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Salivary gland dysfunction after radioactive iodine-131 therapy in patients following total thyroidectomy

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PURPOSE: Salivary gland dysfunction is a well-recognized complication of radioactive iodine-131(I-131) therapy for patients with thyroid cancer. However, the exact incidence and imaging features of salivary gland dysfunction following I-131 therapy have not been well known. The purpose of this study is to evaluate the incidence of symptoms and identify the imaging features of salivary gland dysfunction.

MATERIALS AND METHODS: We retrospectively reviewed the images of 750 patients who had undergone total thyroidectomy followed by I-131 therapy of higher level than 100 mCi from March 2009 through December 2011. Of the 750 reviewed, only 118 patients (M:F = 24:94; mean 50.6 ± 12.5) for whom at least one follow-up exam(US or CT of parotid and submandibular glands, or salivary scan) had been performed were included in this study. The incidence of these patients' symptoms resulting from salivary gland dysfunction, as well as associated image findings were evaluated.

RESULTS: Of the 118 patients included in this study, 72 (61.0%) manifested more than one symptom related to salivary gland dysfunction, such as xerostomia, swelling and pain. 35 out of the 72 patients (48.6%) with positive symptoms showed abnormal findings on imaging studies of salivary gland, whereas imaging features of significance were not discovered for the remaining 37 patients (51.4%). Among the 35 patients who portrayed positive symptoms along with abnormal imaging findings, the most frequently involved site was the parotid gland (26/35,74.3%). Other findings in 24 of the 35 patients with abnormal features on imaging modalities, included decreased salivary gland volume (58.3%), sialadenitis (45.8%), fatty degeneration (29.1%) and ductal dilatation (8.3%) on US and CT. The remaining 11 patients showed decreased excretion on salivary scan.

CONCLUSION: More than two-thirds of thyroid cancer patients treated with I-131 therapy developed symptoms related to salivary gland dysfunction. Abnormal findings in salivary gland imaging studies were identified in about half of the patients with positive symptoms. In performing post-thyroidectomy US in thyroid cancer patients, extra care must be taken not to overlook signs of salivary gland dysfunction amidst serving fundamental purpose of identifying tumor recurrence.