I. Digestive Tracts (GI Tract and Pancreas)

Scintigraphy of the Salivary Glands with $^{99m}$Tc-pertechnetate

K. Sakurai, C. Kido, T. Abe

Dept. of Diagnostic Radiology, Aichi Cancer Center Hospital

Scintigraphic studies of the salivary glands of 35 proven cases (18 cases of benign tumor, 5 cases of malignant tumor, 3 cases of abscess, 3 cases of sialitis, 2 cases of sialolithiasis, and 4 cases of miscellaneous lesions) were reviewed.

Using 5 mm pin-hole collimeter, two times magnification scintigram in AP view, four times magnification scintigram in anterior oblique view and lateral view had been taken for the parotid glands in 26 cases and for the submandibular glands in 9 cases.

None of four tumor with the diameter of less than 15 mm was detectable by magnification scintigraphy. All of 14 tumors with diameter of more than 20 mm could be located in the salivary glands by magnification scintigraphy, while only 6 of 14 tumors could be located by conventional scintigraphy.

Of six cases which rendered defect with very irregular or ill-defined margin on magnification scintigram, four cases were malignant tumors, one case was abscess, and the other case was intraglandular lymphadenitis.

Of 13 cases which rendered defect with smooth or slightly scalloping margin, 11 cases were benign tumors, one case was malignant tumor, and the other case was granuloma.

A case of hot tumor with clear margin was Warthin tumor.

Of 11 cases which rendered no defect on the scintigram of the salivary glands, four were cases of benign tumors with diameter of less than 15 mm, two were cases of sialolithiasis, and six were cases of sialitis and extraglandular lesions.

In scintigraphic study of the salivary glands, magnification scintigraphy is essential to localize and to know the nature of space occupying lesion, as well as time sequential conventional scintigraphy to know function of the salivary glands.

Clinical Study of Cold Spot in the Gastric Scintigram with $^{99m}$Tc-pertechnetate

T. Kaneko, M. Matumoto, and K. Katayama

Department of Radiology, Kumamoto University Medical School, Kumamoto

Within a week before the procedure of the gastric scintigraphy alimentary examination of the upper GI tract was performed. After collimation, $^{99m}$Tc-pertechnetate 3 mCi was injected intravenously.
and serial gastric images were obtained using a gamma camera and a data processing system. In the pathological cases, serial enlarged gastric images were obtained using our Di/Con collimator. A total of 65 cases were investigated 16 of the cases were normal and the other 49 cases were as follows: gastric cancer, 13; gastric ulcer, 15; gastric ulcer scar, 4; atrophic gastritis, 6; others, 11. The findings of the gastric scintigrams were compared with those of X-ray examination, endoscopy, biopsy and histological examination in the surgical specimen. In the normal cases the stomach was clearly displayed within approximately 3 minutes postinjection, and it was considered the appropriate gastric images for the detection of cold spot could be obtained within about 5 to 10 min postinjection. In the cases of gastric cancer, the lesion was detectable as cold spot, but in the cases with intestinal metaplasia cold spot was larger than the extent of lesion in alimentary examination. In the cases of gastric ulcer some large niches were slightly visible as cold spots, while smaller niches not detectable, but in the cases with intestinal metaplasia the extent of cold spots were recognized clearly. Also in the cases of atrophic gastritis with intestinal metaplasia, cold spots were detectable but in some cases without intestinal metaplasia not detectable. From the above, cold spot of the gastric scintigram is not only observed in the cases of gastric cancer and gastric ulcer but also in the cases of the presence of intestinal metaplasia.

**Diagnosis of a Small Intestine with Ectopic Gastric Mucosa by Means of $^{99m}$TcO$_4^-$ Scanning**

S. Hashimoto, K. Ishii, N. Yamada, K. Watanabe, K. Nakazawa, K. Yoda

*Department of Radiology, Kitasato University Hospital, Sagamihara*

In 1967, Harden and his associates suggested that by scintigram, only gastric *mucosa* absorbed $^{99m}$TcO$_4^-$ in the intestinal tract. Subsequently Jewett and his associates reported a clinical case in which they diagnosed the Meckel's *diverticulum* with ectopic gastric *mucosa* before performing their operation. We did abdominal scanning in clinical cases in which intestinal bleeding by unknown origin occurred. We injected 500 to 1 Ci of $^{99m}$TcO$_4^-$ intravenously to infants and children, and about 4 mCi of the same to adults. After the injection, we performed abdominal scanning at intervals of 15, 30, 60, and 120 minutes. We collected the data from the scannings and plotted these on a three dimensional chart. During this procedure, we used Nuclear Chicago pho-γ-Camera (Hp type) and CDS 4096. We conducted this procedure in 22 cases in which intestinal hemorrhage had occured, and obtained hot images in 4 of those cases. Case 1 was a duplication of the small intestine. Cases 2 and 3 were Meckel's *diverticulum* and their illnesses were confirmed by operation. Case 4 was an abdominal wall *hemangiona*.

In an experiment we injected 2-5 mCi of $^{99m}$TcO$_4^-$ intravenously to 4 groups of rats, and then killed these groups one group at a time at intervals of 10, 20, 30, and 60 minutes. Next we made microradio autograms of their small intestines, stomachs, and colons, and thus ascertained that the gastric *mucosa* absorbed $^{99m}$TcO$_4^-$ only.

Abdominal scanning by $^{99m}$TcO$_4^-$ is useful to find ectopic gastric *mucosa* in the intestinal tract. If we suspect intestinal hemorrhage from Meckel's *diverticulum* in a patient, we should examine him in accordance with the procedure outlined above.