NOTE

Recurrent Hemithyroiditis: A Case Report

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Abstract. We report on a girl with recurrent painful thyroiditis which involved the entire right thyroid lobe, but did not spread to the left thyroid lobe. She occasionally developed pain and swelling of the right side of the neck following symptoms of common cold over several years. During these attacks, the right thyroid lobe was enlarged, tender, and very soft, while the left thyroid lobe was not remarkable. Ultrasonic examination revealed that the entire right thyroid lobe was hypoechoic, but the entire left lobe was normal echoic. Serum C-reactive protein, white blood cell count, and erythrocyte sedimentation rate were increased during the attacks. The thyroiditis responded quickly to treatment with prednisolone and/or anti-inflammatory drugs, but the thyroiditis may have subsided spontaneously since the signs and symptoms of thyroiditis had subsided with only antibiotic therapy. After resolution of the thyroiditis, the echogenicity of the right lobe returned to near normal and the inflammatory findings became negative. During the investigation, thyroid function was normal except for when the thyroiditis was first diagnosed at another hospital with a serum TSH level of 0.1 mU/l. Serum thyroglobulin level was increased but returned to normal or decreased during and after attacks of thyroiditis. The mechanism(s) of the recurrent hemithyroiditis remains unknown, but the underlying disease appeared to be chronic thyroiditis since tests for anti-microsomal or anti-thyroid peroxidase antibodies were consistently positive during the course of her illness. The changes in the titers of these antibodies were not clear during and after the attacks of thyroiditis. In addition, the clinical course suggests that the present hemithyroditis can be induced by recurrent upper respiratory infection.

Key words: Recurrent thyroiditis, Ultrasonography, CT

(PAIN in the neck is a common symptom observed in patients with acute thyroiditis [1], subacute thyroiditis [1], acute exacerbation of chronic thyroiditis [1–4], sometimes in patients with bleeding into thyroid cyst [1] or anaplastic thyroid carcinoma [5]. Differential diagnosis is relatively easy when ultrasonic examination, thyroid function tests, including measurement of the percentage of thyroidal radioactive iodine uptake (RAIU), and a scintigram with $^{131}$I or $^{99m}$Tc-pertechnetate are performed in addition to obtaining the history of the clinical course of the disease and physical findings.

We recently examined a girl with recurrent thyroiditis who complained of pain, tenderness, and swelling in the right side of her neck during attacks of thyroiditis. Inflammatory processes involved only the right thyroid lobe and did not involve the opposite left thyroid lobe. In addition, the enlarged right thyroid lobe was very soft. Her thyroiditis was clearly different from the well-known examples of painful thyroiditis mentioned above. We report on this patient and summarize the clinical features and changes in thyroid function during the course of her illness.

Case Report

A 13-year-old girl was first referred to our
hospital in April 1994 for further evaluation of recurrent thyroiditis. In December 1991, she consulted a pediatrician in another hospital because of pain and swelling in the right side of the neck following general fatigue, cough, sore throat, and fever. The right thyroid lobe was enlarged and tender, but the left thyroid lobe was not palpable. Serum levels of T3, free T4, and TSH were 3.2 nmol/l (normal range: 1.2–2.8), 23 pmol/l (normal range: 11–28), and 0.1 mU/l (normal range: 0.6–5.1), respectively. Anti-microsomal antibodies determined by the particle agglutination method (MCPA) were detectable (1:100, negative range: <1:100), but anti-thyroglobulin antibodies determined by the particle agglutination method (TGPA) were not detectable (negative range: <1:100). A test for C-reactive protein (CRP) was positive (++) and the white blood cell (WBC) count was increased (19 x 10⁹/l). Ultrasonographic examination demonstrated that the right lobe was enlarged and hypoechoic. She was diagnosed as having acute thyroiditis and treated with antibiotics and anti-inflammatory drugs. The size of the right thyroid lobe returned to normal and the symptoms improved after several days. In her past history she had similar episodes (details unknown). Since then, similar episodes occurred two or three times a year and each time she was treated with antibiotics. Sometimes anti-inflammatory drugs were also given. The serum CRP concentration and the WBC count were increased during the attacks of thyroiditis and returned to normal after resolution of the thyroiditis. MCRA were consistently detectable (1:100–1:800) while TGPA remained non-detectable until the end of 1993. Serum levels of thyroid hormones and TSH were within the normal ranges between 1991 and 1993 except in December 1991 (TSH 0.1 mU/l). Scintigrams of the right thyroid lobe with ⁹⁹ᵐTc-pertechnetate showed decreased uptake during the attack (March 19, 1992) and normal uptake after the attack (April 1, 1992). A barium swallow performed in September 1992 did not reveal the presence of a fistula from the pyriform sinus. In February 1994, a similar episode occurred following common cold symptoms and she was treated with antibiotics. When she was first seen at our hospital in April 1994, the thyroid gland was not palpable and thyroid function was normal. The serum was positive for MCRA (1:1600), but negative for TGPA (<1:100). The serum CRP concentration was less than 0.30 mg/dl. The erythrocyte sedimentation rate (ESR) was 5 mm/h (normal <15). The RAIU was 18.2% (normal range: 10–40%) and a scintigrat with ¹²³I was not remarkable, but ultrasonic examination demonstrated slight hypoechogenicity of the right thyroid lobe. We could not determine the type of thyroiditis at that time. We recommended her to consult us when she had neck pain, swelling, or fever in the future. She had another episode in August 1994 and was treated at the same other hospital. She was next seen on February 21, 1995 complaining of neck pain and fever (37–38°C) following a headache and sore throat over several days. Clinically she appeared to be euthyroid. The right thyroid lobe was enlarged, tender, and very soft. An ultrasonogram revealed that the right thyroid lobe was hypoechonic but the left lobe was not. Scintigraphy with ⁹⁹ᵐTc-pertechnetate and computed tomography (CT) performed on that day are shown in Fig. 1. The scintigram demonstrated decreased ⁹⁹ᵐTc-pertechnetate accumulation in the right thyroid lobe. The CT indicated that the same lobe had a decreased iodide content. Fine needle aspiration biopsy of the right thyroid lobe revealed the presence of a few lymphocytes and neutrophils without follicular cells. The thyroglobulin (Tg) concentration was 714 µg/l and the serum CRP level was increased to 6.42 mg/dl. The ESR was 26 mm/h. She was treated with an anti-inflammatory drug (mefenamic acid 750 mg/day). The neck pain disappeared and the size of the right lobe decreased in two or three days. The RAIU was 10.2% on March 6, 1995 and a scintigram with ¹²³I was not remarkable (Fig. 2). She next noticed neck pain and fever (38°C) on May 12, 1995 following general fatigue and nasal obstruction for two or three days. The right thyroid lobe was enlarged, tender, and soft. She was treated with prednisolone (30 mg/day). The symptoms improved in a week. The dose of prednisolone was gradually decreased and the treatment was terminated on June 10. The changes in the ultrasonogram between February and March 1995 are seen in Fig. 3 and between May and June 1995 are in Fig. 4. When the right thyroid lobe was enlarged and tender, it was hypoechogenic (upper panel in Fig. 3 and in Fig. 4). The echogenicity increased after the painful and tender thyroiditis.
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subsided (middle and lower panels in Fig. 3 and in Fig. 4). A similar attack occurred in late June 1995, mid August 1995, and early January 1996. In June 1995 and January 1996, mefenamic acid was effective. In August 1995, the symptoms were mild and improved without any treatment. Results of $^{99m}$Tc-pertechnetate thyroid scintigram and neck CT obtained in October 18, 1995 when she was free of painful thyroiditis were similar to those obtained on February 21, 1995. Ultrasononic examination showed that the right thyroid lobe was slightly hypoechoic on that day. The left thyroid lobe was not enlarged during the investigation period. In addition, she did not have erythema or localized warmth over the right thyroid lobe up to January 1996.

Discussion

The clinical features of this patient are summarized as follows: 1) the thyroiditis often
recurred, 2) there was a history of antecedent upper respiratory infection prior to the attack of thyroiditis, 3) inflammatory processes only involved the right thyroid lobe, and did not involve the left thyroid lobe, 4) the serum CRP concentration and WBC count were increased during the attack, 5) during and after the attacks, thyroid function was normal except for December 1991 (TSH 0.1 mU/l) when thyroiditis was first diagnosed at another hospital, 6) glucocorticoid and anti-inflammatory drugs were effective in the treatment of the thyroiditis and the symptoms promptly improved following treatment, and 7) hypothyroidism did not develop during the course of the illness.

The clinical course and the changes in the thyroid function in this case of recurrent hemithyroiditis are clearly different from subacute thyroiditis [1] and acute exacerbation of chronic thyroiditis [2–4]. On the other hand, several clinical and laboratory findings mentioned above are also observed in patients with acute thyroiditis. But, we considered that our present patient did not have acute thyroiditis based on the following reasons: 1) the left thyroid lobe is usually involved in acute thyroiditis [6–9], 2) erythema and/or localized warmth is usually noted over the affected thyroid lobe in acute thyroiditis [8, 9], 3) in CT and ultrasonography, perithyroid lesion (abscess) can be detected and/or margin of the affected thyroid lobe is obscure in acute thyroiditis [7, 10–14], but our patient did not have such findings, 4) the barium swallow could not reveal the presence of a fistula from the piriform sinus which is thought to cause acute thyroiditis [6, 7], and 5) treatment with prednisolone improved not only clinical and laboratory findings but also ultrasonic findings in our patient, whereas the clinical course of patients with acute thyroiditis does deteriorate when glucocorticoid is given in error [8, 9, 12]. We could not determine the type of her thyroiditis from the specimen obtained in the aspiration biopsy since only a few cells were included in the specimen and contamination with peripheral blood could not be ruled out. Because neither barium swallow nor aspiration biopsy of the thyroid gland was repeated, the present study cannot totally rule out the possibility that our patient had an unusual type of acute thyroiditis.

Tests for anti-microsomal (MCPA) or anti-peroxidase antibodies (TPOAb) were consistently positive during the investigation period, suggesting that the patient had underlying chronic thyroiditis. Nevertheless, the changes in the titers of these antibodies were not clear during and after the painful thyroiditis (see Table 1), suggesting that the mechanism(s) of the disease in the patient was different from that of silent thyroiditis [15, 16] and acute exacerbation of chronic thyroiditis [2, 4] in which the titers of antithyroid antibodies were often increased and then decreased during an attack of thyroiditis. We cannot yet explain why the inflammation recurred only in the right lobe and did not involve the left lobe. The clinical course, however, indicates that recurrent upper respiratory infection may trigger the development of the present hemithyroiditis.

We used glucocorticoid and anti-inflammatory
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Table 1. Changes in thyroid function and inflammatory findings

<table>
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<tr>
<th></th>
<th>thyroid</th>
<th>fT3 (pmol/l)</th>
<th>fT4 (pmol/l)</th>
<th>TSH (mIU/l)</th>
<th>Tg (μg/l)</th>
<th>TgAb (U/ml)</th>
<th>TPOAb (U/ml)</th>
<th>CRP (mg/dl)</th>
<th>WBC (× 10⁹/l)</th>
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<tr>
<td>95-02-15*</td>
<td>+</td>
<td>5.4</td>
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<tr>
<td>02-21</td>
<td>+</td>
<td>4.1</td>
<td>17</td>
<td>0.88</td>
<td>714</td>
<td>*1.80²</td>
<td></td>
<td>6.42</td>
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<tr>
<td>03-07</td>
<td>+</td>
<td>4.8</td>
<td>17</td>
<td>1.01</td>
<td>151</td>
<td>*1.80²</td>
<td>&lt;0.3</td>
<td>37</td>
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<tr>
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<td>4.7</td>
<td>15</td>
<td>0.77</td>
<td>702</td>
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<tr>
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<td>&lt;0.3</td>
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<td>&lt;0.3</td>
<td>37</td>
<td>1.3</td>
<td>9.5</td>
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<td>14</td>
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<td>1.03</td>
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<td></td>
<td>32</td>
<td>&lt;0.3</td>
<td>6.2</td>
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</table>

*anti-microsomal antibodies as measured by the particle agglutination method (negative range: <1.100). # data from another hospital (see text). Normal range of fT3, fT4, and TSH after April 1995 as follows: fT3 3.4–5.9, fT4 9–23, TSH 0.43–4.09. f3, free T3; fT4, free T4; Tg, thyroglobulin; TgAb, anti-thyroglobulin antibodies; TPOAb, anti-thyroid peroxidase antibodies; CRP, C-reactive protein; WBC, white blood cell.

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References


