pelvic cavity from cancer of uterine cervix.
Poor delineation was seen in oral cancer, laryngeal cancer, metastatic focus of the lumbar spine and pelvis from cancer of uterine cervix and sacral metastasis from renal cancer.
Scintigraphic delineation was not obtained in 13 cases. These were pulmonary cancers, primary and metastatic lymph nodes and others.
The problem was that some part of $^{131}$I was isolated from $^{131}$I-fibrinogen after the I.V. injection. This disturbed the pattern near blood pool and urinary system as increment of background.
We expect the substances with higher tumor affinity for the detection of malignant tumor.

Affinity for a malignant tumor of radioactive mercuric compounds

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It has known that $^{203}$Hg-compounds have affinity for malignant tumor, and among them $^{203}$Hg-Chlormerodrin is used already in clinical scanning of a brain tumor. But this compound is not enough satisfactory for the scintigraphically positive delineation of tumor because of special affinity for kidneys and others. So, to discover the better compound and investigate the mechanism of accumulation in tumor, some $^{203}$Hg-compounds were synthesized and these affinity for malignant tumor was examined.
Six compounds of $^{203}$Hg-acetate, $^{203}$Hg-Chlormerodrin, $^{203}$Hg-EDTA, $^{203}$Hg-mercurochrom, $^{203}$Hg-1-Mercuri-2-hydroxypropane were injected intravenously to the rats transplanted subcutaneously with Yoshida Sarcoma and these rats were sacrificed 3 hours, 24 hours and 48 hours after injection. The activities of the tumor, blood, muscle, liver and kidney were measured by a well-type scintillation counter. Retention values (dpm/g tissues weight) in the tumor, blood, muscle, liver and kidney were calculated. Generally, mercuric compounds tend to combine firmly with protein. In these six mercuric compounds, $^{203}$Hg-acetate most firmly combines with albumin and $^{203}$Hg-Chlormerodrin most weakly.
Retention values of the tumor, blood, muscle, liver were the greatest at 3 hours after injection and decreased then. But in the kidneys was the greatest at 24 hours after injection. Retention values decreased in order of the kidney, liver, blood, muscle, but in tumor the compounds which most firmly combines with albumin have strong affinity and $^{203}$Hg-Chlormerodrin which weakly combines with albumin have weak affinity. So, we thought that $^{203}$Hg-compounds were carried with albumin into tumor and accumulated in tumor after albumin was pinocyted and catalyzed. The values of tumor/muscle ratio at 24 hours after injection were 24.2 in $^{203}$Hg-Chlormerodrin, and were from 5.0 to 9.1 in other five compounds. From above-described results we may conclude that $^{203}$Hg-Chlormerodrin in these six $^{203}$Hg-compounds is most excellent in clinical use.