VI. Tumors

Study on the Early Stage of Experimental Hematogenous Metastasis of Yoshida Sarcoma Tagged with Tritiated Thymidine

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Tumor cells of Yoshida sarcoma, tagged with tritiated thymidine, were injected into blood to observe the formation of metastasis in the lungs and the liver. First, the cumulative labeling of ascites was carried out, that is, 200μCi of tritiated thymidine was injected four times every six hours into the abdominal cavity of Donryu-rat, transplanted the Yoshida sarcome six days before. As a result, we knew that the labeling index was 96 per cent and the generation time was 25 hours. Next, the tumor cell suspension, contained 10^7 of tumor cells per 0.1 ml, was injected into the portal vein or into the tail vein of nine Donryu-rats. The rats were sacrificed one by one 1, 6, 12, 18, 24, 36, 48, 72 and 120 hours after injection to make autoradiographs of the organs and blood.

In the group of portal vein transfusion, one hour after injection, the tumor cells were found isolated in the sinusoids of the liver and, less frequently, capillaries of the lungs. But they were not found in the kidney, the spleen and the blood. Most of the tumor cells, therefore, were likely captured in the liver. After that the tumor cells in the liver gradually increased in number and the mean grain count decreased. This fact indicates the homogeneous proliferation of the survival tumor cells with proportional decrease in the mean grain count.

In the group of tail vein transfusion, one hour after injection, the tumor cells were found isolated in the sinusoids of the liver, capillaries of the lungs, kidney, spleen and the blood. On this account the tumor cells were likely passable through lungs and scattered through out the body. After that, although mitotic phase of the tumor cells was found in places and the mean grain count decreased to be impossible to find 72 hours after injection. We interpret this result that the tumor cells were removed as non viable cells in high proportion. 120 hours after injection, on the other hand, we found the tumor cells in the liver as many as in the group of portal vein transfusion. Grains were scanty. The tumor cells have increased in number for the short time. This remarkable increase of the tumor cells in number can not be explained from the proliferation of the survival tumor cells in the liver. To explain this fact, we tentatively assume that remetastasis from other metastatic foci might occur.