Simultaneous non-Hodgkin lymphoma of the external auditory canal and thyroid gland: A case report

BeeLian Khaw, MD; Shailendra Sivalingam, MS–ORL; Sitra Siri Pathamanathan, MBBS; Teck S. Tan, MBChB, MRCS; Manimalar Naicker, MPath

Abstract
Approximately 25% of all cases of extranodal non-Hodgkin lymphoma (NHL) occur in the head and neck region; NHL of the external auditory canal (EAC) and thyroid gland are rare. Specific immunohistochemical staining of the excised tissue is required to confirm the final pathologic diagnosis. We report the case of a 53-year-old woman with underlying systemic lupus erythematosus and autoimmune hemolytic anemia that were in remission. She presented with chronic left ear pain, a mass in the left EAC, and rapid growth of an anterior neck swelling that had led to left vocal fold palsy. High-resolution computed tomography (CT) of the temporal bone and CT of the neck detected a mass lateral to the left tympanic membrane and another mass in the anterior neck that had infiltrated the thyroid gland. The patient was diagnosed with simultaneous B-cell lymphoma of the left EAC and thyroid gland. She was treated with chemotherapy. She responded well to treatment and was lost to follow-up after 1 year. To the best of our knowledge, the simultaneous occurrence of a lymphoma in the EAC and the thyroid has not been previously described in the literature.

Introduction
While non-Hodgkin lymphoma (NHL) is an uncommon malignancy, its incidence is higher among patients who have an underlying autoimmune disease such as Sjögren syndrome, rheumatoid arthritis, systemic lupus erythematosus (SLE), celiac disease, and dermatitis herpetiformis. SLE has been associated with a 2.7-fold increase in the risk of NHL, diffuse large B-cell lymphoma, and marginal zone lymphoma.1 The external auditory canal (EAC) and the thyroid gland are unusual sites for lymphoma. While the signs and symptoms of EAC lymphoma are nonspecific, thyroid lymphomas usually present as a rapidly growing thyroid swelling. An adequate tissue biopsy with special immunohistochemical staining is important to obtain the precise diagnosis.

In this article, we describe a case of simultaneous EAC and thyroid gland lymphomas. To the best of our knowledge, the simultaneous occurrence of a lymphoma in the EAC and the thyroid has not been previously described in the literature.

Case report
Our patient was a 59-year-old Chinese woman who had been diagnosed with SLE and autoimmune hemolytic anemia approximately 30 years earlier. At the time of her presentation to us, her conditions were in remission. She had come to our otorhinolaryngology clinic for evaluation of chronic left ear discomfort, pain, and associated left-sided otorrhea, which was scanty, purulent, and foul smelling. She reported that the hearing in her left ear was diminished, but she had no tinnitus, vertigo, or facial weakness. We prescribed oral antibiotic therapy, but her symptoms did not respond and she returned to our clinic about 2 weeks later.

At the return visit, the patient reported the sudden onset of a painless anterior neck swelling that was associated with mild dyspnea, dysphagia, and hoarseness. She was clinically euthyroid. A repeat examination of her left ear revealed a reddish swelling in the inferomedial aspect of the bony EAC; the lesion bled on probing. The tympanic membrane was intact. Examination of the neck revealed a midline anterior swelling that...
measured 6 × 8 cm. The swelling was mobile, firm, and nontender, and it moved with deglutition.

Flexible nasopharyngolaryngoscopy revealed immobility of the patient's left vocal fold and slight edema over the left piriform fossa. Fine-needle aspiration cytology (FNAC) of the neck swelling demonstrated features of lymphocytic thyroiditis, probably Hashimoto thyroiditis.

Computed tomography (CT) of the neck showed an ill-defined, hypodense lesion of soft-tissue density that extended from the lower border of C2 to the upper border of C5. The mass had infiltrated the thyroid gland bilaterally, engulfing the trachea and proximal esophagus as well as the prevertebral tissue (figure 1, A). High-resolution CT of the temporal bones detected a soft-tissue mass in the left EAC; there was no bony destruction, and the middle ear and mastoid air cells were normal (figure 1, B).

Because the clinical presentation differed from the cytologic diagnosis, the patient was offered a total thyroidectomy to relieve her compressive symptoms, as well as for a histologic diagnosis. The total thyroidectomy and excision of the left aural mass were completed during the same surgery.

Histopathologic examination of the thyroid gland and the aural mass revealed large lymphoid cells with pleomorphic nuclei and prominent nucleoli, some with nuclear cleaving. No Reed-Sternberg cells or granulomas were noted. On the other hand, we did observe “nodular MALT (mucosa-associated lymphoid tissue) balls” (figure 2, A). Immunohistochemistry revealed that the malignant cells were positive for LCA, CD20 (figure 2 B), and Bcl-2 and negative for CD3, CD15, CD30, cytokeratin, EMA, thyroid transcription factor 1, and calcitonin. The deep margin of the left thyroid lobe was involved.

Two weeks postoperatively, a bone marrow aspiration was performed, and it showed no involvement of the bone marrow by lymphoma. A full-body CT was also done to stage the disease. The final diagnosis was stage IIE primary extranodal marginal zone B-cell lymphoma of the MALT subtype in the EAC and the thyroid gland simultaneously.

The patient was started on chemotherapy with an R-CHOP regimen (rituximab plus cyclophosphamide, doxorubicin, vincristine, and prednisolone). She responded well to the treatment and was lost to our follow-up after 1 year.
Discussion
Some 25% of all cases of NHL are extranodal, and 25% occur in the head and neck region. As mentioned, lymphomas of the EAC and the thyroid gland are unusual.

EAC lymphoma. Primary lymphoma of the EAC is extremely rare, and its pathogenesis is unknown. Our literature review found only 9 cases of EAC lymphoma in a total of 7 patients (2 patients had bilateral EAC lymphoma); most of these were B-cell lymphomas. Among these cases:

- González Delgado et al reported a case of T-cell lymphoma of the EAC in which the patient reported mild discomfort and hearing loss in the left ear. Their patient was successfully treated with chemotherapy.
- Shuto et al reported a case of asymptomatic primary bilateral EAC lymphoma, which was also treated with chemotherapy.
- Fish et al described a case of B-cell lymphoma of the EAC in a 53-year-old woman who presented with painful swelling in the external auditory meatus. She was treated with surgery followed by chemotherapy.
- A case of bilateral EAC lymphoma was reported in a patient by Maiche et al.
- Bruschini et al presented the case of a 43-year-old man with aural fullness and reduced hearing in the left ear. Biopsy of a left-ear polyp identified it as a B-cell lymphoma. The patient responded well to 6 cycles of chemotherapy.
- Merkus et al reported the case of an 83-year-old woman with anaplastic large-cell lymphoma of the skin of the EAC. She responded well to radiotherapy.

Other unusual sites of lymphoma in the temporal bone include the inner ear, middle ear, and mastoid cavity.

Thyroid lymphoma. Less than 2% of all lymphomas arise in the thyroid gland; these cases account for 1 to 5% of all thyroid gland malignancies. The most common histologic subtype of thyroid lymphoma is diffuse large B-cell lymphoma. The MALT type of B-cell lymphoma is associated with Helicobacter pylori infection. In addition to the thyroid, it had been reported to occur in the gastrointestinal tract, salivary glands, orbit, lung, and breast.

Thyroid lymphoma is most common in women in the sixth and seventh decades of life. A reported 40 to 80% of patients with a thyroid lymphoma had a known or presumed history of chronic lymphocytic thyroiditis. Thyroid lymphoma usually presents as a painless, rapidly growing anterior neck swelling with or without hoarseness, dysphagia, dyspnea, or stridor secondary to local tumor compression or infiltration. These symptoms overlap with those of the more life-threatening anaplastic thyroid carcinoma. The clinical presentation of these two diseases—a rapidly growing mass, obstructive symptoms, and cervical lymphadenopathy—is very similar. In patients with thyroid lymphoma, the thyroid mass appears as a hard, smooth, rubbery swelling.

Anaplastic thyroid carcinoma is also seen in several other conditions; about half of all cases arise from differentiated thyroid carcinoma. It may also arise from a long-standing goiter or a pathologic lesion with a focus of anaplastic carcinoma in the thyroid gland. The mean survival rate is only 6 months.

The definitive distinction between thyroid lymphoma and anaplastic thyroid carcinoma is traditionally made via an open biopsy and histopathologic examination. The classic B symptoms—night sweats, fever, and weight
loss—are rare in thyroid lymphoma.\textsuperscript{2,9}

MALT thyroid lymphoma usually presents with an indolent course and a good prognosis. Overall survival rates at 5 and 10 years are both in the 90\% range.\textsuperscript{11,12} MALT lymphoma of the thyroid seems to arise in patients with underlying autoimmune disease or a background of chronic lymphocytic thyroiditis. Some 40\% of patients have a clinical history of Hashimoto disease, and 90\% have histologic evidence of lymphocytic thyroiditis.\textsuperscript{12} Although thyroid MALT lymphoma is generally a slowly growing tumor, transformation into a more aggressive diffuse large B-cell lymphoma has been reported.\textsuperscript{13}

It is sometimes difficult to cytologically differentiate among Hashimoto thyroiditis, thyroid lymphoma, and thyroid carcinoma.\textsuperscript{13} Punch biopsies or incisional biopsies along with special immunohistochemical staining are often required to establish a definitive diagnosis. In our patient, the initial FNAC results were highly suggestive of chronic lymphocytic thyroiditis, but the acute presentation with left vocal fold palsy and compressive symptoms were not in line with the presence of a benign thyroid lesion. In such a circumstance, a thyroid lymphoma should be suspected. We performed a total thyroidectomy on our patient in order to relieve her obstructive symptoms and to make a definitive tissue diagnosis.

**Treatment.** Over the years, the treatment of lymphoma has undergone a transition from surgery to radiotherapy and chemotherapy. Surgery is now used primarily to establish a precise histologic diagnosis. Surgery also plays an important role in relieving severe airway obstruction or compressive symptoms.

Lymphoma has demonstrated sensitivity to radiotherapy, which can be used (1) as a monotherapy to treat localized, low-grade NHL or (2) in combination with chemotherapy for the treatment of intermediate and high-grade NHL. Chemotherapy helps control existing local and distant metastases, and it has been shown to improve survival.\textsuperscript{13} The most commonly used regimen is R-CHOP. Rituximab is a monoclonal antibody that binds to CD20 on the surface of B cells and leads to apoptosis of these cells. It is commonly used to treat diffuse large B-cell lymphoma and other B-cell lymphomas that express CD20. The R-CHOP regimen has yielded a better response rate in patients with MALT lymphoma than in those with diffuse large B-cell lymphoma.\textsuperscript{10}

**References**


