Fundamental Evaluation on Diagnosis of the Stomach Cancer with $^{32}$P

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Several reports were made on our attempt to diagnose malignant tumor by the use of $^{32}$P and catheter-type semiconductor radiation detector. Even though promising results were found in the diagnosis of esophageal, pulmonary and uterine cancer, but in the cases of the stomach cancer certain number of cases showed either false positive or false negative results.

In order to elucidate the unsatisfactory results of the diagnosis of stomach cancer, secretive function of the stomach was examined, which was very different from other organs. After $^{32}$P administration to the living bodies, following results were obtained.

(1) After $^{32}$P administration to the dog, radioactivity in the blood showed rapid decrease, but in one hour or two it reached to the plateau till 24 hours later.

(2) When $^{32}$P was administrated to the dog, both uptake and excretion of $^{32}$P by gastric mucosa were quite rapid. As to the changes of radioactivity in the gastric mucosa in the course of time, no fundamental difference was found between the body and antrum of stomach.

(3) In case of the rat experiment, as to the organic distribution of $^{32}$P between the esophagus, stomach, large intestine, liver and spleen, the lowest values were obtained in the esophagus at 4 hours and in the stomach at 21 and 45 hours. This fact revealed the rapid turnover of $^{32}$P in the stomach.

(4) Hyoscine-N-butylbromide did not affect the excretion mechanism of $^{32}$P to gastric juice.

Measurement of $^{32}$P Uptake of Esophageal Diseases by Catheter-type Semiconductor Radiation Detector

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Fifty seven cases of esophageal diseases including 44 esophageal carcinomas were tested by radioisotope method. The probe of 3.2 mm diameter (Katelix probe, TCK-3-88CO17) was inserted into esophageal lumen. About 24 hours after intravenous administration of $^{32}$P sodium phosphate (0.5 mCi), accumulation of $^{32}$P in the esophageal tissue was counted and recorded by Katelix probe by the pull-out manner. $^{32}$P uptake was measured twice in each case and showed good reproducibility. More than 50% increase in counting rate over normal area was regarded as positive for carcinoma. All cases of eso-