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What is the energy consuming style in chronic severe hepatitis B patient normality?

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The liver plays a pivotal role in fuel and energy metabolism. Many studies have shown that patients with liver cirrhosis have nutrient and energy metabolism imbalances, which lead to malnutrition and can seriously affect their prognosis. However, the characteristics of the fuel and energy metabolism in patients with chronic severe hepatitis are not clear.

A research article to be published on July 21, 2008 in the *World Journal of Gastroenterology* addresses this question. The research team led by Professor Hui-Guo Ding investigated REE and oxidation rates of glucose, fat, and protein in chronic severe hepatitis B patients.

One hundrend patients with liver diseases were categorized into 3 groups: 16 in the acute hepatitis group; 56 in the chronic severe hepatitis group; and 28 in the cirrhosis group. The REE and the oxidation rates of glucose, fat, and protein were assessed by indirect heat measurement.

They found that REE of chronic severe hepatitis patients was not significantly different from that of acute hepatitis and cirrhosis patients, who do not have increased energy metabolism. The REE per kg weight was similar in the chronic severe hepatitis group to that in the cirrhosis group, and both were lower than that in the acute hepatitis group ($P = 0.014$). The RQ of the chronic severe hepatitis group (0.84 ± 0.06) was significantly lower than that of the acute hepatitis and cirrhosis groups ($P = 0.001$).

The proportion of energy supplied by the three major substrates (carbohydrate, fat, and protein) differed among the groups. Protein oxidation rates were not significantly different among the groups; they ranged from 21.0% to 22.2%. The carbohydrate oxidation rate of the severe hepatitis group (39.2%) was significantly lower than that of the acute hepatitis group and the cirrhosis group (P

The energy metabolism was singnifcantly improved when they recovery from severy satge. It is very interesting that 4 of these patients had been given growth hormone (4.5 IU/day for 2 wk), the glucose oxidation rate increased from 41.7% to 60.1%, while the fat oxidation rate decreased from 26.3% to 7.6%.

In their conclusion, the glucose oxidation rate is significantly decreased, and a high proportion of energy is provided by fat in chronic severe hepatitis. The measurement of REE and the oxidation rates of fat, glucose and protein substrates can be used to determine the optimal nutritive support therapy for severe liver disease patients.

Reference: Fan CL, Wu YJ, Duan ZP, Zhang B, Dong PL, Ding HG. Resting energy expenditure and glucose, protein and fat oxidation in severe chronic virus hepatitis B patients. World J Gastroenterol 2008; 14(27): 4365-6369
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