

Overfeeding breaks down liver function and results in life-style related disease

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【Outline of survey】

The liver is a large organ which metabolizes sugar, protein and lipid and detoxifies medicine and foreign substances. Taking in the mass substances from the blood and metabolizing them, the liver releases the metabolites into the entire body. In the age of the long starvation, the liver utilized the ingested nutrition efficiently and played a significant role in keeping a certain level of important metabolites including glucose in blood: "homeostatis". However, the age of gluttony has come and the overfeeding liver can not process the nutrition which exceeds its ability. The excessive nutrition is carried to the entire body, even though the liver originally has the excellent metabolic ability. A state where the liver cannot process the excessive influent nutrition can be called a state where the original liver function fails and does not keep "homeostatis". The failure of the liver function potentially influences the nutrition-related syndromes including arteriosclerosis, diabetes, cancer and inflammation which are the largest issue of 21st century. This research determines what leads to the change of overfeeding liver and establishes the disease concept of new liver diseases. The research should become a basis of diagnosis and cure development of the "nutritional abnormal liver metabolism" which results from the failure of the liver function.

【Expected results】

Functional abnormality of overfeeding liver was not considered a liver disease because it does not show the liver-specific manifestations such as generalized fatigability and jaundice. However, the research demonstrates that overfeeding liver is under a clinical condition in which the various metabolic states are changing without any clinical symptoms. Recognizing this condition the liver disease, we carry the research forward. This will allow us to establish and classify the diseased concept which is based on the state of the liver functional failure. We expect that the analysis of the relation between classified failure of the liver function and life-style related disease will lead to the achievement of foundational research in new diagnosis and cure targeted at the clinical condition.

【References by the principal researcher】

• T Takamura, M Sakurai, T Ota, H Ando, M Honda, S Kaneko. Genes for systemic vascular complications are differentially expressed in the livers of type 2 diabetic patients. Diabetologia 47(4):638-647, 2004.

【Term of project】 FY2006 - 2010

【Budget allocation】 31,500,000 yen

【Homepage address】

<http://www.m-kanazawa.jp/>