Toxoplasmosis lymphadenitis presenting as a parotid mass: A report of 2 cases

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Abstract
Toxoplasmosis manifesting as a parotid mass is rare; our review of the literature found only 6 previously reported cases. We report 2 new cases. Both patients presented with a small, mobile left parotid mass, and both were successfully treated with a diagnostic superficial parotidectomy. In both cases, the patient had been regularly exposed to cats and had recently eaten undercooked meat. When evaluating a parotid mass, otolaryngologists should be aware of the infectious causes of parotid swelling and lymphadenopathy and consider the possibility of toxoplasmosis when the history and pathologic findings are not suggestive of more common diseases.

Introduction
Most preauricular masses are parotid neoplasms, but some infectious and inflammatory conditions have a similar presentation. Toxoplasmosis is a zoonotic infection that is transmitted to humans by other mammals. Immunocompetent hosts are usually asymptomatic, their only presenting sign being a localized or generalized lymphadenopathy. Radiologic studies are not helpful; only histopathologic and immunologic findings can confirm a diagnosis of toxoplasmosis.

To the best of our knowledge, only 6 cases of toxoplasmosis lymphadenitis within the parotid gland have been previously reported in the literature. In this article, we report 2 new cases.

Case reports
Patient 1. A 38-year-old man was referred to us with a 3-month history of a slowly enlarging, painless left parotid mass. The mass had not responded to several courses of antibiotics prescribed by a primary care physician. The patient denied any constitutional symptoms, and he had no history of scalp or oral lesions, dysphagia, breathing difficulties, or otalgia. He worked as an insurance salesman, and he was married and monogamous. He was a nonsmoker and a social drinker, and he did not use recreational drugs. His family kept pet cats, and he sometimes changed their litter. He reported that he had recently visited Norway, where he had consumed undercooked moose meat.

On examination, the patient was well appearing and afebrile. He had no obvious facial asymmetry, no facial nerve weakness or twitching, and no facial numbness. His parotid mass was nontender and mobile; no other neck adenopathy was present. Computed tomography (CT) localized the 2-cm mass in the tail of the left parotid gland (figure 1). His skin, scalp, and oral and pharyngeal mucosa were normal, as were findings on the remainder of the head and neck examination.

A fine-needle aspiration biopsy revealed acellular debris and fat and was nondiagnostic. A superficial parotidectomy was performed along with removal of several adjacent superior jugulodigastric lymph nodes. Histopathology of the parotid mass revealed that it was made up of a group of lymph nodes whose architecture was preserved; the mass contained a proliferation of histiocytes, hyperplastic follicles, enlarged germinal centers, and epithelioid cells with abundant, pale eosinophilic cytoplasm (figure 2). These findings supported a diagnosis of toxoplasmosis lymphadenitis. Follow-up measurement of immunoglobulin levels revealed that the patient had had an acute toxoplastic infection (table). No other treatment was administered.

At the 3-month follow-up, the patient remained asymptomatic. His facial nerve was intact, and no new masses were observed in the parotid gland or neck.

Patient 2. A 45-year-old woman presented with a 2-month history of a slowly enlarging, superficial left parotid mass. She denied fevers, fatigue, and other constitutional symptoms, and she had no skin or scalp lesions. She did report that she had been bitten by an insect just before she noticed the mass. She also reported the development of a small, tender suboccipital swelling at the same time.
The patient worked at a bank, and she was married and monogamous. She smoked half a pack of cigarettes per day and was a social drinker. She denied intravenous drug use. She lived on a farm, where she had contact with several barn cats and likely had contact with their excrement in the hay. She reported eating meat cooked quite rare prior to the onset of her parotid mass.

On physical examination, the patient appeared to be healthy. Her parotid mass was mobile and measured 1.5 × 1.5 cm. A tender 1-cm lymph node was palpated at the superior edge of the trapezius muscle. No facial nerve weakness or twitching was evident, and findings on the remainder of the head and neck examination were unremarkable. CT localized the mass.

A superficial parotidectomy was performed. Findings on histopathologic review were consistent with toxoplasmosis lymphadenitis. An immunologic evaluation confirmed a previous toxoplasmosis infection (IgG positivity) but not a current infection (IgM negativity). (Titters were not performed because the IgM assay was negative.) No other treatment was recommended.

At the 6-month follow-up, the patient was asymptomatic, and her posterior lymphadenopathy had resolved.

Discussion

Toxoplasmosis is a protozoan infection caused by the parasite Toxoplasma gondii. Warm-blooded animals are intermediate hosts, and cats are the definitive hosts. Humans can become infected via transplacental transmission, ingestion of cysts, and blood transfusion. Infection during
tecture that confirms the diagnosis unless the entire lymph node is removed; such architecture is not identifiable on fine-needle aspiration biopsy. Therefore, if a patient has a history suggestive of toxoplasmosis and the blood work is consistent with such a diagnosis, it is a reasonable option to treat the patient with a course of antibiotics to see if the lymph node swelling resolves.

Histologic analysis will reveal that the lymph node architecture is preserved and that hyperplastic follicles are present. Multiple mitoses are seen in the germinal centers. Also present are many epithelioid cells with pale eosinophilic cytoplasm. Serologic investigations include the Sabin-Feldman dye test and the enzyme-linked immunosorbent assay (ELISA). The Sabin-Feldman dye test is a neutralization test that entails lysis of organisms in the presence of antibody and complement; it measures IgG antibodies. The ELISA involves the use of antigens of killed toxoplasmosis organisms to detect antitoxoplasmosis antibodies. Measuring IgM, IgE, and IgG levels can help differentiate chronic from acute infection. An IgM level indicates an acute infection if it rises within a few days of inoculation. IgM levels then normalize in 3 to 4 months. IgG elevation indicates a previous infection; these levels rise 2 to 3 weeks after inoculation, and this antibody remains positive for the rest of the patient’s life. An elevated IgE level is an indication that the infection is more acute than an infection that is associated with only an IgM level; IgE levels normalize within 2 months.

Localized disease requires no treatment. Systemic disease responds to sulfonamide and pyrimethamine. Our review of the literature via MEDLINE, dating back to the 1960s, revealed that only 6 other cases of parotid toxoplasmosis have been reported.\(^1-4\) The diagnosis in these cases was based on histopathologic examination of multiple parotid specimens.

<table>
<thead>
<tr>
<th>Test</th>
<th>Result</th>
<th>Interpretation</th>
</tr>
</thead>
<tbody>
<tr>
<td>IgG (Sabin-Feldman dye)</td>
<td>1:8,000</td>
<td>Positive</td>
</tr>
<tr>
<td>IgM (ELISA)</td>
<td>1.9 g/L</td>
<td>Equivocal</td>
</tr>
<tr>
<td>IgE</td>
<td>Negative</td>
<td>Negative</td>
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</tbody>
</table>

Pregnancy can lead to stillbirth; surviving infants may be born with hepatosplenomegaly, fever, rash, or chorioretinitis. Acquired toxoplasmosis has a varied presentation; the most common finding is a generalized or localized lymphadenopathy. Typically, the disease is relatively innocuous, as other common symptoms are fever, malaise, headache, and myalgia. However, some patients, especially immunocompromised hosts, experience more serious symptoms, including cardiac involvement, central nervous system infection, pneumonia, and chorioretinitis.

Diagnosis is made by correlating histologic and serologic data, but the history is important, too. As part of obtaining a history of any patient with a parotid mass, the otolaryngologist should ask the patient if he or she is exposed to cats and if he or she has eaten rare or uncooked meat. A positive response to either question might help the pathologist interpret an unusual nodal architecture. Serologic tests can confirm the diagnosis. Unfortunately, when a diagnosis of toxoplasmosis is suspected, the pathologist cannot identify the characteristic nodal architecture that confirms the diagnosis unless the entire lymph node is removed; such architecture is not identifiable on fine-needle aspiration biopsy. Therefore, if a patient has a history suggestive of toxoplasmosis and the blood work is consistent with such a diagnosis, it is a reasonable option to treat the patient with a course of antibiotics to see if the lymph node swelling resolves.

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References