Review

Considerations on Liver Pathology

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Posted Date: 1 July 2024

doi: 10.20944/preprints202312.0919.v4

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Considerations on Liver Pathology

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Abstract: The aim of this article is to identify the best available evidences analyzing liver samples, normall and pathological. In the study were used liver samples, collected during necropsy, from healthy patients and from patients diagnosed with cirrhosis .This mentioned, are known as routinally practice for hepatitis C diagnosis, which conduct to hepatic cirrhosis.__Were made permanent preparations and used Hematoxylin–Eosin staining and other special stainings for structural observations at optical microscope using lens with differents magnifications, such us x10 and x40.

Keywords: liver, hepatitis C; cirrhosis; diagnosis; laboratory technique

Introduction

Currently , HCV infection could be consider as one of bad results after percutaneous blood administration to ill patients. Also good to mention that HCV infection it is known as one of the most commonly through injection drug use. [1] The first and most important step in the care cascade is testing for HCV. Actually, is an enlarge number of expansion of populations eligible for testing for HCV prevention. [1-3]

It is know about *care cascade,* including multiple key points in diagnosis HCV infection. An HCV *care cascade* is consider as a model for identifying opportunities and barriers in order to improve laboratory tests, linkage to care, and proper treatment access. [4][5] Relativelly recently, there have been increases in HCV detection among women of childbearing age. [6][7] Reinfection with HCV after curative therapy in illness status in different patients, is an important key point for medical team. [8-10] The proper laboratory techniques include immunoglobulin (Ig) G antibody enzyme immunoassays (anti-HCV) and nucleic acid tests (NAT), as modern methods, in conection with blood tests.[11] In case that need to distinguish between two directions such as true or false positivity of the anti-HCV antibody result, previously mentined tests, may be done with a second FDA-approved HCV antibody assay that is different from previously used for testing [11][12] Morphologically, HCV is an enveloped, positive-sense, single-stranded RNA virus of the *Flavivirdae* family.[13-15] The great key point knowing as a start of the direct-acting antiviral (DAA) era was in 2011. The important role in this direction was the introduction of two NS3/4A protease inhibitors. Both previously mentioned were used in combination with interferon-based regimens for chronic HCV treatment to ill patients diagnosed.16] Results of studies show that the HCV replication process is error prone. Finally results practically could be observe in variant viruses knowing as quasispecies.[17][18] Nowadays there are 7 genotypes of HCV. So there are known 6 major genotypes and the recent addition of genotype 7. This last 7 genotip has been found only in a few cases diagnosed to HCV positive patients. [19] Hepatitis C virus (HCV) infection is a great cause of various liver diseases as cirrhosis and hepatocellular carcinoma. Following promising news, significant scientific discovering things remain in attention for reducing morbidity and mortality, associated to HCV. [20][21] Understanding the properties of hepatitis C virus (HCV) viral RNA and proteins facilitates the development of diagnosis methods and also a proper treatment, including antivirals.[22-24] In addition we can mention that HCV genotyping assays approved for *in vitro* diagnostic use are commercially available[25][26] Cirrhosis, as a nowadays disease, is characterized by fibrosis and nodule formation of the liver. In the secondary plan, it is known as a chronic injury, which leads to alteration of the normal lobular organization of the liver. A complex

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of factors, such as life style, or environmentals, can injure the liver, and beside also including viral infections, toxins, hereditary. With each injury, the liver suffer alterations as fibrosis. Finally but after a long-standing injury, liver functionalteration, develop in time cirrhosis as a complex diseases. Ethiology of the chronic liver diseases usually progress unfortunately in cirrhosis, following pathological mechanisms.[27] Scientific knowledges referring to the severity of liver cirrhosis, as a disease with a bad prognostic on the public health, is still not well characterized. [28] Liver diseases are without doubts, the most common in the world. [29] Reserchers must be carefully to ideea refering to demonstration that drug injury is present inliver structure injury that conduct to pathology. [30]

Material and methods

Following the study purpose, were made permanent preparations that were stained with hematoxylin and eosin for observation at optical microscope and with special stainings.The process of the permanent microscopic preparations was based on prior knowledge of the steps from the classical method, using a standard H&E staining technique. Optical microscope examination were used lens with magnification x10 and x40. In order to assist medical staff in understanding the concerns outlined, a series of digital images have been prepared. The operative pieces are intended to bring in the pathological anatomy service for macroscopic examination for diagnostic purposes. Most important is to analyse and to diagnosed liver pathology observing structural changes.

Results

Normal liver structure, using an optical microscope analyse and a special staining namely Masson. We can observe hepatocytes and interlobular spaces and septa.[Figure 1]

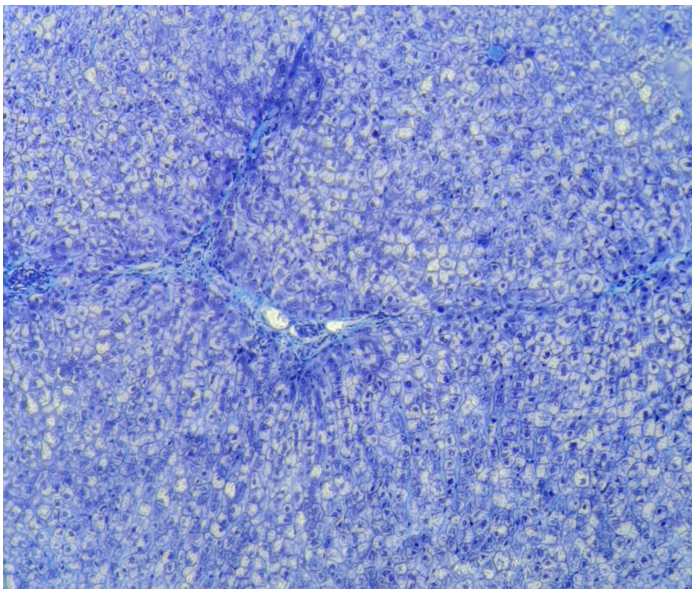

Figure 1. Normal Liver x10 Masson staining.

The functional unit of the liver is the lobule with hexagonal form. Kienann space is specific for liver strucutre, including a portal triad (portal vein, hepatic artery, bile duct) sits at each corner of the hexagon. Mitochondri as points observing with lens x40. Portal vein with enlarge lumen. [Figure 2]

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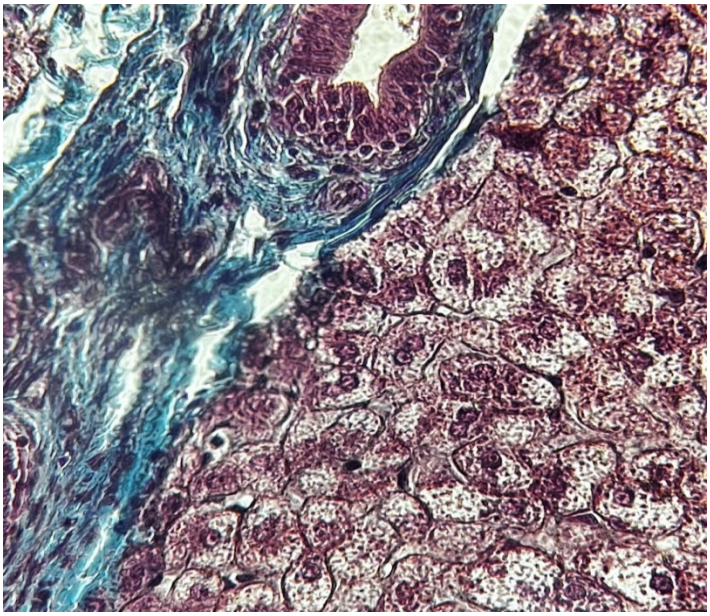

Figure 2. Normal liver x 40 Goldner Szekely stain.

Based on function and perfusion, hepatocytes are divided into three zones.

1. Zone I is considered to be the periportal region of hepatocytes and are the best perfused and first to regenerate due to their proximity to oxygenated blood and nutrients. Implication in oxidative metabolisms.
2. Zone II is defined as the pericentral region of the hepatocytes.
3. Zone III has the lowest perfusion due to its distance from the portal triad. Implication role in detoxification.

Cirrhosis is a result of continuous liver injury, inflammation, fibrosis, and necrosis. Commonly cause cirrhosis are chronic hepatitis B and C and also life style including alcoholism. The fibrosis present in cirrhosis occurs from the secretion of TGF-beta from the Ito cells in the space of Disse. [Figure 3]

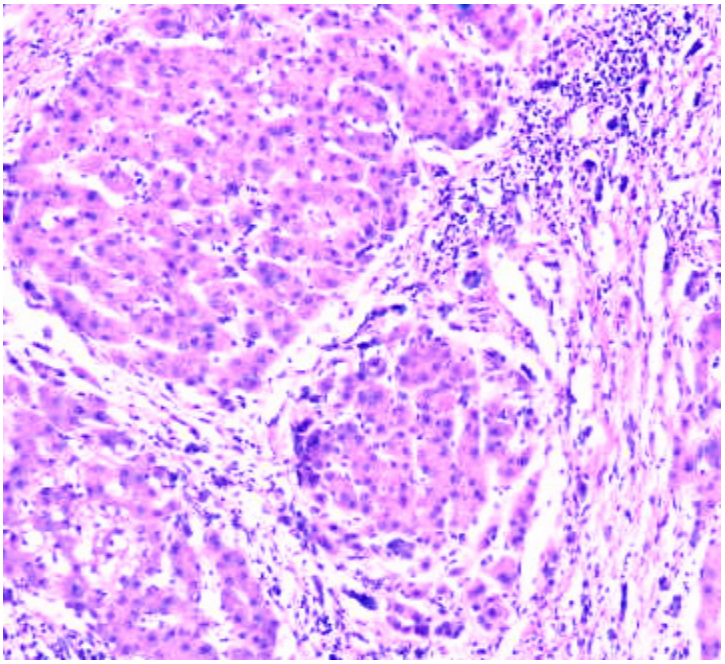

Figure 3. Cirrhosis liver x10 H&E stain.

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Cirrhosis usually represents with end-stage liver disease. Hepatitis C is the most damaging. Cirrhosis develops after a period of inflammation. The ill liver has parenchyma with fibrotic tissue and regenerative nodules. [Figure 4]

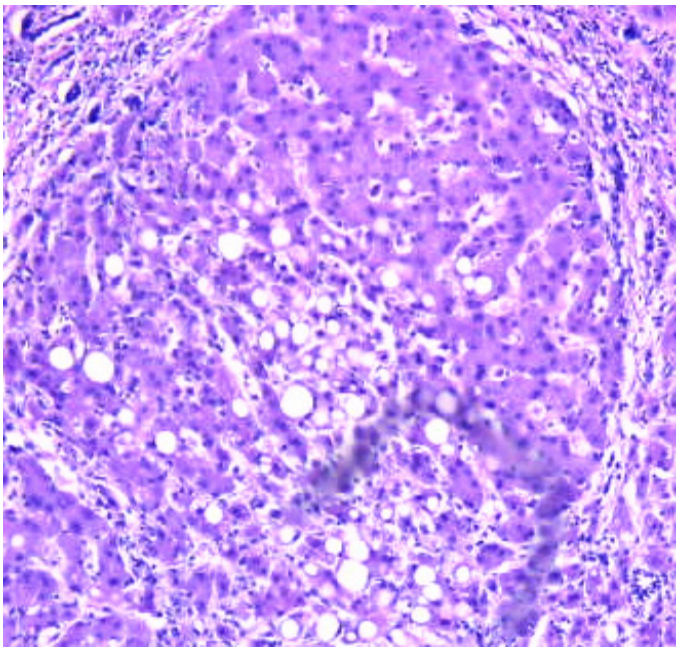

Figure 4. Cirrhosis liver x10 H&E stain.

Clinically, liver cirrhosis is the severe period of chronic liver diseases. Early prevention and treatment of the causes of development and progression and pathogenic mechanism may slow down or reverse liver cirrhosis and its severe complications.

Decompensated liver cirrhosis and its complications, take attention to the clinicians. Various clinically signs as ascites, esophagogastric variceal bleeding, hepatic encephalopathy, acute kidney injury, and hepatocellular carcinoma, could be observing at the medical examination. Clearly that patients' quality of life is affected in liver cirrhosis.

Discussions

Patient lifestyle changes, unfortunately cannot cure cirrhosis. Complications accompanying hepatic cirrhosis include, portal hypertension, edema in the abdomen and lower extremities, splenomegaly, infections, hepatic encephalopathy.

Behavioral modifications can prevent or at least delay disease progression and provide symptomatic relief.

Lifestyle changes, include factors, as eliminating ethanol consumption and dietary interventions as possible low-sodium diet, in order to reduce water retention. Regulate protein intake according to their doctor's directions and some medical recommandations, will be proper in the treatment of cirrhosis.

Cirrhosis secondary to HBV and HCV is one of the common risk factor for liver degeneration in cirrhosis.. Practically monitoring of cirrhotic patients is recommended, with at least six monthly screenings. Liver biopsy is the gold standard technique highly promising non-invasive methodology under development, that are used in diagnosis. Liver transplantation (LT) is also an effective therapeutic option for the management of cirrhosis end-stage. Relatively recently research investigations try to elucidate the signal transduction pathways that link hepatocytes alterations including cellular disfunctionality. Diferential diagnosis of cirrhosis include research directions reffering **to** neonatal iron storage diseases, HELLP(hemolysis, elevated liver enzymes, low platelets) syndrome of pregnancy, idiopathic drug reaction. More than, other diseases are included in the diferential diagnosis of cirrhosis. This are Tyrosinemia, Galactosemia, Fructose intolerance.

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Conclusions

Research studies predict about not so a good prognosis of patients diagnosed with cirrhosis, knowing laboratory results and clinical points.. Knowing the diagnostic in the ill patients, medical specialists could applay the proper treatment, carefully to the comorbidities.In idea that hepatic cirrhosis is hard or impossible to cure, we are waiting from future research dirrections and plans.

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