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DOPPLER EXAMINATION AT HEPATOPANCREASBILIARY ZONE DISEASES

Abstract

Results of ultrasonic research of hepatic haemodynamics are presented at diseases of a hepatopankcreatobiliarny zone (GPBZ) in152 patients. The reliable increase in arterial inflow on A. hepatica communis system, than venous is proved; especially indigenous persons at early stages have diseases. Further there is qualitatively new sign - delay of venous return of blood that is at the bottom of increase of volume sizes of blood circulation of a liver and a sign of the compensatory and adaptive mechanism. At radical persons the qualitative characteristic of hepatic blood circulation at early stages of a disease is higher, than at persons of not radical group for 7-8%.

Keywords: hepatic hemodynamics, cholecystitis, ultrasonography, Doppler, pancreatitis.

Introduction

In the early stages of the GPBZ disease, when clinical researches and biochemical tests do not detect functional changes in the liver and pancreas, dopplerographic indicators are already altered, indicating that early poor circulation in parenchymal organs of the area. Such research on geodynamics of different organs, especially the liver, and holekinetik indicators of liver function due to other diseases are very few. [1-3,6,9-13]. For various diseases of the digestive tract liver hemodynamic changes. [4,7]. So when bile hypertension, research A.I.Mosunova, Y.V.Zulina with co - author. [5] have shown an increase in arterial blood flow by A.hepatica communis system and reduced inflow by V.porta as compensatory – adaptive mechanism. The author determined the absolute norm defense within 2000mill/min. Research results of many authors extremely contradictory. As the results of experimental researches, aborigines have been found higher levels of peripheral blood flow and a higher rate of blood flow during cooling than the residents and visitors of the population living in the mid – latitudes. [8].

A purpose of the research is the study of indicators of hepatic hemodynamics in indigenous patients with chronic calculous cholecystitis, chronic biliary pancreatitis and postcholecystectomy state compared to some patients in the early stages of the disease, living in Yakutia at least 5 years.

The materials and methods of research. To count the flow rate of hepatic blood flow was used modified Ardrana formula, adapted for duplex scanning abdominal vessels research by A.I.Mosunov with co - author, (2000) [5], $V = 4710 \cdot D^2 \cdot C$ int., где: V = volume rate of flow (mill/min). *D* =

inner diameter of the vessel cm.C int = average (integral) flow m/sec. Total hepatic blood flow (DIC) can be determined the amount of blood flow to the liver by A.hepatica communis (AP) and inflow venous flow by V.porta (VP). V опк = V ap + V vp (mill/min). For the qualitative characteristics of hepatic blood flow notion of 'Arterio – venous ratio' (AVR), counted as proportion of arterial and venous flow to the body as a percentage: ABC = Vап : Vопк x 100%/ Vvp : Vопк x 100%.

To assess the impact of various diseases and organs ZHVP GDZ on liver function in 152 patients performed hemodynamic study by the method of ultrasonographic duplex scanning abdominal vessels, abdominal segment of the aorta, truncus coeliacus, a. Lienalis, a.hepatica communis subhepatic segment V. Cava inferior, V Porta и V Lienalis. All patients were divided into: 1) indigenous patients were born in the far north and visiting with experience living in the north for more than 5 years; 2) non – indigenous patients - caucasians – with northern experience residence less than 5 years.

First group consisted of patients biliary pancreatitis: indigenous – 10 (mean ages 38.8 years), non – indigenous – 23 (mean age 46.3 years). The second group consisted of patients with PHES after cholecystectomy, the most thorough survey is not allowed to reveal the cause of suffering, except chronic colonic stasis; indigenous – 21 (mean age 50.6 years), non – indigenous – 16 (mean age 50.6 years). The third group consisted of patients with chronic calculous cholecystitis – 59 people. Indigenous of them – 45 (mean age 43 years), non – indigenous – 14 (mean age 49.1 years). There were 129 patients of both groups. The control group included indigenous volunteers – 23 men (mean age 35.6 years). Duration of disease in the three groups consists of 1 to 3 years.

Results and discussions. By comparing the results with published information revealed a high degree of conformity. It should be noted that differences of hemodynamic parameters in indigenous and non – indigenous groups, the subjects were in the range of variation within the group, where there are some significant differences between the individual indicators. ($p < 0,05$). For example in the picture shows a diagram of ratio (%) hemodynamic parameters in in indigenous and non – indigenous patients with chronic biliary pancreatitis to the corresponding values of healthy (Arctic Group). Patients with chronic pancreatitis and indigenous groups ABC_a ,C_v, and V_v are less by 8% and 12% than in the non – indigenous group.

ABC _arteriovenous ratio as a qualitative characteristic of hepatic blood flow is higher in indigenous following indicators – 108 against 95 in some. In the second group is similar in patients with chronic calculous cholecystitis indicator V_a is less by 26% and D_a, C_a and V_v are less by 10% on the indigenous people. ABC _ arteriovenous ratio is higher than 13%. And in patients with radical groups PSEH figures ABC_a, C_a are more by 7% and V_a by 13%, than in the non – indigenous group.

Analysis of the Doppler research of hepatic hemodynamics in patients with various diseases (chronic calculous cholecystitis, chronic biliary pancreatitis, PHES) showed the presence of changes in the parameters of the arterial and venous blood flow in the liver in the early stages of the disease.

Conclusion.

1. In the early stages of the disease hepatopancre atobiliary dopplerographic zone indicators are already changed, indicating that early vascular disturbances in parenchymal organs of the zone.

2. Increased inflow of arterial blood in A.hepatica communis system and reduced inflow by V.porta especially pronounced among indigenous people with chronic calculous cholecystitis, chronic biliary pancreatitis (increased ABC_a and Va in 1.63, and venous flow is reduced by 12%.

3. Patients with PSEH (chronic colonic stasis) with disease duration of 1 year quality indicators of liver blood supply undergo less pronounced changes.

4. Analyses of the Doppler research revealed the presence of hepatic hemodynamic parameters of the linear dependence of the arterial and venous blood flow in the liver of the dwell time at low temperatures. In this research in patient with non – indigenous groups living in Yakutia period for 5 years there is a decrease of hepatic vascular component compensatory – adaptive mechanism, which is higher in the early stages of indigenous diseases of GPBZ organs.

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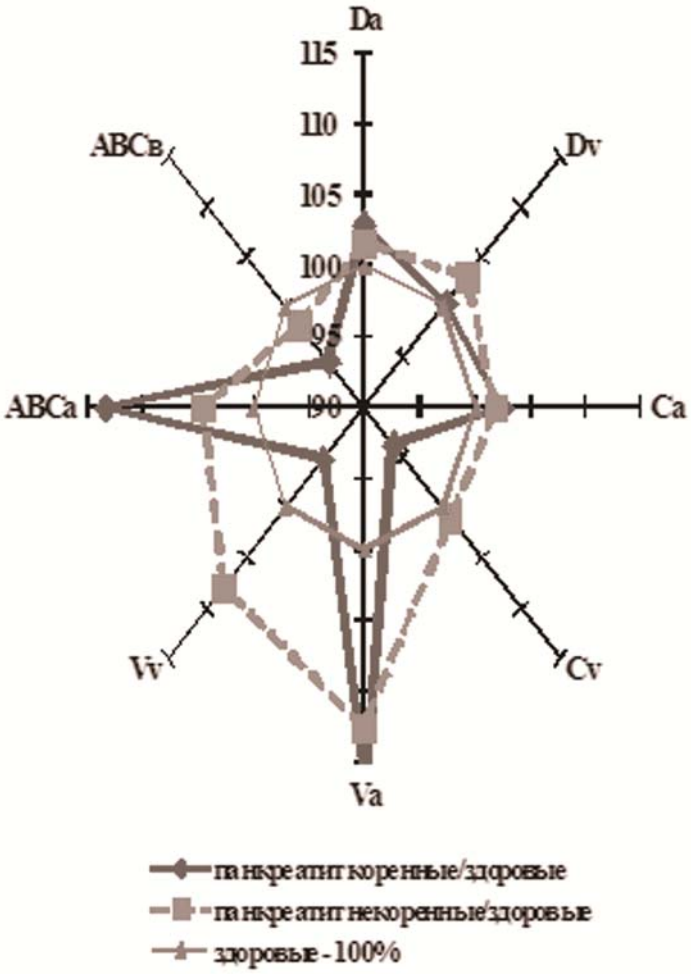

Рис.1. Диаграмма печеночной гемодинамики у больных с хроническим билиарным панкреатитом

Picture.1. Chart hepatic hemodynamics in patients with chronic biliary pancreatitis.

Pancreatitis indigenous/healthy

Pancreatitis non – indigenous/healthy

Healthy – 100%

Table

Indicators of hepatic hemodynamics in healthy volunteers from the Arctic zone.

	Da	Dv	Ca	Cv*	Va	Vv*	ABCa	ABCв	Возр
M	0,51	1,14	0,46	0,22	529,80	1346,45	28,60	71,38	33,85
σ	0,02	0,10	0,06	0,03	117,19	305,73	5,31	5,32	11,51