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Glossary

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Acinus — The main structural unit of the liver seen under the microscope; each acinus includes liver cells, sinusoids, central and portal areas with blood vessels, lymphatics and bile ducts.

Acute fatty liver — Rapid accumulation of fat in the liver usually caused by alcohol or medications that interfere with fat metabolism. Rarely, this can occur in the last trimester of pregnancy.

Acute liver disease — Liver disease that is limited in duration, but usually with a sudden and symptomatic onset.

Acute liver failure — Serious liver failure arising suddenly in a person without previous liver disease.

Acute hepatic necrosis — Sudden severe liver (hepatic) cell death (necrosis) that is typical of toxic injury to the liver.

Adenoma — A benign tumor of the liver that can grow large and rupture, causing internal bleeding.

Adenosine triphosphate (ATP) — The molecule within cells used for energy reactions.

Alanine aminotransferase (ALT) — An enzyme found in the blood that is elevated with liver injury, particularly hepatocellular (formerly SGPT). This is the most sensitive indicator of injury to the liver.

Alkaline phosphatase (Alk P) — An enzyme found in the blood that is elevated with liver injury, particularly cholestatic. This enzyme can also originate from other structures, like bone and bowel; if originating from the liver, other enzymes, such as the GGT, ALT, or liver fraction of the alkaline phosphatase will be abnormal.

Allogeneic — A transplant in which the recipient receives an organ or cells from another (usually related) person.

Aminotransferase — One of two enzymes (alanine or aspartate aminotransferase: ALT and AST) found in the blood that, when elevated, are sensitive indicators of liver injury.

Anicteric — Absence of jaundice (icterus).

Anorexia — Loss of appetite.

Antinuclear antibody — An antibody found in blood directed against the nucleus of cells, typically present in patients with autoimmune hepatitis.

Anti-smooth muscle antibody — An antibody found in blood directed against smooth muscles, typically present in patients with autoimmune hepatitis.

Apoptosis — Programmed cell death which is typical of the liver cell injury from hepatitis, as opposed to necrosis which is typical of toxic injury or shock.

Ascites — Accumulation of fluid in the abdominal cavity, which is usually caused by acute or chronic liver failure.

Aspartate aminotransferase (AST) — An enzyme found in the blood that is elevated with liver injury, particularly hepatocellular (formerly SGOT). Although elevated in liver disease, the enzyme can originate from other organs and muscle.

Asterixis — A jerking motion of the outstretched hands that is a sign of early stages of liver coma.

Autoantibodies — Antibodies in the blood that are directed against normal body proteins or cells, such as antinuclear antibody or anti-smooth muscle antibody.

Autoimmune features — Findings suggestive of an overactive immune system, such as high antibody levels and "autoantibodies".

Autoimmune hepatitis — A chronic liver disease in which an overactive immune system appears to damage the liver.

Autologous — A transplant in which the recipient receives his/her own organ or cells.

Ballooning degeneration — A form of liver cell (hepatocyte) degeneration associated with cell swelling.

Benign postoperative cholestasis — Jaundice after major surgery that is temporary and resolves without treatment.

Bile ducts — The small conduits (ducts) in the liver that allow the flow of bile from liver cells out through gradually larger bile ducts into the intestine.

Bilirubin — The chemical breakdown product of red blood cells that is normally removed by the liver and excreted in bile. Bilirubin can accumulate in the serum and lead to detectable jaundice when there is liver injury and dysfunction, obstruction to the flow of bile, or spontaneous red cell destruction (hemolysis).

Bland cholestasis — Cholestatic liver injury with minimal or no inflammation in the liver.

Bone marrow transplantation — Replacement of a person's bone marrow with that of another person, used to treat leukemia and other severe forms of cancer or genetic disease.

Budd-Chiari syndrome — A severe liver disease caused by clotting and blockage of the large veins that drain the liver.

Celiac disease — An inherited disease of the small intestine caused by allergy to wheat (gliadin).

Cerebral edema — Swelling of the brain due to accumulation of fluid, that can occur in liver failure.

Cholangiography — An X-ray that shows the large bile ducts that drain bile from the liver into the intestine.

Cholecystectomy — A surgical operation to remove the gallbladder.

Cholecystitis — Inflammation of the gallbladder, typically causing fever, nausea, and abdominal pain.

Choledocholithiasis — Gallstones which have passed into the bile ducts.

Cholelithiasis — Gallstones in the gallbladder.

Cholestatic injury — Liver injury in which interference with bile flow and jaundice are prominent.

Cholesterol — The major form of fat in the body, most of which is produced in the liver.

Chronic liver disease — Persistent, long term liver disease often with vague or mild symptoms and slow onset. Conventionally, disease has been present for more than 6 months.

Chronic liver failure — Serious liver failure arising gradually in a person with a chronic liver disease.

Cirrhosis — Scarring and permanent injury to the liver, usually the result of chronic, long term damage.

Clinical phenotype — A pattern of clinical presentation and course of liver injury that is typical for a specific disease or injury from a specific medication.

Clinical signs — Findings on physical examination such as rash, fever, enlarged or tender liver and jaundice.

Clinical symptoms — Patient complaints such as fatigue, nausea, poor appetite, dark urine or yellow discoloration of the skin (jaundice).

Coagulopathy — Abnormal bleeding tendency which can be caused by lack of clotting factors that are made by the liver.

Collagen — The major protein found in scars and that is increased in cirrhosis of the liver.

Dark urine — Dark or tea-colored urine is a symptom of liver disease caused by elevations in serum bilirubin and secretion of bilirubin in the urine.

Dietary Supplements — Dietary supplements contain one or more dietary ingredients such as vitamins, minerals, herbals or other botanicals, amino acids or organ extracts that are intended to supplement the diet.

Ductopenia — Finding on liver histology of a decrease or lack of small bile ducts in the liver.

Ductules — The smallest bile ducts that can be seen on liver histology.

Edema — Tissue swelling of the feet, ankles or other parts of the body caused by abnormal accumulation of fluid which can be the result of heart, kidney or liver failure.

Eosinophilia — Increased eosinophils in the blood (the white blood cells that are active in allergic reactions).

Elastography — A noninvasive X-ray method of measuring stiffness of the liver, which is increased with advancing fibrosis and cirrhosis.

Encephalopathy — Mental confusion and altered level of consciousness that can occur in liver failure.

Endothelial cell — The cells in the liver that line the blood channels (sinusoids).

Esophagus — The muscular swallowing tube that runs from the mouth to the stomach.

Fatty acid — The breakdown product of triglycerides and fat that are taken up by the liver and used as a source of energy or to make triglycerides.

Fibrosis — The presence of scarring in the liver, usually shown by liver biopsy histology.

Focal nodular hyperplasia — A benign tumor of the liver.

Gamma glutamyl transpeptidase (GGT) — An enzyme found in the blood that is elevated with liver injury, particularly cholestatic. This is also commonly elevated in recent alcohol consumption.

Glutathione — A substance made in the liver that binds to and helps remove drugs and toxins.

Glycogen — The principal storage form of glucose (sugar) in the liver.

Granulomatous hepatitis — Liver injury in which granulomas (small collections of inflammatory cells) are found in the liver biopsy.

Graves' disease — A disease of the thyroid (hyperthyroidism)

Hepatic encephalopathy — Confusion, mental dullness, drowsiness and even coma caused by liver failure.

Hepatitis A — Infectious liver disease, spread primarily through the fecal-oral route, caused by the hepatitis A virus; now preventable by vaccine. Most people recover and the infection does not become chronic.

Hepatitis B — Infectious liver disease caused by the hepatitis B virus, spread primarily through sexual contact or through perinatal (vertical) transmission; now preventable by vaccine. Approximately 5% of acute hepatitis B cases become chronic.

Hepatitis C — Infectious liver disease caused by the hepatitis C virus for which there is no vaccine and which commonly becomes chronic; now the most common cause of cirrhosis in the United States.

Hepatitis D — Rare but severe liver disease caused by the hepatitis D virus, which only affects persons who are also infected with hepatitis B.

Hepatitis E — Infectious form of viral hepatitis that is rare in the United States but common in the developing world; may also be spread by contact with pigs or wild boar.

Hepatocellular injury — Liver injury in which liver cell damage and inflammation are prominent.

Hepatocyte — The major cells in the liver responsible for its function.

Hepatotoxicity — Toxin injury to the liver due to a medication, chemical, herbal or dietary supplement; another term for drug induced liver injury.

Hemangioma — A benign tumor of the liver.

Hematopoietic cell transplantation — Transplantation of blood elements such as bone marrow or stem cells.

Hepatic venous pressure gradient — A diagnostic measurement of the pressure inside the veins of the liver that is increased in cirrhosis.

Hepatomegaly — Enlargement of the liver.

Hyperammonemia — High levels of ammonia in the blood which can occur in liver failure.

Hyperlipidemia — Abnormally high levels of lipids (cholesterol, triglycerides) in the blood.

Hyperthermia — Abnormally high body temperature, usually due to heat shock, which can cause liver injury.

Hypotension — Abnormally low blood pressure, which can cause liver injury (ischemic hepatitis).

Hypoxia — Low oxygen tension in the blood which can cause liver injury (ischemic hepatitis).

Icteric — Presence of jaundice, which is typically first evident in the whites of the eyes (sclera) followed by skin.

Icterus — Another name for jaundice, used to describe a yellowish tinge to the skin and eyes.

Idiopathic — A medical term meaning "of unknown cause".

Immunoallergic hepatitis — Liver injury with prominent features of allergy or hypersensitivity. Typically, this includes fever, rash, and/or hives.

Immunoglobulin — A class of blood proteins that include antibodies.

Interlobular bile ducts — The larger bile ducts in the liver that allow the flow of bile from intralobular bile ducts to the larger bile ducts that, ultimately, direct bile to the gallbladder and intestine.

Intralobular bile ducts — The small conduits (ducts) in the liver than allow the flow of bile from liver cells to the larger, interlobular bile ducts.

Ischemic hepatitis — Severe hypotension (shock), lack of oxygen (anoxia), or sudden heart failure that leads to decreased blood flow to the liver; usually resolves quickly if the sudden insult is corrected.

Itching — Irritating skin sensation that provokes scratching, a symptom of liver disease, particularly cholestatic (also known as "pruritus").

Jaundice of sepsis — Jaundice occurring in the setting of severe bacterial infections (sepsis) that resolves if the infection in treated; liver biopsy shows prominent cholestasis.

Jaundice — Yellowish tinge to the skin or whites of the eyes caused by elevation in bilirubin in the blood; also called "icterus".

Lactic acidosis — High levels of lactic acid in the blood, usually caused by failure of mitochondrial function in the liver.

Large bile ducts — The bile ducts in the liver (right and left hepatic duct) and outside of the liver (common bile duct) allow the flow of bile to the gallbladder and intestine.

Latency — The duration between ingestion, or exposure, to a drug, toxin, or infectious agent and the onset of disease.

Likelihood score — A 5-point scale [A to E] that estimates whether a medication is a of cause liver injury: A=Well known cause; B=Highly likely cause; C=Probable cause; D=Possible cause; E=Unlikely cause; E*=Suspected but unproven cause; X=Unknown.

Liver histology — Findings on microscopic assessment of a liver biopsy.

Liver inflammation — Findings of white blood cells (inflammatory cells) in the liver on microscopic assessment of a liver biopsy.

Liver test abnormalities — Blood tests results that indicate liver injury such ALT, AST, alkaline phosphatase, bilirubin, albumin and prothrombin time (or INR).

Liver transplantation — Replacement of a person's liver with that of another person, used to treat end stage liver disease, acute liver failure, liver cancer and rare genetic disorders.

Lymphocyte — A type of white blood cell that is responsible for immune responses.

Macrophage — A large cell found in the liver that engulfs foreign material and takes part in inflammation.

Macrovesicular fat — Abnormal large droplets of fat found in liver cells; typically, the nucleus is pushed to one side of the cell by fat droplets.

Mallory bodies — Abnormal twisted rope-like bodies seen by microscope in fatty liver disease.

Matrix — The proteins that surround and support cells.

Microvesicular fat — Abnormal numbers of small droplets of fat in liver cells; typically, the nucleus remains in the center of the cell.

Mitochondria — A component found in all living cells that is responsible for producing energy and is essential for health.

Mixed injury — Liver injury with features of both hepatocellular and cholestatic injury.

Monoclonal antibody — Antibodies produced in mice that are highly specific for a single protein or substance, which can be used to treat serious diseases such as cancer (rituximab) or arthritis (infliximab).

Mononucleosis — Acute illness caused by the Epstein Barr virus that can cause liver disease that resembles acute viral hepatitis.

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M & V Scale — A causality assessment method similar to RUCAM developed by Drs. Maria and Victorino.

Myeloablation — Deliberate destruction of the bone marrow by chemotherapy, done in preparation of bone marrow transplantation.

Myopathy — Disease of the muscles.

Naranjo Scale — A causality assessment method for assessing all forms of drug induced adverse events.

Neuropathy — Disease of the brain, nerves or nervous system.

Neutropenia — Decrease in neutrophils, a white blood cell important in defense against infections.

Neutrophil — A white blood cell which is an important defense in bacterial infections.

Nodular regenerative hyperplasia — Unusual transformation of the normal liver structure into nodules. Typically, there is little or no scar tissue, differentiating this from cirrhosis.

Nonparenchymal — A liver histology term referring to those parts of the liver other than the major hepatocytes (liver cells) including the endothelial cells, macrophages, veins, arteries and bile ducts.

Nystagmus — Involuntary jerking motion of the eyes that occurs with brain injury and liver coma.

Optic neuritis — Inflammation of the nerves of the eye, which can cause blindness.

Pancreatitis — Inflammation and injury of the pancreas.

Parenchymal — A liver histology term referring to the part of the liver with hepatocytes (liver cells) as opposed to the areas with supporting cells, veins, arteries and bile ducts.

Percutaneous liver biopsy — A liver biopsy that is done by passing a needle through the skin into the liver.

Plasma cell — A cell that makes antibodies, which is often found in liver inflammation caused by autoimmune reactions.

Portal hypertension — Abnormally increased pressure in the portal vein that delivers blood from the intestine to the liver, which is caused by cirrhosis and can result in bleeding and fluid retention (ascites).

Portal inflammation — Findings of inflammatory cells on liver biopsy in areas around the veins, arteries and bile ducts entering the liver.

Primary biliary cirrhosis — A chronic liver disease marked by gradual autoimmune loss of bile ducts leading ultimately to cirrhosis.

Primary sclerosing cholangitis — A chronic autoimmune disease marked by damage and loss of the large bile ducts that can lead to liver damage and cirrhosis.

Prodromal — In acute liver disease, the period of symptoms, frequently vague, immediately before appearance of jaundice.

Prognosis — Prediction or likelihood of an outcome (good or bad) of an illness.

Prothrombin time — A measure of clotting ability that becomes abnormal (prolonged) with liver failure.

Pruritus — Itchiness of the skin, a symptom of liver disease, particularly cholestatic.

Radio-mimetic — Resembling radiation effects.

Rechallenge — Reexposure, deliberate or accidental, of a patient to a medication that was believed to have caused an adverse side effect, such as drug induced liver injury.

Reticulin — A stain used on liver biopsies to visualize elastic fibers.

Reye's syndrome — An acute and severe liver disease of children that follows an acute viral illness and aspirin use.

RUCAM — The Roussel Uclaf Causality Assessment Method for evaluating the likelihood that a medication has caused drug induced liver injury.

R value — The ratio of alanine aminotransferase (ALT) to alkaline phosphatase (Alk P) values, both expressed as multiples of the upper limit of normal. An R value of >5.0 is used to define hepatocellular injury, R <2.0 as cholestatic injury, and R between 2.0 to 5.0 as mixed hepatocellular-cholestatic injury.

Sinusoids — The small passages between liver cells in which blood flows from the portal areas to the central veins.

Sinusoidal-obstruction syndrome (SOS) — Liver histology findings indicating a blockage of blood flow out of the liver.

Splenomegaly — Enlargement of the spleen.

Status epilepticus — Persistent, uninterrupted seizures.

Steatohepatitis — Excess fat with inflammation and damage in the liver.

Steatosis — An abnormal amount of fat in the liver.

Stellate cells — Fat storing cells in the liver that make collagen (fibrosis).

Stevens-Johnson syndrome — Sudden onset of fever and severe body rash often due to an allergic reaction to a medication.

Synthesis — Production or making of a substance.

Tachycardia — Rapid heart rate.

Tachypnea — Rapid breathing rate.

Thrombocytopenia — Abnormal decrease in the numbers of blood platelets, which are small elements needed for clotting.

Transjugular liver biopsy — A liver biopsy that is done by passing a needle in a flexible tube from a vein in the neck into the liver.

Triglycerides — One of the major forms of fat that is produced in the liver and found in the blood.

Varices — Abnormal, large veins that are found in the esophagus and intestine when there is portal hypertension.

Vanishing bile duct syndrome (VBDS) — A chronic form of liver disease in which there is a gradual loss of small bile ducts in the liver (ductopenia).

Veno-occlusive disease (VOD) — Another term for "sinusoidal-obstruction syndrome" or liver histology findings indicating a blockage of blood flow out of the liver.

Vinyl chloride — Chemical used in manufacturing that can harm the liver.

Viral hepatitis — Liver disease caused by one of 5 hepatitis viruses (A, B, C, D or E).

Wilson disease — An inherited disease marked by accumulation of copper in the liver, brain and other tissues that can cause cirrhosis and be fatal if not detected early and treated.