

Nucleic Acid Metabolism of Small Intestine and Liver Induced by Hyperbaric Oxygenation Therapy for Superior Mesenteric Arterial Occlusion

K. AKITA, T. TAKEMAE, I. KOBAYASHI and S. HAYASHI

Department of Surgery, Faculty of Medicine, Shinshu University, Matsumoto

Although the direct vascular surgery has been the treatment of choice for superior mesenteric arterial occlusion (SMAO), the prognosis remains still very gloomy. Then, the authors have studied on the effectiveness of oxygen at height pressure (OHP) as one of the treatment for SMAO in rats and the results were obtained as follows: 1) Post-occlusion survival could be obtained in groups of SMAO of less than 2 hours in rats. 2) OHP 2 atmospheres absolute (2ATA) for one hour preformed immediately after release of occlusion could improve the survival-rate even in rats with SMAO for 3 and 4 hours, but OHP (3ATA) was not so effective in the similar groups. 3) ^{32}P -uptake into RNA in small intestinal wall or liver was increased in group treated with OHP (2ATA) compared with in OHP (3ATA) and Air (1ATA) groups at the time-points of 6 and 12 hours after administration of ^{32}P . The similar results were obtained in both groups with SMAO

for 1 and 3 hours. But no difference was found in ^{32}P -uptake into DNA of small intestinal wall among groups of AIR (1ATA), OHP (2ATA) and OHP (3ATA). 4) ^{32}P -uptake into DNA of liver showed the similar tendency as ^{32}P -uptake into RNA of small intestinal wall and liver. 5) Higher level of ^{32}P -uptake into small intestinal mucous membrane was found in any group compared with ^{32}P -uptake of small intestinal wall. 6) Among the various kinds of solution infusing into the peritoneal cavity in this experiment, physiological saline group showed much lower ^{32}P -uptake into small intestinal wall or liver nucleic acid than 5% glucose, 5% fructose, or 5% xylitol group. It might be summarized so far that OHP (2ATA) evaluates as one of the treatment for SMAO under the consideration of reducing the pathological change, accentuating the metabolic rate of the damaged intestine, and following by the improved survival rate.

Analysis of Cell Proliferation of Induced Squamous Cell Carcinoma of Skin in Mice and the Effects of Bleomycin on Cancer Cell Proliferation

Y. KUBO, M. KODAMA, I. HASHIMOTO and T. TANAKA

Second Department of Surgery

T. ASAHIHARA

Second Department of Pathology

Kyoto Prefectural University of Medicine, Kyoto

By painting 3, 4- Benzpyrene solubilized in sesame oil on the skin of mouse (d-d strain), squamous cell carcinoma was induced. Pro-

liferation of this cancer cell was investigated and the effects of Bleomycin on cancer cell proliferation was studied for the purpose of

improving the administration of Bleomycin. For analysis of cell kinetics, "cumulative labeling method" was used, that is, ^3H -thymidine was injected into a peritoneal cavity repeatedly, and for making radioautogram, tumor biopsy was performed at 1, 6 and 24 hours respectively after the first injection of ^3H -TdR.

Kinetic parameter of tumor cell are follows: DNA synthesis time (ts) ranged from 6 to 10 hours and generation time (tg), from 34 to 38 hours.

Taking the ts and tg into consideration, 0.08 mg of Bleomycin was injected subcutaneously 5 times at the interval of 5 (Group 1),

24 (Group 2), and 48 hours (Group 3) respectively and radioautography was taken after 48 hours of last injection of Bleomycin.

Results are as follows: Labeling Index of Group 1 and 2 show 16.7% and 26.6%, whereas that of control group was 32.8%. Prolongation of ts and tg of Group 1 was observed, but the Prolongation of Group 2 and 3 was not remarkable. The 5 hours interval administration of Bleomycin was the most effective about the depression of cell proliferation.

The effects of Bleomycin on the normal tissue cell were also discussed.

Kinetic Analysis of Calcium Metabolism in Human

T. UCHIKAWA, E. YABUMOTO, T. MATSUMOTO, N. FUKUDA and T. IINUMA

National Institute of Radiological Sciences, Chiba

Calcium kinetics were studied in patients with various disorders of calcium metabolism by measuring the time course of radioactive Ca or Sr concentrations in blood, and whole body retention after a intravenous injection, and fitting the curves thus obtained to sums of exponential functions.

Various compartment models were then formulated, and their validities were examined by computing the transfer rates and pool sizes of the compartments. Two models were compatible to data in three compartment

models, and four models in four compartment analysis. There were, however, marked discrepancies between the calculated and observed whole body retention values, which was due to the isotope uptake in the fixed compartment of the bone.

The new way of computing this accretion rate was devised, and tested with all parameters obtainable from the area and shape of the blood radioactivity curves and whole body retention curves without assuming particular compartment models.

Some Observation on Estriol-4- ^{14}C Incorporation into Some Organs in Fetus

H. KAWADA and F. AKASU

Department of Obstetrics-Gynecology, Kanazawa University, Kanazawa

Present experiments were performed to study how Estriol-4- ^{14}C was incorporated into each fraction of the organs.

Each fetus was given Estriol-4- ^{14}C by umbilical cord injection.

Some organs were homogenized and were