
Balloon occluded arterial infusion is a new method for administration of anticancer drugs, in which the anticancer drugs are infused into the artery of cancer affected organ under its temporal occlusion. Interruption of the arterial blood flow is considered to keep the drugs at high concentration in the organ, because the drugs is not diluted by blood. To evaluate the drug concentration in this method, we performed a Xe-133 wash out test in the kidney, the liver, and the pelvis. Radioactivity of Xe-133 in the kidneys with arterial occlusion was over 16 times in the kidney without occlusion, in the liver 5 times and in the pelvis 3 times. Interestingly, radioactivity in tumor area of the liver was 2 times higher than in the non-tumor area.


We studied clinical evaluation of radiation-induced changes in the regional blood flow in the primary cervical carcinoma. The blood flow in 5 primary cervical carcinoma was measured with the xenon-133 wash-out method. Xenon-133 (300-500 MBq) was slowly injected into the tumor. The counts were recorded for 5-10 minutes. The counts gave in most cases a two-exponential curve (fast and slow component with half-time of \( T_1 \) and \( T_2 \)).

The blood flow is decreased in all cases after 3-4 days of radiotherapy. The blood flow are increased in 3 cases after 7 days of radiotherapy. The fast component with half-time (\( T_1 \)) are prolonged in all cases after 3-4 days, and are shortened in 4 cases after 7 days of radiotherapy. The slow component with half-time (\( T_2 \)) are prolonged in 3-4 days, and are prolonged in all cases after 7-14 days of radiotherapy. A/B (ratio of scale factors of two-exponential curve) are increased in 4 cases in 7-14 days of radiotherapy. There are no difference of histology or staging of cancer.

After 3-4 days of radiotherapy, the blood flow of tumor is decreased due to prolonged \( T_1 \) and increased A/B.