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FUNCTIONAL IMAGING OF THE SALIVARY GLAND: DIAGNOSTIC VALUE FOR DETECTING SALIVARY GLAND TUMORS. F. Nakanishi, T. Kasuga, T. Yamasaki, K. Yano and H. Hirano. Department of Radiology, Department of Oral Surgery and Technological Service of Radiology, Shinshu University School of Medicine, Matsumoto.

This study was designed to evaluate regional function of the salivary gland in washout phase. Computerized image subtraction technique was used: The data were collected on MT in 30 frames of 0 to 40 min. after Tc-99m pertechnetate pertechnetate i.v. administration. An image acquired 2nd min. after stimulation was subtracted from an image acquired just before stimulation. The remaining activity of the salivary gland was visualized as cold areas.

Functionality was produced by computerized image subtraction technique. It was as follows: The data were collected on MT in 30 sec. frame from 0 to 40 min. after Tc-99m pertechnetate i.v. administration. At 30nd min. lemon juice was administered. An image acquired 2nd min. after stimulation was subtracted from an image acquired just before stimulation. The remaining activity of the salivary gland was visualized as cold areas.

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This technique has been applied to 13 cases with histologically confirmed salivary gland tumors and evaluated comparing with conventional scintigram. In conventional image, 5 of 13 tumors were imaged as normal or hot areas without clear delineation of tumor and normal gland. But in functional image, all of these tumors were visualized as cold areas.


Sequential salivary scintigraphy (SSS), labial salivary gland biopsy, and contrast sialography were performed in 292 patients suspected of Sjogren's syndrome (SSS). The uptake coefficient was evaluated to 10 minutes after intravenous administration of Tc-99m pertechnetate. Tc-99m pertechnetate, by the stimulated parotid gland, and its recovery function were quantitated in 142 patients, 150 examinations (127 females, 15 males).

The value of parameters of SSS in the diagnosis of SS was compared with the histologically diagnosed groups of patients. 70 cases of non-SS, 28 of subclinical-SS and 44 of definite-SS.

The results correlated well with the histological diagnosis used to categorize the disease. Patients with definite-SS had the lowest recorded rates in each of uptake, excretion and recovery in the series. In the present study we evaluated excretory rate as the most useful parameter of salivary gland function which reliably separated normal patients from those with subclinical-SS and appears to be a feasible diagnostic parameter in SSS.

Quantitative analysis of SSS is useful as a noninvasive and repeatable method to initially evaluate or to follow the course of Sjogren's syndrome.


Ga-67 citrate scintigraphy has been shown to be useful in the evaluation of the effectiveness of the treatment, and in the early detection of the local recurrence and metastases on post-irradiated patients with head and neck malignant tumor. Bekerman et al. has described the increased concentration of Ga-67 citrate within salivary gland following radiation therapy, which results in the false-positive on scintigram and may be confused with cervical lymph-node or recurrence activity. The decision that the increased uptake of Ga-67 citrate is salivary gland is only due to clinical course. Therefore, some of the sites considered to be salivary gland may be due to tumors.

Then, we used 99mTcO4- salivary gland scintigraphy to evaluate the false-positive as well as clinical findings. Additionally, we studied on the relation between the Ga-67 uptake and absorbed dose in the salivary glands.

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