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Perspective

The Separation of Falciform Ligament by Anatomical Precision

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DESCRIPTION

Over the stomach, duodenum, and right kidney, the liver is located in the upper abdomen. It possesses mostly the right hypochondrium. It weighs approximately 1500 g in an adult and is the largest organ in the body. The superior, inferior, anterior, posterior, and right lateral surfaces make up the liver, because it runs from the posterior abdominal wall to the anterior abdominal wall.

Lobes of the liver

The liver is typically divided into right and left lobes. The falciform ligament is frequently regarded as the morphological right and left halves of the liver. However, structurally, the C line that runs from the gall bladder fossa to the inferior vena cava marks the boundary between the right and left lobes. The falciform ligament actually divides the left and right halves of the left lobe, according to anatomical precision. Five-sixths of the liver's volume is in the right lobe, while only one-sixth is in the left lobe. On the transpyloric plane, about a hand's width from the xiphisternal joint, the inferior border crosses the infrasternal angle. At the inferior aspect are the smaller caudate and quadrate lobes in addition to the right and left lobes. The liver's sharp inferior border, the gall bladder on the right, the ligamentum on the left, and the portal hepatis posteriorly form the quadrilateral quadrate lobe. The caudate lobe is linked laterally. Above, it merges seamlessly with the liver's superior surface. The portal hepatis is located below. On the left is the fissure for the ligamentum venosus, and on the right is a deep groove that holds the inferior vena cava in place. Each of the nine portobiliary segments of the liver is equipped with its own arterial, portal venous, and biliary supplies. The lack of connective tissue septa between the segments and the arrangement of the hepatic veins, which does not follow this pattern, limit the independence of these structures, which is important for planning surgical segmental resections. However, separating the liver into these sections has significant practical value. The liver's right lobe is divided into anterosuperior, anteminferior, posterosuperior, and medioinferior segments, while the left lobe is divided into medioinferior, latcrosuperior, and latero-inferior segments. The right lobe also has anterosuperior, anteminferior, posterosuperior, and although the right half of the caudate lobe, in particular, has a variable blood supply, it is still included in the ninth segment.

Bile ducts

Bile emitted by the liepatocytes channels into the right and left hepatic pipes. The gall bladder stores some bile through the cystic duct, which is protected by oddi's spiral sphincter. The hepatic duct is formed where this meets the junction of the two hepatic ducts. Finally, bile drains into the second duodenum. There are three types of large bile ducts: first generation ducts, which are the left and right hepatic ducts that are larger than 800 millimeters in diameter; second generation ducts, which are segmental ducts that are smaller than 400 millimeters per minute; and third generation ducts, which are area ducts that are smaller than 300 millimeters per minute.

Blood supply

Aproximately 25% of the cardiac output is delivered to the liver. Due to its dual blood supply, it is an unusual organ. The portal vein, which receives nutrients from the intestines, accounts for 80 percent of this. The hepatic artery, which carries the remaining 20%, has a higher P^{O2}.The liver gets 40% of its oxygen from the hepatic artery rather than the hepatic vein. Variable connections exist between these blood vessels and the portal hepatis. A common hepatic artery originates from the superior mesenteric artery in 14% of people, a left hepatic artery originates from the left gastric artery in 14% of people, and a common hepatic artery originates from the superior mesenteric artery in 3% of people. Blood channels from the liver by means of the hepatic vein and afterward into the substandard versa cava.

Endothelial cells

Endothelial cells that line the sinusoids specialized endothelial cells line the sinusoids in the liver. There is no well-formed basement membrane and the cells are discontinuous. These cells have plates that look like sieves in their cytoplasm; all three of these characteristics make it easier for blood material to

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exchange with hepatocytes. The cells become adherent, the sieve-like plates are lost, and a distinct basement membrane is laid clown under pathological conditions. The diffusion barrier is increased by all of these changes. The cells have long, bland nuclei that are hard to see with routine staining, as is the cytoplasm. Kupffer cells and stellate cells cannot be reliably distinguished from them using these stains. The endothelial cells not only have unusual histological characteristics, but they also have a distinctive immunophenotype. Again, in pathological conditions, these cells become more similar to endothelial cells elsewhere and are positive for these markers, but they do not stain for the typical endothelial markers CD3I and CD34. Other endothelial cells the endothelial cells that line the portal vein, hepatic vein, and hepatic artery as well as their branches have the same histological and immune-histochemical characteristics as the endothelial cells that are found throughout the body.

Macrophages

Both the portal tracts and the sinusoids contain macrophages, or kupffer cells. The density of kupffer cells is highest around the portal tract, despite their distribution throughout the liver lobule. They have cytoplasmic nuclei in the shape of beans that are typical of macrophages found elsewhere in the body. These cells become activated when there is an inflammatory situation and now have d PAS-positive carotid pigment in them. Their presence may indicate that liver damage has subsided to the point where only minor abnormalities remain. It is possible to identify hepatic macrophages under both normal and pathological conditions.

Stellate cells

Stellate cells, which used to be known by a lot of different names, including Ito cells, have received a lot of attention inrecent years because they are the primary cells that are involved in liver fibrosis, which is a major occurrence in all chronic liver diseases. In the normal liver, this space is invisible, but in cases of acute venous outflow obstruction, red blood cells can be seen in it. Although they may also act as pericytes and regulate sinusoidal blood flow, their normal role appears to be as vitamin A storing cells. They are extremely difficult to identify in normal livers, but when vitamin A overload occurs, they become clearly vacuolated and are associated with scalloping of the nucleus. They are referred to as myofibroblasts upon activation. They begin to produce collagen and become positive for actin, desmin, and vimentin. The neural cell adhesion molecule synaptophysin are expressed by resting stellate cells.

Extracellular matrix

Portal tracts and the hepatic vein walls contain dense and polarizable type I collagen. This kind of collagen is uncommonly found within the lobules. Several stains, such as I lematoxylin van Gicscn and trichromc stains. The liver does not contain type 2 collagen, which is typically associated with cartilage. The sinusoids contain collagens of types 3 and 4. Silver stains can help identify type 3 collagen (reticulum), type 4 and type 5 collagen, respectively is found in bile ducts and blood vessels' basement membranes. The portal tracts and sinusoids both contain fibronectin, a glycoprotein of the extracellular matrix. Type I collagen and elastic fibers are found in the same places. An elastic van Giesen, orcein, or Victoria blue stain can identify it.