Abstract

Ultrasonographic Diagnosis of Salivary Gland Atrophy after Radio-iodine Treatment for Papillary Thyroid Cancer

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Abstract

Purpose: To describe ultrasonographic (US) findings of major salivary glands (MSG) atrophy in patients who received radio-iodine (RAI) treatment for papillary thyroid cancer (PTC). Determine MSG damage prevalence and associated risk factors.

Methods and materials: IRB approved, prospective non-concurrent cohort study. Patients that had CPT surgery with subsequent RAI between 2005-2015, were included. All had a preoperative US and at least one follow-up US 12 months after RAI administration. Patients with prior MSG altered findings were excluded. Uni and multivariate analysis with logistic regression was performed using US gland damage as dependent variable and RAI dose, gender and age as independent variables. Statistical significance was defined as p<0.05.

Results: In total 328 patients [average age: 42.47(IQR 34-53), female: 263 (80.2%)] met inclusion criteria, receiving a median dose of 105mCi (IQR 100-150). Follow-up period: 12-107 months. In 103 patients (31.4%) US detected salivary gland atrophy (size reduction, wavy contours, hypoechoogenicity and heterogeneous structure) in at least one MSG. Univariate analysis indicated that total RAI dose received was significantly associated with atrophy (p<0.01). No actin injury was present in patients treated with a total dose lower than 100mCi. Multivariate logistic regression revealed total radiation dose OR of 2.35 (IC 95% 1.80 to 3.06) and women OR of 2.17 (IC 95% 1.017 to 4.42) for MSG atrophy.

Conclusion: Actinic sialoadenitis is common, affecting approximately one-third of patients. Cumulative dose is the main factor related to this damage. For the first time, US was used to prospectively and systematically evaluate the MSG of patients with RAI treatment.