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Morphological features of the structure of liver complexes

F. Kh. Olimkhujhaev
(*Tashkent State Dental Institute, Department of Anatomy)*

Abstract: In an experiment on 142 white male mongrel rats from the moment of birth to 8 months of age, various periods of postnatal ontogenesis were studied. The early postnatal period (up to 10 days) of rat liver development is characterized by the absence of lobular structure both in the subcapsular zone and in the underlying parts of the hepatic parenchyma; the presence of initial hepatic venules formed in the subcapsular zone from the fusion of several sinusoids. From the age of two weeks to the end of postnatal ontogenesis, in the liver, along with the lobules, it is possible to distinguish constantly occurring hepatic complexes, which represent a higher level of structural organization of the hepatic parenchyma than the lobule. In the process of formation of the microvascular architectonics of the organ in postnatal ontogenesis, the main thing is the formation of new structural and functional units in the subcapsular zone of the liver.

Key words: hepatic structure, microvessels, structural features, experiment

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B.A. Akhunjanov, V.A. Alimov (2005) gigar microcron tomirlari and parenchymosis are part of the control package, the participant of the integrated tour carrier accurately assesses possible side, regulatory and pathological indicators. If you are thinking about taking a decisive step, dzhigar micromirlari and the postnatal structure of a long and completed round.

Material and styles

In the experiment, we studied different periods of postnatal ontogenesis of the liver in 142 White benign rats. 1(Newborn) of postnatal ontogenesis for experience), 3, 7, 12, 14, 21 daily and received periods of 1, 3, 8 months. They were kept in a normal nutrition ration under vivarium conditions. Periods of Postnatal ontogenesis (V.I.Zapadnyuk, 1971; R.Based on the classification of Gossrau,1975). All animals were inanimate by the method of decapitation.

For the purpose of detection and examination of hepatic blood vessels, the administration of the traditional Gerot mass into the hepatic blood vessels, tush-X injection of bichrome with gelatin (2% solution).X.After painting the vessels with the Kamilov (1970) style, paraffin and 5% waxed liver fragments were prepared and reconstructed in microtoma in parallel with the Glisson capsule, floor-by-floor cuts with a thickness of 20-40 μm. Morphometric examinations were

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measured in an R-2 binocular microscope with a MOV-15x ocular-micrometer, photographing microprepa-rats, variation-statistics (Strelkov B.P. (1965) methods and Microsoft Excel 2010 programs were used. Only when the statistical R < 0.05 was satisfied, the differences were perceived as factual.

Results

The time from birth to the 2-week period of postnatal growth of the hepatic hemomycrocirculatory system is very intense. During this period, the liver does not have classic pieces of liver, in which lumpy structures begin to form only by 12-14 days.

When the liver observed incisions made in a parallel state to the fibrosis capsule, it was found that newborn 1-day haymons do not have fragmentary structures. Under the fibrosis capsule, starting hepatic venules are observed, which are separated from the capsule at a depth of 100-120 μm from the sinusoid capillary mesh and sinusoid vein injection. Up to the 7th day of Postnatal growth, asinar structures in the liver fibrosis are detected at a depth of 220-260 μm from the capsule.

And from the 10th day, "oblong fragments" of 7-8 angles began to be detected at a depth of 240-260 μm from the hepatic fibrosis capsule. In the center of these fragments, 2-3 First-Order (central) veins are located. Among the veins of the first order, sinusoid vessels are identified. 240-260 μm from the hepatic fibrosis capsule. at a depth of up to an irregular mesh of sinusoid vessels is located.

On the 12th day of Postnatal development, 7-8 angular fragments were located at a depth of 160-180 μm from the liver capsule, which differ in size from the fragments observed on the 10th. If on the 10 day of postnatal development the average area of \ u200b \ u200bThe lumpy surface is 0.147 mm2, then on the 12 day its area is equal to 0.178 mm2. On the 14th day of Postnatal growth, hexagonal (classic) fragments begin to be detected at a depth of 40-80 μm from the hepatic fibrosis capsule. In the area up to 40-80 μm from the hepatic fibrosis capsule, the mesh of the sinusoid vessels is located. From some sectors of the sinusoid mesh, primary hepatic venules are formed as a result of the addition of sinusoid capillaries. These venules are the first branch of the vessels that carry the microcirculatory system of the liver. Up to the 14th day, the appearance of four zones of liver complexes sequentially indicates the formation of the first bases of liver complexes, then the third and later the second zone.

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Photo 1. Liver slice. The Postnatal period is 14 days. Cut perpendicular to the hepatic fibrosis capsule. Scanning electron microscopy. Lens X50, ocular X20. 1-formation of the initial hepatic vein, 2-sinusoidal veins.

As you know, in the literature published so far, liver slices are described in the following form: a piece of liver has a hexogonal structure with a hexagonal shape, which has a prismatic shape. Portal triads are located at the corners of the lane. The vein in its center is turned in a downward direction, forming a right angle, at the base of the lump, and the lump is poured into the underground vein (Prives M. G. (1985); Sinelnikov R. D. (1979); Sadriddinov A.F.(1993).

In our research, it was found that from birth, that is, from 1 day, up to 10 days of postnatal development, fragmentary structural structure is not found either in the hepatic capsulosti part and deeper parts of it, the formation of primary hepatic venules in all periods from the addition of sinusoids in the hepatic capsulosti zone, rapid growth of the liver at the expense

Our research has found that from the 2nd week of postnatal development of the liver, until the end of life, along with lumps, there are always liver complexes that occur. They have a structural structure above the splinter, are made up of 3 different splinters that are bounded by Portal veins and overlap each other:

The fragments of the 1st type are formed from classic liver fragments with hexagons, at the corners of which are delimited by Inter-articular veins and the septal or fragmented anterior veins separating from them.

Pieces of the 2nd type have a "oblong" shape, characteristic of the addition of 2-3 classic pieces. Such fragments are 7-8 corners, in the center of which 2-3 central veins are located. These veins we called the veins of the first order. In" oblong fragments", the distance between two or three first-order veins decreases as the liver deepens from the fibrosis capsule. The 3rd type of splinters also have a "oblong" shape with a difference from the 2nd type of splinters, in which two or three first-order veins join each other, dressing the next, second-order veins.

Liver complexes consist of 4 zones, which are arranged in the following order:

Zone I-there are no lumpy structures under the hepatic fibrosis capsule, and in this zone the sinusoid capillary vascular mesh is located. Between this mesh, the initial hepatic venules are formed from the joint of the sinusoid vessels.

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In Zone II, hexagonal (classic) fragments of Type 1 are located, in the center of which I collects blood from the (Central) Viennese sinusoids of the first order.
Zone III was made up of "oblong pieces"of Type 2, dressing from the addition of 2-3 classic pieces. Such fragments are 7-8 corners, in the center of which 2-3 veins of the First Order (Central) are located. Between these veins are located sinusoids.

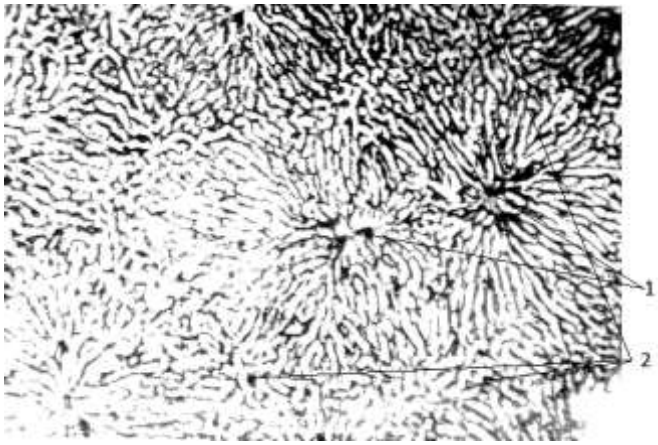

Photo 2. Liver slice. The Postnatal period is 14 days. Cut parallel to the hepatic fibrosis capsule. Fibrosis is at a depth of 180 μm from the capsule. Coloring method: dream-injection of bichrome with gelatin (2% solution). Lens x15, ocular X8. 1-veins of the First Order (central vein), 2-Portal veins.

In Zone IV, fragments of the "oblong" shape of Type 3 are located, the difference from the fragments of Type 2, in which 2-3 veins of the First Order are joined among themselves, dressing the next, second-order veins.

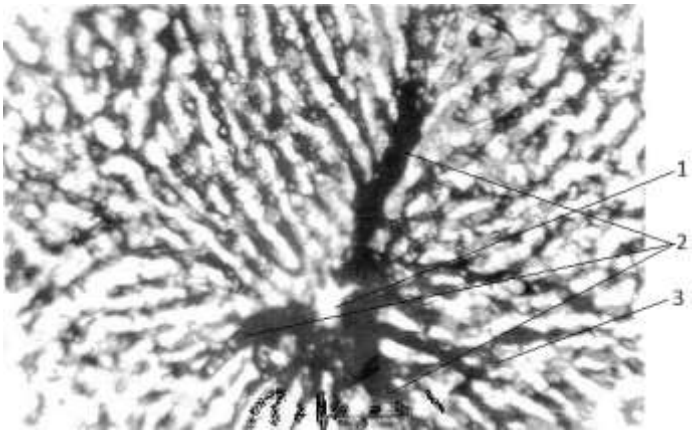

Photo 3. Liver slice. The Postnatal period is 14 days. Cut parallel to the hepatic fibrosis capsule. Fibrosis is 40 μm deep from the capsule. Coloring method: dream-injection of bichrome with gelatin (2% solution). Lens X20, ocular X10. 1 - veins of the First Order (central vein), 2-initial hepatic vein, 3-sinusoidal capillary vessels.

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In addition to the wavy and asynchronous process in the growth of the hepatic cleft and microtomyrs, it was observed that the depth of detection of various zones of liver complexes changes. If on 7 days of postnatal development, asinar structures were detected at a depth of 220-260 μm, on 10 days, fragments of Type 3 were observed at a depth of 240-260 μm, and on 12 days, fragments of Type 2 at a depth of 160-180 μm. On the 14th day, fragments of 1 type were detected from 40-80 μm. These changes will also be evidence of the dressing of liver complexes and lumps and the growth in the direction of capsulaosti, starting from the bases of the complexes.

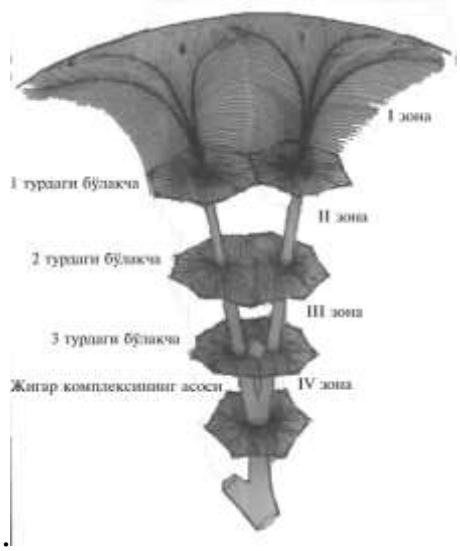

Photo 3. Liver complex drawing. Scheme prepared by the method of reconstruction based on liver incisions of different depths. Above is the hepatic fibrosis capsule. Under it are sinusoidal capillaries tri. Pieces of 1, 2, 3 types. 4 zones of the liver complex.

Thus, a waveform and asynchronous process was observed in the growth of the hepatic cleft and microtomyrs. This is evidenced by the dressing of new microtomyrs and structures in them. Growth occurs due to the fact that in our opinion the lower part of the liver capsule. The waveform and asynchronous process in the growth of the liver fragment and microtomyrs indicates that the liver fragments and complexes are newly dressing under the liver capsule.

Discussion

Liver sinusoids have been studied in laboratory animals and humans under experimental Hepatology.

A.V.Kolasov, V.M.Balashov (1963) studied the morphological structure of sinusoids in liver fragments, their thickness and relationship with liver cells as well as liver sinusoids in people aged 9-87 years. In children, sinusoids are located in an indeterminate direction. With age changes, the sinusoids acquire a radial orientation and accumulate in the central vein. Children will have mesh sinusoid nets. In people who have lived a lot and are old, the sinusoid parts are transformed into

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fragments by reduction.

S.K.Mitra (1966) found anastomoses between the terminal of the liver cell and the sinusoid in the peripheral part of the liver fragment.

R.S.According to the definition of the Cascade (1976), the path of sinusoid and arterial blood is uneven and consists of the sphincters of endothelial cells located in the part of the sinusoids away from the gate vein and in the part of the sinusoids that fall into the central vein.

V. E. According to Burkel(1980), sinusoids store endotheliocytes in their wall, regardless of whether they start with the artery system or the venous system. Their starting section is bounded by the basal membrane. During the next course of the sinusoids, the basal membrane, while in the endothelium, the phenestrasias are characteristic clouded.

X. E. According to the indication of Blox(1994), the functional unit of the liver is the sinusoids, which lie in an area surrounded by a perisinusoidal cavity, corresponding to a diameter of 1/2 of the sinusoid with liver cells and bile ducts. The size of the functional unit of the liver varies depending on its specialization.

The literature shows that until now there are different views on the functional-structural unit of the liver: while most scientists look at a piece of liver, clinicians – a Portal piece or asinus, some authors believe that it is a perisinusoidal cavity.

N.Stefanelli (2005) performed a chyotic microscopy in a combination of constant changes in Venous and arterial blood pressure, which made it possible to see a more complete picture of the sinusoid and central venous route. Blood is visible in the Portal fragments in rare cases. With the help of chyotic microscopy, it is possible to see the full structure of the liver barrier, and in the norm, the diameter of the sinusoid can be determined.also, in pathological cases, changes in the liver sinusoids can be observed.

Ecataxine Wichai, Wake Kenjiro opinion, liver sinusoids differ significantly from other vessels in the fetus and newborns. The artery maintains a 3-storey structure in itself, while Vienna has a well-developed adventitious floor and an endothelialosti floor. Which of these Hech in the sinusode does not exist. In histological preparations, sinuses of various forms are observed. Some sinusoids will have several sinuses.

As can be seen from yukoridaki, liver sinusoids have a much more complex morphological relationship with blood vessels in the fetus and newborn babies, on the one hand with arteriola and artery anastomoses, on the other hand with the venula and the central vein.

Conclusions

As a result of the examination, the following was found: the first system of blood flow from the liver is the primary hepatic Venule, which is characteristic of the addition of sinusoids in the hepatic capsulaosti zone. The primary hepatic venules are located between the sinusoids and the primary hepatic veins.

Postnatal development of the liver from the 2nd week to the end of life, along with lumps, it is possible to distinguish between constantly occurring liver complexes. They have a structural structure above the splinter, are made up of 3 different splinters that are bounded by Portal veins and overlap each other.

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The early period of Postnatal ontogenesis is characterized by the following: the absence of a fragmentary structure even in the hepatic capsulosti part and deeper parts of the hepatic structure, the formation of primary hepatic venules from the joining of sinusoids in the hepatic capsulosti zone, rapid growth of the liver at the expense of the subcapsular zone.

Growth in the liver of young mammals the basis of the process is an increase in the number of structural-functional units. In the death of the liver fragment and microtomyrs, a wavy and asynchronous process is observed. This indicates that the liver slices and complexes will be hsil under the liver capsule anew.

It has been found that hepatic microtomeres have something in common between postnatal growth, compensatory-adaptive processes in hepatic blood vessels and fragments. The main change in this is the formation of new structural-functional units in the hepatic capsulaosti part. In conclusion:

1. The fact that the structure of the fragmented structure does not occur on days 1-10 in the hepatic capsulosti part and deeper parts from it;
2. Dressing of the initial hepatic venules from the addition of sinusoids in the hepatic capsulaosti zone;
3. Rapid growth of the liver in the form of a subcapsular zone.

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