

Atypical Thyroiditis Following Influenza B Infection

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Viral infections are known to be a predisposing factor for subacute (De Quervain's) thyroiditis. In this report, we document a novel case of thyroiditis, with an atypical presentation, following an influenza B infection. A 13-year-old previously healthy female visited the outpatient clinic complaining of right neck pain. She had been diagnosed with an influenza B infection at a local clinic 3 weeks earlier. All laboratory tests were normal. A thyroid ultrasound showed an ill-defined hypoechoic mass (1.0×0.5×1.5 cm) in the right lower thyroid, and scintigraphy of the thyroid with Technetium-99m (99m-Tc) demonstrated the normal uptake of the radiotracer. Fine-needle aspiration from the nodule showed the presence of a few neutrophils. To the best of our knowledge, this is the first case of atypical thyroiditis associated with an influenza B infection described in the literature. Influenza B infection should be considered as a possible cause of atypical thyroiditis.

Key Words: Influenza B, Infection, Thyroiditis

Introduction

Viral infections are recognized as predisposing factors for subacute (De Quervain's) thyroiditis.¹⁾ Previously, there have been several reports of subacute thyroiditis following an influenza A infection.²⁻⁴⁾ However, there has been no case report of thyroiditis associated with influenza B infection. We describe a novel patient with an atypical presentation of thyroiditis following an influenza B infection. The patient presented with a painful thyroid nodule, but with normal laboratory studies and a normal 99m-Tc thyroid scan.

Case Report

A 13-year-old previously healthy female presented to our endocrinology clinic on April 27, 2016, complaining of right neck pain. The patient had no prior history of thyroid disease, but three weeks earlier at a local clinic she had been diagnosed with an influenza B infection and was treated with a seven-day course of oseltamivir (Tamiflu®). She had not been vaccinated for influenza. Physical examination of the patient revealed a painful and tender lesion of the right lower region of the thyroid gland without lymph node enlargement. Blood pressure was 110/70 mmHg, pulse rate was 76 beats per minute, and body temperature was 36.7°C. The chest was clear on auscul-

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tation and the abdomen was soft to palpation. Chest radiograph and ECG findings were normal. The diagnosis of influenza B viral infection had been based on a rapid influenza diagnostic test (Genedia; Green Cross, Yongin, Korea) with nasopharyngeal swabs at a local clinic. There were no signs of thyrotoxicosis such as tachycardia, weight loss, or tremor.

Laboratory tests showed normal thyroid function (thyroid-stimulating hormone [TSH]=0.73 μ IU/mL, reference range: 0.35–4.94 μ IU/mL; triiodothyronine [T3]=66.54 ng/dL, reference range: 58–159 ng/dL; free thyroxine [FT4]=0.97 ng/dL, reference range: 0.70–1.48 ng/dL), and thyroid autoantibodies (thyroid peroxidase antibody and TSH receptor antibody) were not present. The white blood cell (WBC) count was $9.72 \times 10^3/\mu$ L with a normal differential, and the erythrocyte sedimentation rate (ESR) was 3 mm/hour (reference range: 0–10 mm/h).

Ultrasound of the thyroid gland showed a hypo-

echoic mass (1.0×0.5×1.5 cm) in the right lower lobe of the thyroid gland with an irregular and poorly defined border (Fig. 1A). Thyroid scintigraphy with 99m-Tc demonstrated normal radiotracer uptake in both lobes of the thyroid gland (Fig. 1B).

Fine-needle aspiration of the focal lesion in the right lower lobe of the thyroid gland revealed the presence of a few neutrophils, suggesting inflammation.

Subsequently, localized thyroiditis without thyrotoxic symptoms was suspected, and a seven-day course of a non-steroidal anti-inflammatory drug (NSAID) and prednisolone (20 mg/day) was empirically begun. The patient's neck pain rapidly resolved within 24 hours of starting therapy. The NSAID was stopped and prednisone was gradually tapered over the next two weeks. Repeated ultrasound screening revealed resolution of the previously noted hypoechoic nodule (Fig. 2). Repeat laboratory studies revealed normal thyroid function, normal WBC levels, and a normal ESR. The

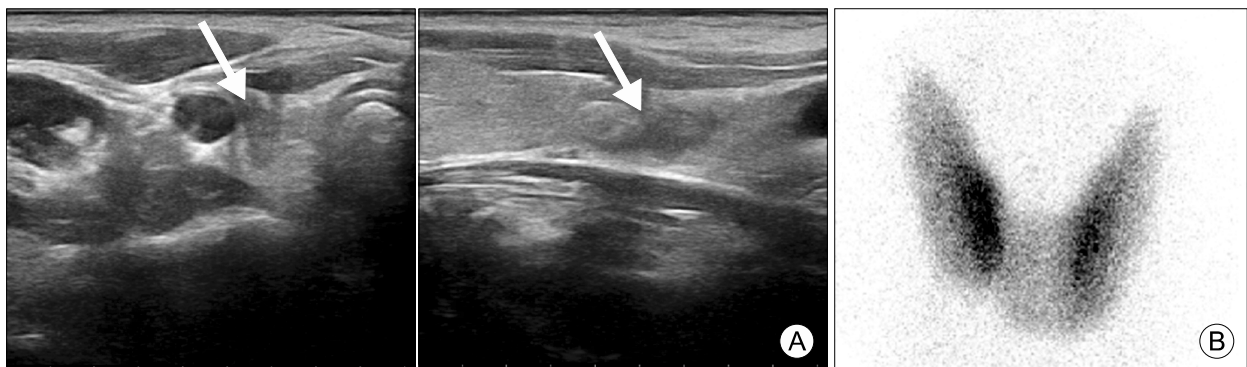


Fig. 1. Initial thyroid ultrasonography and 99m-Tc scintiscan. (A) Thyroid ultrasonography showed an ill-defined hypoechoic nodule (1.0×0.5×1.5 cm) in the right lobe of the thyroid gland (indicated by white arrows). (B) Thyroid scintigraphy with 99m-Tc revealed normal radiotracer uptake in the thyroid gland.

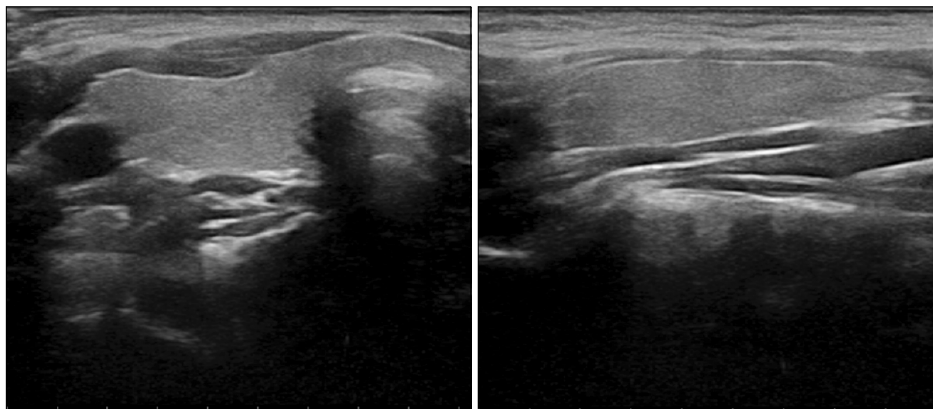


Fig. 2. Follow-up ultrasonography showed resolution of the hypoechoic nodule in the right lobe of the thyroid gland.

patient has had no recurrence of the right neck pain.

Discussion

We describe a novel case of a patient with atypical thyroiditis presenting after an influenza B infection. Three case reports of patients with subacute thyroiditis following an influenza A infection have been previously published. Two of these patients presented with a typical clinical course^{2,4)} and one patient presented with fever of unknown origin.³⁾ Interestingly, there has been one report of subacute thyroiditis following a seasonal influenza vaccination,⁵⁾ and ours is the first to report a case of atypical thyroiditis associated with an influenza B infection.

Subacute thyroiditis is a spontaneous remitting inflammatory disorder caused by a viral infection or a post-viral inflammatory process.^{1,6)} It is diagnosed based on clinical and laboratory findings, including a painful focal thyroid lesion, symptoms of thyrotoxicosis, decreased thyroid uptake of radioactive iodine, elevated thyroid hormones (FT4 and T3), and an elevated ESR.⁷⁾ Tissue diagnosis is not necessarily required.⁸⁾ The cytological features of fine-needle aspiration specimens include the presence of large multinucleated giant cells or epithelioid granulomas, but the absence of these findings does not exclude a diagnosis of subacute thyroiditis.^{9,10)}

Our case did not have the features of typical subacute thyroiditis. In our patient, laboratory studies, including WBC count, neutrophil percentage, thyroid function, and ESR were normal and thyroid autoantibodies were absent. However, the clinical findings of neck pain and thyroid tenderness led to the consideration of the diagnosis of thyroiditis. The findings of scintigraphy and laboratory studies were normal, and histological features were not typical for subacute thyroiditis. But ultrasound exam offered a clue for the diagnosis of thyroiditis which showed a mass in the right lower lobe of the thyroid gland. Since ultrasound is the single-most valuable imaging modality for examination of the thyroid gland, the abnormal findings of this exam should be considered seriously. We also have taken advantage of using ultrasound of thyroid

for diagnosis of atypical thyroiditis.

On the other hand, the normal thyroid function tests, normal scintigraphy, and the histological features were not typical of those usually seen in subacute thyroiditis. Also, the clinical manifestations were mild and the duration of treatment was only 3 weeks, which is shorter in comparison to typical cases of subacute thyroiditis.

Generally, thyroiditis is a group of inflammatory thyroid disorders. Three categories have been proposed for inflammatory diseases of the thyroid: acute, subacute and chronic thyroiditis.⁸⁾ Nevertheless, considering the broad category of thyroiditis includes all the following inflammatory diseases of the thyroid gland, there have been possibilities that other groups of thyroiditis still has existed. In this regard, painful thyroiditis without thyroid hormone abnormalities might have existed like this case.

To the best of our knowledge, ours is the first report of thyroiditis associated with an influenza B infection. It was possible that thyroiditis following an influenza B infection might elude diagnosis since the clinical manifestations were mild and self-limited. A diagnosis of atypical thyroiditis should be considered in patients with compatible symptoms and a prior influenza B infection.

In conclusion, this is the first case of atypical thyroiditis associated with an influenza B infection described in the literature. Influenza B infection should be considered as a possible cause of atypical thyroiditis.

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Conflicts of Interest

The authors report no relationships that could be construed as a conflict of interest.

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