Tuberculous Thyroiditis: Report of a Case with a Review of the Literature

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Abstract. A 49-year-old Japanese woman was referred to our department for evaluation of a thyroid nodule. She underwent subtotal thyroidectomy with modified neck dissection for a follicular thyroid carcinoma, suspected on preoperative diagnosis. The histological diagnosis was tuberculous thyroiditis. She made an uneventful recovery and received antituberculous agents. At follow-up she remains well and is euthyroid. Reports on forty-four patients in the Japanese literature were read. Tuberculous thyroiditis must be differentiated from thyroid cancer and subacute thyroiditis. Surgery plus administration of antituberculous drugs is considered the treatment of choice.

Key words: Tuberculous thyroiditis, Thyroid

TUBERCULOUS thyroiditis is rare [1]. Rankin and Graham [2] reported that tuberculous thyroiditis was found in about 0.1% of 20,758 tissue specimens examined at the Mayo Clinic. Furthermore, since the development of antituberculous agents and countermeasures for tuberculosis, tuberculous thyroiditis has become extremely rare [3]. We report a case of tuberculous thyroiditis and a review of the Japanese literature.

Case Report

A 49-year-old Japanese woman was referred to our department for evaluation of a hard mass in her anterior neck, in July of 1989. Her general condition was excellent, without fever, cough or dyspnea. No previous or family history of tuberculosis or thyroid disease was found. Physical examination showed a 25×25 mm nodule in the right lobe of the thyroid and a 25×30 mm lymph node in the right supraclavicular region, which were essentially immobile, hard and rough-surfaced. No other lymph nodes were palpable. The overlying skin was normal. Laboratory data were as follows: FT₃ 3.8 pg/ml (2.5-6.0), FT₄ 0.90 ng/dl (0.8-2.2), TSH 0.99 μU/ml (0.34-3.90), thyroglobulin 38 ng/ml (<60), ESR 37 mm/h. Antithyroid autoantibodies to thyroglobulin and thyroid microsomal antigen were both negative. Complete blood count, liver and renal function tests were all within normal ranges. Chest X-ray findings were normal. Neck X-ray film revealed no calcification or deviation of the trachea. Fine needle aspiration of thyroid nodule revealed cell cumulativity and nuclei of slightly variable size, which suggested a class III diagnosis (Fig. 1). The findings of fine needle aspiration of the supraclavicular mass showed background contamination with necrotic substances and infiltration of inflammatory cells such as lymphocytes. These findings were different from those of a tumor, and the mass was not diagnosed as chronic or subacute thyroiditis (Fig. 2). A CT scan of the neck and upper thorax showed...
a cancer-like nodule in the right lobe of the thyroid and an apparently metastatic lymph node in the right supraclavicular region. A $^{201}$TI-$^{99m}$Tc subtraction scintigram revealed accumulation of $^{201}$TI in the thyroid nodule and the supraclavicular mass. She was admitted because of suspected thyroid cancer.

A subtotal thyroidectomy with right modified neck dissection was conducted on September 5, 1989. A nodule in the right lobe of the thyroid

Fig. 1. Findings of fine needle aspiration of thyroid nodule. Cell cumulativity and a slight degree of nuclear size variation are observed (Pap, $\times$100).

Fig. 2. Findings of fine needle aspiration of supraclavicular mass. Background contamination with necrotic substances, and infiltration of inflammatory cells such as lymphocytes can be seen (Pap, $\times$100).
was hard and had an irregular surface (Fig. 3). The lymph node in the right supraclavicular region consisted of necrotic and granulomatous material. The lymph node was found to have communicated with the right lobe of the thyroid by means of a thin string, and was adherent to the sternocleidomastoid muscle and internal jugular vein. There was no abscess. The cut edge of the nodule was smooth, poorly circumscribed and grey-white in color, and did not have the appearance of thyroid cancer. The lymph node was also necrotic, consisted of granulomatous materials, and did not look like a lymph node with metastasis. Intraoperative diagnosis of the frozen section was tuberculous thyroiditis and tuberculous lymphadenitis of the cervix. H-E findings of the nodule and lymph node were epithelial cell granuloma with caseous necrosis, Langerhans-type giant cells and lymphocytic infiltration, providing a definite diagnosis of tuberculous thyroiditis (Fig. 4). The tuberculous thyroiditis, in particular, consisted of Langerhans-type giant cells, while the granuloma was mainly epithelial cells. Subacute thyroiditis showed foreign body-type giant cells.

She made an uneventful recovery. Tuberculous skin test with purified protein derivative showed 20 × 20 mm erythema. She received 5 months of treatment with isoniazid, streptomycin and rifampicin. At present, she is well and euthyroid.

**Review of cases reported in the Japanese literature**

To date, a total of 44 patients with tuberculous thyroiditis (TT) have been reported in Japan. They ranged in age from 19 to 76 years (average age 46.3 years). The proportion of patients 45 to 50 years of age was the highest, followed by that of patients 50 to 55 years of age (Fig. 5). The patients consisted of 10 males and 34 females, a sex ratio of 1:3.4. The frequency at which struma occurred commonly in the right lobe was 59.1%, or 2.6 times higher than that in the left lobe. The incidence of mass in the anterior neck was the highest, 97.7%, followed by dysphagia (20.5%). Respiratory symptoms, such as cough and dyspnea, were observed in only a few patients. With regard to the properties of nodules, the diameter was 4-5 cm in 43.2%, the highest proportion of patients, and the frequency of a hard nodule with a smooth surface was also highest. Malignant struma was diagnosed preoperatively in 38.1% (Table 1). TT was diagnosed preoperatively in only one patient by fine needle
Fig. 4. Microphotogram of the thyroid nodule showing an epithelial cell granuloma, Langerhans-type giant cells and lymphocytic infiltration (HE, ×50).

Fig. 5. Age distribution of 44 patients with tuberculous thyroiditis from the Japanese literature.

Table 1. Preoperative diagnosis in 44 patients with tuberculous thyroiditis from Japanese literature

<table>
<thead>
<tr>
<th>Preoperative Diagnosis</th>
<th>No. Patients</th>
<th>Frequency (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Malignant tumor</td>
<td>22</td>
<td>50.0</td>
</tr>
<tr>
<td>Benign tumor</td>
<td>6</td>
<td>13.6</td>
</tr>
<tr>
<td>Subacute thyroiditis</td>
<td>3</td>
<td>6.8</td>
</tr>
<tr>
<td>Tuberculous thyroiditis</td>
<td>1</td>
<td>2.3</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>8</td>
<td>18.2</td>
</tr>
<tr>
<td>Unknown</td>
<td>4</td>
<td>9.1</td>
</tr>
</tbody>
</table>

aspiration [4]. Forty-two of the 44 patients were operated on. The frequency of lobectomy during the operation was 54.8%, the highest among surgical procedures, followed by enucleation (26.2%). With regard to the outcome, 70.5% recovered, 6.8% (3 patients) died, and the outcome was unknown in the remaining patients. Two of the 3 deaths were due to miliary tuberculosis.

Discussion

The tendency to make a diagnosis of TT on the basis of the distinctive presence of histological findings characteristic of tuberculosis is increasingly being seen. The diseases from which TT should be differentiated include malignant struma, subacute thyroiditis, thyroidal sarcoidosis, granulomatous syphilis, and so on [1, 5, 6]. TT cannot be clearly differentiated from subacute thyroiditis in patients in whom the concept of subacute thyroiditis has not yet been established. A considerable number of cases of subacute thyroiditis might therefore have been diagnosed as TT before 1960 [7]. In the present review, the patients who met the following conditions were diagnosed as having TT: patients who have been diagnosed as having TT since 1960, in whom distinct caseous necrosis was
observed histologically and whose condition has been differentiated from subacute thyroiditis. There has been only one recent case of TT that could be diagnosed preoperatively [4]. Our present case was diagnosed as class III by fine needle aspiration of the thyroid nodule, but it was impossible to make such a diagnosis of the supraclavicular mass. Retrospectively, TT should also have been taken into consideration in the latter. TT is characterized by a background contaminated with necrotic substances, lymphocytic infiltration, and Langerhans-type giant cells [4]. Subacute thyroiditis and chronic thyroiditis are considered the diseases from which a differential diagnosis must be made. The former is characterized by a background contaminated with less necrotic substances than in TT, more marked inflammatory findings than in TT, and multinuclear histiocytes. The latter is characterized by a clearer background, without necrotic substances, than in TT, and various lymphocytes.

With regard to treatment, Berger et al. [1] carried out excision or incision with drainage in 8 patients, drainage with administration of antituberculous agents in 4, and administration of only antituberculous agents in 3 of 15 patients with TT, and obtained good results. As far as the authors could determine in their search of the literature, enucleation or lobectomy was carried out in the majority of patients, partly because preoperative diagnosis of TT was impossible. Allan and Clarke [8] described the effects of drainage, with administration of antituberculous agents, in the treatment of a patient with combined thyroid mass and lymphadenopathy. The present patient was diagnosed during surgery as having TT as a consequence of the possibility that her condition was not cancer being considered, because the enlarged lymph node was necrotic and consisted of granulomatous materials. In general, antituberculous agents are administered as a matter of course. If a patient has been preoperatively diagnosed as having tuberculosis, such an agent should be administered before and after the operation [1]. The duration of postoperative administration should be determined on the basis of the results of the tuberculin reaction and imaging findings of renal tuberculosis and intracranial tuberculoma; such an agent should be administered for about 6 months after these findings have normalized [5]. For TT as well, therapy with antituberculosis agents alone is effective, and combined therapy involving antituberculosis agents and drainage is effective for cases with abscess formation. However, combined therapy with antituberculosis agents, thyroidectomy and lymph node dissection is considered safest.

References