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*Brief Report*

# Classic Techniques for Structural Analyse in Pathologically Liver

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## Abstract

The purpose of this article is to identify the results of structural analyze from liver samples. In the study were used both normaly and pathologically liver samples. Also good to mention that in this study were used liver samples, collected during necropsy, from healthy patients and from patients diagnosed with cirrhosis .This previously mentioned, are known as routinely found methods, in medical practice, used for hepatitis C diagnosis, which conduct to hepatic cirrhosis Following steps from the classic structural study, it is possible to analyse normal and alterate liver structure, on the colored preparates with classic specific stainings. Hematoxylin and eosin stain is the most commonly used in studies.

**Keywords:** liver; samples; classic method; structural analyse; diagnosis

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## Introduction

Actually, HCV infection could be consider as one of bad results after percutaneous blood administration to ill patients. So, 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]

Relatively 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 of factors, such as life style, or environmentals, can injure the liver, and beside also including viral infections, toxins.

With each injury, the liver suffer alterations as fibrosis. Finally but after a long-standing injury, liver functional alteration, develop in time cirrhosis as a complex diseases. Etiology 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] Researchers must be carefully to idea referring to demonstration that drug injury is present in liver structure injury that conduct to pathology. [30]

## Material and Methods

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. This are examined by performing the optical microscopic analysis. Using an optical microscope, could be possible liver structure analyze. We can observe hepatocytes and interlobular spaces and septa. On a normal liver structure but using another specific stain known as *Argentica impregnation Gomori*.

The functional unit of the liver is the lobule with hexagonal form. Kienann space is specific for liver structure, including a portal triad (portal vein, hepatic artery, bile duct) sits at each corner of the hexagon. Mitochondria as points observing with lens x40, using Goldner Szekely stain.

In liver cirrhosis, on samples could be observe tissue fibrosis and alterations in the normal liver architecture in abnormal structural nodules.

A similar coming image with specific structural changes in liver structure and with vascularized fibrotic septa in cirrhosis More than, we can mention in this disease, about portal hypertension. Prevention and treatment of liver cirrhosis are best done by an interdisciplinary medical team.

Animal models play a significant role in liver pathology diagnosis for example in rats with cirrhosis. Cirrhosis, as a nowadays disease, is characterized by fibrosis and neoformation nodules in the liver architecture. In addition, cirrhosis it is known as a chronic injury, which leads to alteration of the normal lobular organization of the liver. [29–31] A complex of factors, such as life style, or environmental factors, can affect the liver, for better or for worse. [32,33] In addition to optimal management of cirrhosis complications per the recent EASL guidelines, patients with advanced liver disease also require support and management for substance/alcohol abuse, nutrition and frailty. [34,35]

## Cirrhosis Etiology

**Table 1.** Etiology in cirrhosis.

Viral	Toxins	Vascular	Metabolic	Cholestatic	Autoimmune
hepatitis B, C, and D	alcohol, drugs	Budd-Chiari syndrome,	hemochromatosis, NASH, Wilson	primary biliary	autoimmune hepatitis

		sinusoidal obstruction syndrome, cardiac cirrhosis	disease, alpha-1 antitrypsin deficiency	cholangitis, primary sclerosing cholangitis	
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#### 4. Complications in Cirrhosis

Hepatic encephalopathy (HE) is an important major neuropsychiatric disorder in liver cirrhosis. There are known two types. So minimal hepatic encephalopathy (MHE), known as a cognitive deficit found in the earlier past time using specific psychological tests and Grade I HE. More than, also it is known about overt hepatic encephalopathy (OHE), with specific clinical symptoms.[36,37]

Ascites is known as a common complication in hepatic cirrhosis. Ascites is accompanied with portal hypertension. This previously mentioned complication in cirrhosis, it is known as a specific one, defined as an accumulation of a fluid quantity in the peritoneal cavity.[38]

Ascites infection is a possible accompanying event for ill persons diagnosed with cirrhosis. Infection in ascites is often known as a bacterial peritonitis (SBP) sometimes with accompanying fungal infections.[39,40]

Variceal bleeding represent a relatively common accompanied complication to patients diagnosed with cirrhosis. [41] In liver damage as cirrhosis, esophageal and gastric variceal bleeding together with rectal variceal bleeding.[42]

Hepatorenal syndrome and kidney injury represent a common complication to patients diagnosed with hepatic cirrhosis. [43]

Infections are also relatively common in hepatic cirrhosis. In different parts of the body could be found after signs and symptoms, infections as tissue infections, bacteremia, pneumonia, urinary tract infections. [44,45] From years ago, till nowadays, infections caused by multidrug-resistant organisms (MDRO) play a significant role in liver damages such as from hepatic cirrhosis.[46]

#### 5. Cellular and Molecular Key Points

Following embryogenesis stages, hepatic cells starting with progenitor cells namely hepatoblasts, during differentiation, become finally hepatocytes.

In the cellular and molecular mechanisms, signals play a great importance. So, hematopoietic cells, manage the hepatoblast proliferation process. In this direction, E-cadherin-mediated cell junction in hepatoblasts evolutionary mechanism. Also are known other contributors in fibroblast hepatocytes evolution. It is useful to mention that the gradient of TGF- $\beta$  secreted from the portal vein mesenchyme play also a great role in previously mentioned direction with finality hepatocytes. Cellular and molecular mechanism referring to mechanistically, show a higher TGF- $\beta$  signaling in portal vein in hepatic cells that drives cholangiocyte physiological direction. Research studies, show the decreasing expression of CCAAT/enhancer binding protein (C/EBP)  $\alpha$  and which promoting expression of Hnf6 (aka Oc1) and Hnf1 $\beta$ . More that, also results of studies, show the transcription profile. In this direction it is good to mention a bit about cholangiocyte-specific gene transcription process. More exactly, by HNF6 and HNF1 $\beta$ , are implications in suppressing hepatocyte genes by decreasing C/EBP $\alpha$  levels.[47]

In the developmentally mechanism, the hepatocytes, and the cholangiocytes, emerge from the specific region in the definitive endoderm. In the initiation signals referring to hepatic cells, include fibroblast growth factor (FGF), and also bone morphogenic proteins (BMPs). [47]

Studies also show as that non-alcoholic fatty liver disease (NAFLD) is a key point in liver diseases. In this direction, we can mention that the pathologically mechanisms, follow steps starting with steatosis having finally to cirrhosis Also good to mention that liver enzymes play also a role. In this mechanism, it is known about ALT:AST ratio. [48,49]

Nowadays, the Model for End Stage Liver Disease (MELD Score) and the MELD-Na are important in liver illness prediction.[50,51]

Good to mention idea that the liver is a metabolic organ. Specific activity in the liver is metabolic activity with implications in normal endocrinologically function of the body.[52]

More than we can mention a little bit about the importance of the level of glucose in the blood. This is important to know and to control for body protection and for avoiding from non normaly deviations.

## Key Points in Cirrhosis for Differential Diagnosis

**Table 2.** Causes for differential diagnosis in cirrhosis (a,b,c,d).

**Table 2. a.**

Acute fatty liver of pregnancy	Neonatal iron storage diseases	Galactosemia
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**Table 2. b.**

HELLP syndrome of pregnancy ( hemolysis, elevated liver enzymes, low platelets)	Bacillus cereus toxin	Acetaminophen poisoning
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**Table 2. c.**

Fructose intolerance	Tyrosinemia	Amanita phalloides mushroom poisoning
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**Table 2. d.**

Hemorrhage viruses (Ebola virus)	Hemorrhage viruses (Lassa virus)	Hemorrhage viruses ( Marburg virus)
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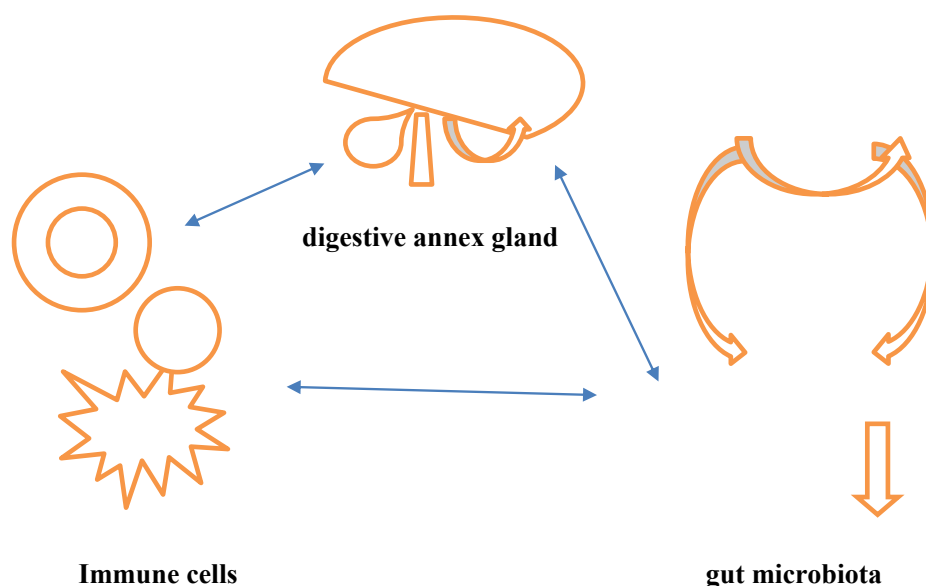
Idiopathic drug reaction is one of the great key point in cirrhosis, for differential diagnosis. Nowadays, the exactly prevalence of cirrhosis in the world, is without doubts still unknown.[54]

**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 recommendations, 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 dysfunctionality. [Figure 1]

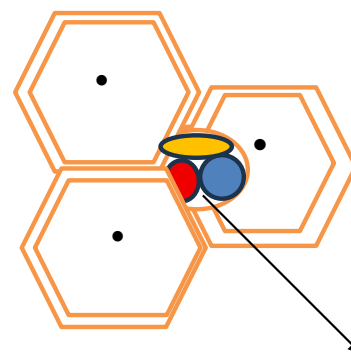


**Figure 1.** Interaction each – other under physiologically conditions.

As mentioned in studies, the digestive annex gland is capable to store, synthesize, metabolize, and release glucose. There are more important functions for a proper life of each person. In this study direction, we can mention, that the liver is an important organ for digestive absorption and also for performs uptake, synthesis, and not only for secretion of biochemical compounds such us lipids and lipoproteins. Good to mention that the cholesterol can be absorbed from the intestine or could possible to be synthesized *de novo* in the liver. The liver is an annex gland of gastrointestinal tract, known as an organ. [55]

Important in studies and in research work, the falciform ligament is an attachment near the umbilicus and continues the anterior aspect of the liver with the umbilical fissure. Referring to the surgical acts, at the base of the falciform ligament along the liver, the hepatic veins drain into an important part from the gastrointestinal tract, more exactly, inferior vena cava (IVC). [56] Good to know that gastrointestinal tract has specific associations with the liver. In addition, the duodenum

and also the portal structures are in direct association with the liver through the hepatoduodenal ligament and porta hepatis vein. Pringle maneuver is important in medical practice, from surgically point of view. So, during a hepatic resection, need a Pringle maneuver for fully control of the hepatic vascular inflow.[57,58]



**Artey, Vein, Bile duct= portal area**

**Figure 2.** Liver structure. Hepatocytes; lobules compounds; central vein.

## Conclusions

Research studies predict about not so a good prognosis of patients diagnosed with cirrhosis, knowing laboratory results and clinical points. Nowadays diagnostic methods including a proper control of liver functions conduct to a proper diagnostic. In idea that hepatic cirrhosis is hard or impossible to cure, we are waiting from future research dirrections and plans.

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