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# ANATOMICAL AND PHYSIOLOGICAL FEATURES OF THE HUMAN LIVER (HEPAR)

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**Annotation:**

The liver (hepar) is the largest parenchymal gland in the human body and is central to the metabolic regulation system. Due to the variety of functions performed, the liver participates in maintaining homeostasis, providing detoxification, synthetic processes, energy balance and immunological protection of the body.

The relevance of studying the anatomical and physiological features of the liver is due to the high prevalence of hepatobiliary diseases and the importance of this organ in clinical practice.

The purpose of this work is a comprehensive consideration of the anatomical structure and physiological properties of the human liver.

**Anatomical features of the liver**

The liver is located in the right hypochondrium and epigastric region, adjacent to the diaphragm. The organ has a wedge-shaped shape and is covered with a serous membrane — the visceral peritoneum (peritoneum viscerale), with the exception of the area of the "bare zone" (area nuda).

Macroscopically, the liver is divided into two main lobes - the right (lobus dexter) and the left (lobus sinister), as well as additional - the caudate (lobus caudatus) and the square (lobus quadratus). Functionally, the liver is divided into segments according to the branching of the portal vein (vena portae) and the hepatic artery (arteria hepatica propria).

The structural and functional unit of the liver is the hepatic lobule (lobulus hepaticus), which is a prismatic formation consisting of hepatocytes. Hepatocytes form beams (trabeculae), between which sinusoidal capillaries (sinusoides hepatici) are located, which provide contact between blood and liver cells.

A feature of the blood supply to the liver is a double system of blood flow:

Venous blood flows through the portal vein (vena portae)

arterial — along the hepatic artery

The outflow of blood is carried out through the hepatic veins (venae hepaticae), which flow into the inferior vena cava inferior.

The bile tubules (canaliculi biliferi), formed by hepatocytes, unite into larger ducts, forming the biliary system.

Physiological properties of the liver

The liver is a multifunctional organ that provides a wide range of biochemical and physiological processes.

Metabolic function

The liver plays a key role in metabolism. In carbohydrate metabolism, it regulates blood glucose levels through the processes of glycogenesis, glycogenolysis, and gluconeogenesis.

In protein metabolism, the liver carries out the deamination of amino acids, the synthesis of urea and plasma proteins, including albumin and coagulation factors.

Lipid metabolism includes the synthesis of cholesterol, phospholipids and lipoproteins.

Detoxification function

One of the most important functions of the liver is the neutralization of endogenous and exogenous toxins. In hepatocytes, biotransformation reactions occur, including the phases of oxidation, reduction and conjugation.

Thanks to enzyme systems, including cytochrome P450, the liver neutralizes drugs, alcohol and metabolic products.

Secretory and excretory functions

The liver synthesizes bile (bilis), which is necessary for the emulsification of fats and the activation of intestinal enzymes. Bile is also involved in the elimination of bilirubin, cholesterol and toxins.

Depositing function

The liver serves as a depot of glycogen, vitamins (A, D, B12) and trace elements (iron). This ensures the maintenance of the energy and vitamin balance of the body.

Immunological function

Kupffer liver cells (cellulae Kupfferi) play an important role in immune defense, carrying out phagocytosis of bacteria and decay products.

## Conclusion

The liver is a unique organ that combines a complex anatomical structure with a variety of physiological functions. Its role in ensuring homeostasis, metabolism and detoxification makes it indispensable for the vital functions of the body.

A deep understanding of the anatomical and physiological features of the liver is important for the diagnosis, treatment and prevention of diseases of the hepatobiliary system.

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