Incidence of cirrhosis varies by country and region, and reflects relative contributions from different risk factors. In countries where alcohol consumption is common, alcoholic cirrhosis is the major contributor to the overall prevalence of cirrhosis. In countries with low alcohol consumption, hepatotropic viruses (hepatitis B and C) are the major contributors.

Hepatitis C virus (HCV) infection is gaining increasing attention as a global health crisis. Egypt reports the highest prevalence of HCV worldwide, ranging from 6% to more than 40% among regions and demographic groups. Predicting the impact of the epidemic has been difficult because of the long-latency period and low-resource setting ***(Lehman and Wilson, 2009).***