

Sjögren Syndrome after Radioiodine Therapy in Thyroid Cancer Patients

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Salivary and lacrimal gland dysfunction is relatively frequent after radioiodine therapy. In most cases this is a transient side effect, but in some patients it may persist for a long period or appear late. Radioiodine (^{131}I) therapy is often administered to patients following total thyroidectomy to treat well-differentiated follicular cell-derived thyroid cancer. In addition to the thyroid, ^{131}I accumulates in the salivary glands, giving rise to transient or permanent salivary gland damage. Salivary gland dysfunction following radioiodine therapy can be caused by radiation damage. But, it also may be associated with Sjögren syndrome (SS) developed after radioiodine therapy. It would be recommended that the evaluation for SS including anti-SSA/Ro and anti-SSB/La should be considered before and after radioiodine therapy.

Key Words: Sjögren's syndrome; Thyroid neoplasms; Xerostomia

INTRODUCTION

Sjögren syndrome (SS), the second most common autoimmune rheumatic disease, refers to keratoconjunctivitis sicca and xerostomia resulting from immune lymphocytes that infiltrate the lacrimal and salivary glands.

A significant number of SS patients complaining of symptoms, such as dryness of mouth, dryness of eyes, pain in the parotid region, altered taste, dental caries due to reduced salivation and difficulty in swallowing have been described.¹⁾ Patients with SS are also accompanied by systemic problems, such as lymphoma and interstitial pneumonia. Decreased saliva secretion may significantly reduce the quality of life of the patient.²⁾

Decreased saliva secretion may also be caused by radioiodine (^{131}I) therapy.^{3,4)} Salivary and lacrimal gland dysfunction is relatively frequent after radioiodine therapy. In most cases this is a transient side effect, but in some patients it may persist for a long period or appear late.³⁾

Radioiodine therapy is often administered to patients following total thyroidectomy to treat well-differentiated follicular cell-derived thyroid cancer. Radioiodine is an effective treatment for differentiated thyroid carcinomas after surgery. In addition to the thyroid, ^{131}I accumulates in the salivary glands, giving rise to transient or permanent salivary gland damage. Radioiodine secondarily targets the salivary glands where it is concentrated and secreted in the saliva 50-100 times to that found in serum.⁵⁻⁸⁾ The parotid glands have proven to be more susceptible to the development of radiation sialadenitis than the submandibular.^{1,9)}

There are studies on the possibility of the occurrence of SS after radioiodine therapy for thyroid cancer.³⁾ Thus, we present the case of a patient who was diagnosed with SS after radioiodine therapy for thyroid cancer.

CASE REPORT

A 53-year-old woman presented with dry mouth and

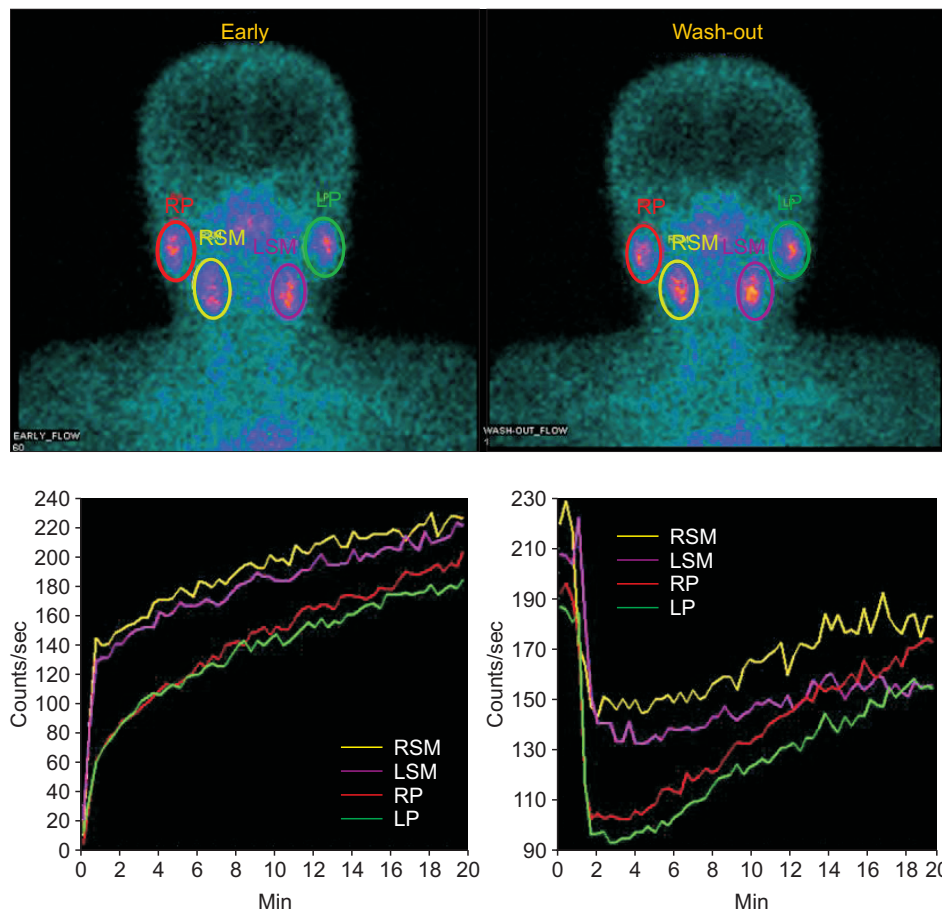


Fig. 1. Salivary scan of a 53-year-old woman was taken. Tc-99m pertechnetate was injected to the patient intravenously. Dynamic images of the salivary glands were obtained before and after the gustatory stimulation. Uptake to the parotid glands is slightly decreased. RP, right parotid gland; RSM, right submandibular gland; LSM, left submandibular gland; LP, left parotid gland.

abnormal taste. She had her thyroid gland removed surgically and received radioiodine therapy. The symptoms developed after radioiodine therapy. She also presented with dry eye after radioiodine therapy.

Thus, the evaluation for SS including salivary flow test and laboratory test, such as anti-SSA/Ro and anti-SSB/La was done.

An unstimulated whole salivary flow rate was 0.166 mL/min and stimulated whole salivary flow rate by chewing gum base was 0.95 mL/min. Laboratory tests revealed that anti-SSA/Ro and anti-SSB/La were positive. And the salivary gland scintigraphy showed a slightly reduced uptake in the parotid gland (Fig. 1). The Schirmer's test was performed for 5 minutes on the ophthalmologic examination and the result was 3 mm in the right eye and 4 mm in the left eye. Finally, she was diagnosed with SS.

According to the American European Consensus Group (AECG) criteria¹⁰⁾ published in 2002, she had symptoms of dry eyes and dry mouth for at least 3 months, abnormal Schirmer's test result, decreased unstimulated whole

salivary flow rate, abnormal salivary gland scintigraphy, and positive anti-SSA/Ro and anti-SSB/La. According to the American College of Rheumatology/European League Against Rheumatism (ACR/EULAR) classification criteria-aproved classification criteria^{11,12)} published in 2016, she had a total score of 4, derived from the sum of the weights assigned to anti-SSA/Ro and Schirmer's test. Her test results met both criteria for SS.

DISCUSSION

Radioiodine (¹³¹I) secondarily targets the salivary glands causing considerable radiation damage to these glands resulting in xerostomia, pain, swelling, altered taste and dysphagia.^{5-7,13,14)}

The radiation damage causes glandular inflammatory infiltration and concomitant swelling which may lead to an increased periductal pressure with subsequent ductal constriction.^{9,15,16)} In addition, long-term effects on the lacrimal glands causes affection of tear secretion leading to

ocular dryness and in some cases, nasolacrimal duct obstruction.⁷⁾ Schirmer's tear test was found to be abnormal in the patient after radioiodine therapy¹⁷⁾ as ¹³¹I is excreted in tears and actively accumulated in the nasolacrimal duct.¹⁸⁾ Obstruction of the lacrimal drainage system could occur after high-dose radioiodine therapy.¹⁹⁾

The main symptom of the patient in this case was xerostomia and abnormal Schirmer's test was documented. There was associated xerostomia and impaired salivary function parameters which is in accordance with the finding of Solans et al.¹⁾

The patient complained of dry mouth after radioiodine therapy for thyroid cancer, and eventually was diagnosed with SS. Salivary gland dysfunction can be caused by radiation damage. But, it also may be associated with SS developed after radioiodine therapy. The patient may already have SS prior to radioiodine therapy, but it is possible that radioiodine (¹³¹I) therapy treatment may have caused SS.

One study³⁾ showed that SS may occur after radioiodine therapy for thyroid cancer. They reported that anti-SSA/Ro and anti-SSB/La after treatment was significantly increased compared with before radioiodine therapy, and 8 patients (25.81%) fulfilled the AECG criteria¹¹⁾ of classification of primary SS after radioiodine therapy.

Patients receiving radiation iodine therapy should be continuously assessed for salivary glands and lacrimal glands. In conclusion, it would be recommended that the evaluation for SS including anti-SSA/Ro and anti-SSB/La should be considered before and after radioiodine therapy in patients who plan to undergo radioiodine therapy.

CONFLICT OF INTEREST

No potential conflict of interest relevant to this article was reported.

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