

Diseases of the Liver

Liver disease in farm animals can have a variety of etiologies including

- 1- Toxicities.
- 2- Parasitism.
- 3- Metabolic disorders.
- 4- infectious diseases.
- 5- Biliary obstructive disorders.

A classification of hepatic diseases into primary and secondary liver disease.

- a- In primary hepatic disease the clinical manifestations are caused solely by liver disease,
- b- Secondary liver disease symptoms arise as part of a generalized disease process, or they are spread from another organ.

Hepatitis is defined as inflammation of the liver occurring in response to a causative factor and characterized by a series of mesenchymal reactions such as proliferation of bile ducts and Kupffer cells or fibrotic processes. The classical symptoms of inflammation, such as increased capillary permeability and exudation.

Hepatosis is defined as a metabolic disorder of liver cells in the widest sense and is characterized by degenerative, noninflammatory changes of the liver parenchyma.

Clinically, the differences between these two diseases are not marked, although some assistance can be obtained from clinicopathologic examination.

Hepatic Dysfunction

There are no specific modes of hepatic dysfunction.

The major hepatic functions that, when disordered, are responsible for clinical signs include:

- 1- Maintenance of normoglycemia
- 2- Synthesis of plasma proteins including so-called positive and negative acute phase proteins
- 3- Formation and excretion of bile salts as well as conversion and excretion of bilirubin
- 4- Formation of prothrombin
- 5- Detoxification and excretion of toxic substances, including ammonia and photodynamic agents

Manifestations of Liver and Biliary Disease

JAUNDICE (ICTERUS)

Jaundice or icterus is characterized by the yellow discoloration of unpigmented skin, mucosal and conjunctival membranes, as well as membranes over the sclera and is caused by elevated blood bilirubin concentrations.

Jaundice is classified into three categories depending on its etiology: prehepatic or hemolytic, hepatic or hepatocellular, and posthepatic or cholestatic.

A- PREHEPATIC OR HEMOLYTIC JAUNDICE

Hemolytic jaundice is caused by massive intravascular or extravascular hemolysis resulting in the release of red blood cell hemoglobin. The breakdown of the increased amounts of hemoglobin results in elevated concentrations of unconjugated (or indirect) bilirubin, which needs to be converted into conjugated (or direct) bilirubin by the liver before being excreted through the biliary system.

B- Hepatic Or Hepatocellular Jaundice

Hepatocellular jaundice is the result of impaired capacity of the liver to conjugate indirect to direct bilirubin, which is required for excretion of bilirubin with bile. The cause may be any of those diffuse diseases of the liver that cause degeneration of hepatic cells, which are listed under hepatitis. Swelling and edema in the liver caused by inflammation can result in a mechanical obstruction of the biliary flow within the liver.

C- Posthepatic Jaundice

Obstruction of the bile ducts or common bile duct by nematodes, flukes, or biliary calculi, as well as compression by tumor masses, is a possible cause of posthepatic jaundice.

Inflammation of the bile ducts by extension from enteritis or by infestation with trematodes can also impair the bile flow and result in elevated concentrations of direct bilirubin.

Hepatic Encephalopathy

Hepatic encephalopathy is defined as the occurrence of neurologic signs caused by neurotoxic substances in the blood that are normally detoxified by the liver. Typical signs include the following:

- Dullness
- Head pressing
- Compulsive walking
- Ataxia
- Muscle tremors and weakness
- Central blindness
- Hyperexcitability
- Convulsions

These signs are common with any severe hepatocellular insufficiency or major circulatory bypass of the liver. Terminally, **hepatic coma** may occur.

Many factors, including hypoglycemia and failure of normal hepatic detoxification mechanisms, leading to the accumulation of excess amino acids and ammonia, or of acetylcholine, and the liberation of toxic breakdown products of liver parenchyma.

Edema And Emaciation

Failure of the liver to anabolize amino acids and protein during hepatic insufficiency is manifested by tissue wasting and a fall in plasma protein. This may be sufficiently severe to cause edema because of the lowered oncotic pressure of the plasma.

Special Examination of the Liver

When disease of the liver is suspected after a general clinical examination, special techniques of *palpation, biopsy, and laboratory diagnostic tests* can be used to determine further the status of the liver.