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Cholestatic children with EBA have an impaired ability to absorb dietary fat and exhibit LCPUFA deficiency. The aim of this study was to assess their LCPUFA status before and after OLT, and also the effect of an infusion of essential fatty acids (EFA) before OLT.

Eight children with EBA waiting for OLT were included in this study. All of them failed to recover from biliary obstruction 3 months after hepatic portoenterostomy and had total bilirubin levels > 250 µmol/L. LCPUFA values in their red blood cells were prospectively studied before (every 3 months) and after (every 6 months) OLT. Mean age was 9.2 ± 1.4 months at the time of OLT, and four of eight children received parenteral nutrition (PN) with EFA supplementation for 14 to 60 days before OLT.

LCPUFA deficiency was rapidly apparent in EBA; it increased when portoenterostomy failed and disappeared during the first year following OLT. Parenteral nutrition seems to partially correct LCPUFA deficiency. These results showed the important role played by fat malabsorption in the constitution of this deficiency and may indicate a positive effect of intravenous EFA supplementation during the pre-OLT period.

Antioxidant nutrients and liver transplantation. J Goudable [1], C Fleuret [1], B Delafosse [2], M Accominotti [1], O Boillot [3] *([1] Services de biochimie; [2] Réanimation; [3] Chirurgie digestive, hôpital Édouard-Herriot, Lyon, France)*

Antioxidant vitamins (A and E) and some trace elements play an important role in protection against free radical damage during biological events and disease processes. These free radical scavengers are provided by the diet.

The liver has a major role in retinoid (vitamin A) and a tocopherol (vitamin E) metabolism as well as in binding protein metabolism. This organ is critical to the regulation of the plasma levels of vitamins and in vitamin delivery to extrahepatic target tissues.

The lack of hepatic perfusion is mandatory in liver transplantation, this period being following by a reperfusion. This ischemia reperfusion is usually associated with an injury due to free radical production. In this respect, the antioxidant nutrients may be of value during this period.

We studied, therefore, the plasma levels of vitamin A, vitamin E, copper, zinc and selenium before and 1 year after a liver transplant in 110 patients following different hepatic disorders.

One hundred ten patients were studied. The main aetiologies were posthepatitic cirrhosis BD (n = 15), posthepatitic cirrhosis C (n = 25) and ethylic cirrhosis (n = 31). No patients received vitamin supplementation.

Vitamins A and E were measured in the plasma by high-performance liquid chromatography. The control population consisted of 58 subjects with normal diets (1 800–2 800 cal/day) without vitamin supplementation.

Selenium, zinc and copper levels were determined in the plasma by atomic absorption spectrometry.

All data are expressed as mean values ± SD. A one-way analysis of variance and a posthoc Scheffe's test, when indicated, was used to compare the means.

The results were as follows:

Vitamin A:

control population: 0.67 ± 0.17 mg/L;
all aetiologies: J_0: 0.20 ± 0.30 mg/L
J_{365}: 0.83 ± 0.26 mg/L

Vitamin E:
control population: 10.5 ± 2.6 mg/L
all aetiologies: J_0: 9.1 ± 4.4 mg/L
J_{365}: 12.1 ± 3.0 mg/L
viral aetiologies: J_0: 7.3 ± 3.5 mg/L
Trace elements:

Copper concentrations were similar to the control group whereas zinc and selenium concentrations appeared not to be significantly decreased.

The levels of vitamin A were largely decreased in all hepatocellular diseases; only 13 patients had a normal status. The levels of vitamin E were only decreased for viral pathologies. One year after liver transplantation, all the patients had a normal vitamin A and E status.

No significant difference was observed between the different pathologies.

This study shows that patients with an hepatocellular insufficiency have a deficient status in antioxidant vitamins. Therefore, systematic vitamin supplementation could be of value in order to protect the liver against free radical agression. In contrast, the necessity of trace element supplementation remains to be proven.

DIGESTION – ABSORPTION

Pancreatic elastases I and II in β-lactoglobulin hydrolysis: preliminary results. C Desbois [1], I Le Huërou-Luron [1], M Gestin [1], V Philouze-Rome [1], T Lengagne [2], L Roger [2], F Mendy [3], P Guilloteau [1] *([1] Laboratoire du jeune ruminant, Inra-Rennes, 65, rue de Saint-Brieuc; [2] Nutrinov, 35042 Rennes; [3] 1, place de Béarn, 92110 Saint-Cloud, France)*

Bovine lactoserum proteins such as α-lactalbumin and β-lactoglobulin are, together with bovine caseins, the most commonly used in infant formulas because of their high nutritional value. These proteins differ qualitatively and/or quantitatively from those of human milk. In addition to an important casein level (80 vs 35% in human milk), cow milk contains 50% of β-lactoglobulin in lactoserum. This globular protein is missing in human milk. These cow milk components are not always tolerated; about 3% of children under 2 years of age present allergic reactions to these milk proteins. According to the literature, this intolerance reaction can be, in part, the result of a deficient proteolytic equipment in the baby's digestive tract. Because of its significant action on globular proteins, the pancreatic elastase II is probably one of the proteases implicated. This enzyme activity would be weak at birth and would increase up to 24 months of age while infant intolerance reactions decrease during this period. Moreover, elastase I, which is not expressed in the human pancreas, is present in the calf which digests its mother's milk proteins very efficiently. The aim of this study was to purify porcine elastases I and II and to analyse their role in β-lactoglobulin hydrolysis. The hydrolysis product antigenicity was measured by radial immunodiffusion.

The purification procedure of both porcine elastases from pancreas acetone powder included ammonium sulfate fractionation followed by cation-exchange chromatography on FPLC (monoS, HR5/5). All β-lactoglobulin hydrolyses were realized under the same conditions (substrate, temperature and time) with elastase I, elastase II and/or with a mixture of pepsin, trypsin and chymotrypsin used to prepare hypoallergenic milk. The reaction products were then separated by reverse-phase chromatography on high-performance liquid chromatography (HPLC) (column C18) and their antigenic properties were analysed using rabbit antisera raised against bovine β-lactoglobulin.

Analysis of HPLC chromatograms showed that elastases I and II presented