

Subdiaphragmatic vagotomy and regulation of the liver polyploidization

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The unique ability of mammalian liver to recovery function and complete mass is being the subject of intense research to date. Recent data have shown that liver regeneration in different diseases does not always occur with classical mechanisms of regeneration simultaneously. It has been established that during alimentary dyslipidemia, tissue renewal is achieved primarily by increasing of the liver parenchymal cells ploidy. Metabolic disorders of the liver caused by subdiaphragmatic vagotomy are also described. Particularly, the transcription is inhibited and delayed the regeneration processes in rat liver during the first 24 hours of recovery. However, the inhibiting effects of the vagotomy on the liver regeneration not fully studied.

The goal. The comparative study of the peculiarities of the regulation of polyploidization in the intact and regenerating liver of adult rats under condition of subdiaphragmatic vagotomy.

Material and methods. Animals - The adult white rats (130 g). Methods - 30% hepatectomy; Subdiaphragmatic vagotomy; The amount of DNA was determined by computer software Image J; The accuracy of the data was 95%.

Result. Studies have shown that at 32 hours after subdiaphragmatic vagotomy, the number of diploid (2c) cells and binuclear tetraploid (2cx2) cells approximately doubles in the liver. At the same time, the number of other high-ploidy cells decrease reliably. Different results were obtained in case of animals which undergo only 30% hepatectomy. Particularly, the diploid (2c) cells increase and the binuclear tetraploid (2cx2) cells decrease compared to control. The same results were obtained in case of animals that undergo liver resection and subdiaphragmatic vagotomy simultaneously. At the same time, it has been shown that the octoploid cells (8c, 4cx2) increase approximately twice in 22h after subdiaphragmatic vagotomy.

Conclusions. 1. The liver responds with the increase of parenchymal cell ploidy to the destructive processes caused by subdiaphragmatic vagotomy (regulation of polyploidy).

2. Subdiaphragmatic vagotomy does not affect on reparative growth at the early stage of liver regeneration.