ULTRASONOGRAPHY ASSESSMENT OF SPLEEN AND LIVER SIZE IN ROWING'S

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Abstract. The aim of this study was to find out the effect of training on dimensions of spleen, kidney and liver in rowing's.

Methods:

The study group consisted of 48 rowing's and 35 male non-athlete controls. The visceral organ measurements were evaluated by ultrasonography. Independent samples t test and linear regression analysis were used for statistical analysis.

Materials and Methods.

Our study group consisted of 48 athletes, who were 18 years old or above, and is engaged in the national rowing team of Uzbekistan. These players trained regularly for at least 5 h a week. 35 healthy men who did not perform any physical activity were included to the study as controls. The liver, spleen measurements evaluated using US. Body mass index (BMI) of every subject was calculated to determine obesity based on World Health Organization (WHO) obesity classification. The study was approved by the Olimpyc Committee of Republic of Uzbekistan. Patients with congenital anomalies or systemic diseases were not included in the examination. All organs examined were ultrasonographically in normal size, shape, and echostructure. Sonographic examinations were performed using an **Philips Affinito - 70**. Liver measurements were made for the long axis and anteroposterior length. The long axis measurement of the liver was done on right mid-clavicular line while the patient was in the left lateral decubitus position. During this measurement, the longest distance between the right and left lobe extreme corners was measured by imaging the inferior vena cava and gallbladder on the same plane. The lateral segment of the left lobe was considered to be the extreme boundary in the medial, and the posterior inferior segment of the right lobe was considered to be the extreme boundary in the lateral margin. The measurement for the anteroposterior length was performed on the midsagittal plane (horizontal plane passing through the xiphoid process) while the person was in the supine position. The measurement was performed at the origin points of the three hepatic veins by imaging on the same plane. In this position, the top edge of the liver under the diaphragm was considered the uppermost border. The spleen's transverse axis length (4.89±0.52 cm) and the liver's anteroposterior length (11.9 ±2.35 cm) were significantly higher in rowing's compared to controls (3.38±0.54 cm, 11.0±1.7 cm; $p<0.001$, $p<0.001$, respectively).

Discussion.

To our knowledge, this is the first study to investigate the effect of training on dimensions of spleen, kidney, and liver in rowing's athletes. We found that the spleen's transverse axis length and the liver's anteroposterior length in rowing's. were higher compared to the controls. Hepatomegaly alone is not a disease, but rather a potential indication of the process that causes it. Many researchers have reported the long axis length of the liver as 145.15±16.22 mm, 14.0±1.7 cm, 13.7±1.42 cm, 12.68±2.57 cm and the anteroposterior length as 11.4±1.94 cm. In our study, the long axis length of the liver was measured as 14.73±1.25 cm and the anteroposterior length as 10.39±1.90 cm in the control group in accordance with these studies. We found that the anteroposterior length of the liver in rowing is longer than that of the controls. The liver is an important organ that contains enzymes that meet the increased energy needs of the body during high-density aerobic exercises. Growth in the liver size is to meet the increased energy needs of the organ. High protein diets are also given to the athletes' diet, taking into account this high energy requirement. It was reported that those who have been active in the American football team professionally for 2–3 years had heavier liver (0.29 kg), heart (0.08 kg) and kidney (0.09 kg) mass compared to the newcomers. Furthermore, weekly training time, age, and BMI were positively correlated with the anteroposterior length of the liver.

Conclusion

We conclude that knowing the normal sizes of the visceral organs of rowing athletes will be useful in determining the appropriate diagnosis and treatment, accelerating come back to competitions.