Fused FDG PET/CT Detects Late-onset Sialadenitis After Radioiodine Ablation Therapy

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Sialadenitis is a common complication arising from radioactive iodine therapy. F-18-fluoro-2-deoxyglucose positron emission tomography/computed tomography (¹⁸F-FDG PET/CT) has been proposed to be useful in detecting not only a malignant lesion but also inflammatory changes. An ¹⁸F-FDG uptake pattern can vary according to inflammatory changes, and the present study reports on a case of late-onset sialadenitis 3 years after the treatment, showing a diffuse and intense ¹⁸F-FDG uptake on ¹⁸F-FDG PET/CT. To the best of our knowledge, this is the first report on such an ¹⁸F-FDG pattern in late-onset sialadenitis after radioiodine therapy. (J Med Life Sci 2016;6(1):40-42)

Key Words : ¹⁸F-FDG, PET Scan, Radioiodine Therapy, Sialadenitis

Introduction

Recent studies demonstrate that FDG PET/CT can find active infectious or inflammatory lesions. Acute sialadenitis is a usual complication due to radioiodine therapy, but late-onset sialadenitis is a rare condition. We report an uncommon case of FDG PET/CT detecting late-onset sialadenitis after radioiodine therapy.

Case Report

A 45-year-old woman underwent total thyroidectomy due to papillary thyroid cancer in 2011. High-dose radioiodine ablation of 3.7 GBq (100 mCi) was performed 2 months after the operation. During hospitalization the patient had not complained of symptoms, suggesting an acute complication due to the therapy. For 3 years after discharge, she had routine follow-up tests that included physical examination, serum thyroid function tests, ultrasonography and F-18-fluoro-2-deoxyglucose positron emission tomography/computed tomography (¹⁸F-FDG PET/CT), and the tests results were found to be normal. Thereafter she complained of a mass-like lesion that grew around the right submandibular area. Sialadenitis was suspected upon physical examination, and a planned ¹⁸F-FDG PET/CT, as routine follow-up, was carried out after 6 days. The images revealed a diffuse and intense ¹⁸F-FDG uptake in right submandibular area on the transaxial and on the maximum intensity projection views(Fig. 1A-D, empty arrows; maximum standardized uptake value, 6.8). The present authors retrospectively reviewed imagery that had been captured 19 months prior, and found that these images contained a faint physiologic ¹³¹I uptake in both submandibular glands(Fig. 1E-H). The ¹³¹I scintigraphy taken on the second day after radioiodine therapy of 3.7 GBq was reviewed additionally. The images showed a focal ¹³¹I uptake in the thyroid bed area, suggesting the presence of a remnant of thyroid tissue. The other focal ¹³¹I uptake in the
right submandibular area was seen with an asymmetric pattern (Fig. 11, empty arrows).

Figure 1. 

\[1^8\text{F}-\text{FDG PET/CT as a routine follow-up showed a diffuse and intense } 1^8\text{F}-\text{FDG uptake in right submandibular area on the transaxial and on the maximum intensity projection views(A-D, empty arrows: maximum standardized uptake value, 6.8). } 1^8\text{F}-\text{FDG PET/CT which had been conducted 19 months prior demonstrated that a faint physiologic } 1^8\text{F}-\text{FDG uptake in both submandibular glands(E-H). The } 1^8\text{I scintigraphy taken on the second day after radiiodine therapy of 3.7 GBq revealed a focal } 1^8\text{I uptake in the thyroid bed area, suggesting the presence of a remnant of thyroid tissue. The other focal } 1^8\text{I uptake in the right submandibular area was seen with an asymmetric pattern(I, empty arrows).}

Discussion

The present study showed that diffuse and intense 

\[1^8\text{F}-\text{FDG uptake in right submandibular gland on } 1^8\text{F}-\text{FDG PET/CT. Other salivary disease such as Warthin’s tumor can also have the same pattern on } 1^8\text{F}-\text{FDG PET/CT. The present authors could exclude the presence of a salivary tumor because after conservative management, the}

complaint was resolve. And therefore they presume that this case of sialadenitis occurred as a result of previous radiiodine treatment, considering there was a significant \[1^8\text{I uptake on the salivary area during post-therapy scintigraphy even though a late-onset condition after 3 years was rare.} \]

Furthermore, previous studies have shown that \[1^8\text{I uptake in salivary glands is more likely to cause sialadenitis after radiiodine therapy.} \]

Recent research revealed that \[1^8\text{F-FDG PET/CT was useful for detecting not only malignant lesions but also infectious or inflammatory lesions.} \]

This study showed the pattern of \[1^8\text{F-FDG PET/CT of late-onset sialadenitis after radiiodine ablation therapy and demonstrated that } 1^8\text{F-FDG PET/CT helps to diagnose inflammatory diseases, such as sialadenitis.}

References

4) Jo KS, An YS, Lee SJ, Soh EY, Lee J, Chung YS, et al. Significance of salivary gland radiiodine retention on post-ablation \[1^3\text{I scintigraphy as a predictor of salivary gland dysfunction in patients with differentiated thyroid carcinoma.} \]


7) Oh JR, Song HC, Kang SR, Yoo SW, Kim J, Chong A, et al. The clinical usefulness of \[1^8\text{F-FDG PET/CT in patients with systemic autoimmune disease.} \]

8) Glaudemans AW, de Vries EF, Galli F, Dierckx RA, Slart RH, Signore A. The use of \[1^8\text{F-FDG-PET/CT for diagnosis and treatment monitoring of inflammatory and infectious diseases.} \]