



Case Report

Lymphoma of the Internal Auditory Canal Presenting as Facial Palsy, Vertigo, and Hearing Loss

Namhyung Ryou, Dong-yn Ko, Hyung Jin Jun, Sung Won Chae

Department of Otolaryngology-Head and Neck Surgery, Korea University College of Medicine, Guro Hospital, Seoul, Republic of Korea

The combined symptoms of vertigo, hearing loss, and facial palsy indicate the presence of lesions in the internal auditory canal (IAC). Differential diagnoses, such as inner/middle ear infections and IAC neoplasms, can make the definitive diagnosis of IAC lymphomas challenging. Lymphomas can infiltrate the central nervous system at various sites; however, IAC involvement in metastatic lymphomas is very rare. Herein we report the case of a patient with IAC lymphoma presenting with aural fullness of the left ear and intractable otalgia followed by symptoms of facial weakness, hearing loss, and vertigo within 48 h. The uncharacteristic clinical manifestations and concurrent middle ear infection meant that the conclusive diagnosis of IAC lymphoma was delayed.

KEYWORDS: Lymphoma, vertigo, facial palsy

INTRODUCTION

The concurrent symptoms of vertigo, hearing loss, and facial palsy are suggestive of lesions occurring in the internal auditory canal (IAC). Differential diagnoses may include infection (e.g., labyrinthitis) or IAC neoplasms, which are also leading causes of vestibulo-cochlear symptoms with facial nerve palsy. Lymphomas frequently infiltrate the central nervous system (CNS), giving rise to clinical manifestations usually related to increased intracranial pressure, headaches, and altered states of consciousness. Inner ear symptoms, such as hearing loss, facial weakness, and vertigo, however, are rare. When IAC lymphoma was reported in a patient with simultaneous infection of the middle ear, the definitive diagnosis of IAC lymphoma proved to be more difficult and resulted in delays.

CASE PRESENTATION

A 35-year-old man was referred from the primary clinic to our hospital with intractable otalgia and aural fullness of the left ear, following a 2-week course of antibiotics for the treatment of acute otitis media. The patient presented with a 12-month history of diffuse large B-cell lymphoma involving the colon and bone marrow that had been treated with chemotherapy. His otoscopic evaluation recorded extensive bulging of the left tympanic membrane, which also showed signs of being infected. Other physical examination results of the upper respiratory tract were normal. The patient was administered an intravenous antibiotic therapy. The first day following treatment, the left tympanic membrane was significantly improved, and the symptoms of otalgia had reduced. However, two days after hospitalization, the patient began to experience grade II left facial weakness on the House–Brackmann scale and complained of vertigo and hearing loss. Pure tone audiometry testing indicated profound sensorineural hearing loss in the left ear, with no wave V auditory brainstem response exhibited following a 90 dB stimulation. Functional loss of the left superior and inferior vestibular nerves was identified through caloric and cervical vestibular-evoked muscle potential testing. Magnetic resonance imaging indicated diffuse soft tissue enhancement with reduced T2-weighted signal intensities in the left IAC. A computed tomography scan revealed mastoid air cells with effusions and osteolytic lesions of the petrous apex, suggesting lymphoma infiltration of the bone marrow (Figure 1). A lumbar puncture was performed, and subsequent cerebrospinal fluid cytology indicated the presence of malignant lymphoma cells. The recurrence of a malignant diffuse large B cell lymphoma was confirmed by performing a bone marrow biopsy. The patient was administered a high dose of methotrexate through intrathecal and intravenous chemotherapy. However, the lymphoma failed to respond to treatment, and the patient died 3 months after the initial diagnosis. Informed written consent was obtained from the patient prior to commencing the study.

DISCUSSION

The audiovestibular and facial nerve symptoms described in this case strongly suggest the involvement of IAC. Lymphoma infiltration of CNS occurs in approximately 10%–15% of lymphoma patients [1]. The most common site of metastatic lymphomas in CNS is the leptomeninges, with a few, rare instances also reported in IAC [2]. In a study of 105 CNS lymphoma patients, 19% displayed symptoms, which were associated with the seventh (VII) and eighth (VIII) cranial nerves [3].

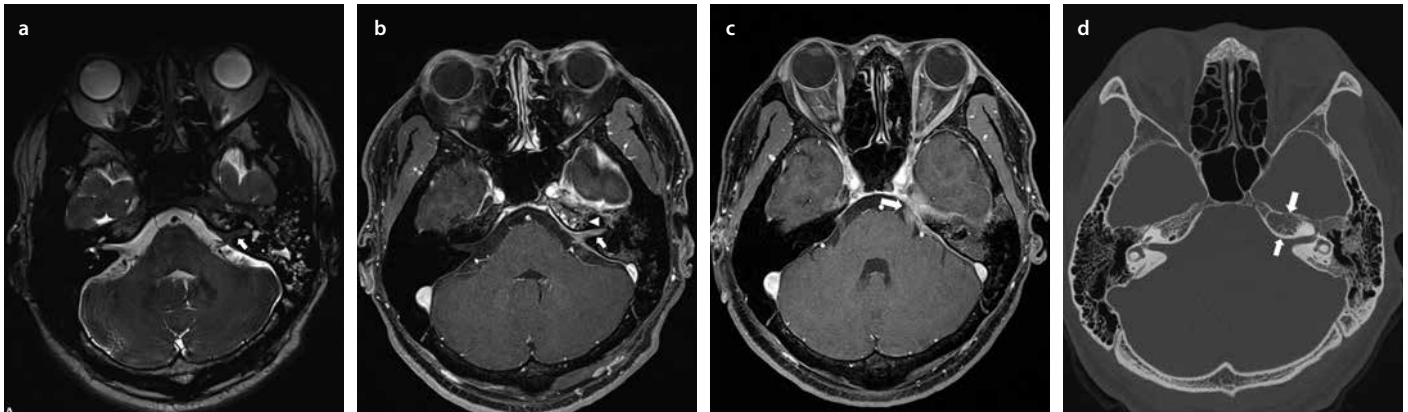


Figure 1 a-d. Magnetic resonance imaging indicated diffuse soft tissue enhancement with reduced T2-weighted signal intensities in the left internal auditory canal (IAC) (arrow, a). Destruction of the seventh (VII) and eighth (VIII) cranial nerves was observed, extending as far as the greater (superficial) petrosal nerve and foramen lacerum, showing strong signal enhancement on T1-weighted images following gadolinium administration (arrow, b). Left petrous apex and clival bone marrow signals were also enhanced (arrowhead, b). Magnetic resonance imaging further demonstrated trigeminal nerve involvement (arrow, c). Mastoid air cells with partial effusions and osteolytic lesions of the petrous apex of the temporal bone suggested lymphoma infiltration of the bone marrow (arrow, d)

The clinical manifestations of hearing loss with combined vertigo and facial weakness are not typical of IAC-related lymphomas. A review of 14 patients with cerebellopontine angle (CPA) lymphoma revealed that the most frequent initial symptom was hearing loss^[4], which was also apparent in our patient. However, symptoms of vertigo and facial weakness were rare, and there were no reports of otalgia. Furthermore, no one has reported a case with simultaneous hearing loss, vertigo, and facial weakness. In addition, the onset of symptoms was abrupt, unlike the symptoms of a slow-growing CPA tumor. Thus, in the present case, the diagnosis of IAC lymphoma could be made only following the careful observation and detailed examination of the patient.

In this case, a concurrent middle ear infection also hindered the conclusive diagnosis of IAC lymphoma. The patient was previously diagnosed with diffuse large B-cell lymphoma, which had been treated with chemotherapy. This could have left the patient in an immunosuppressed state and prone to middle ear infection. The CNS involvement of malignant lymphomas is rare, but a careful evaluation must be performed in patients who have a history of malignant lymphomas. This study demonstrates that symptoms such as hearing loss, vertigo, and facial weakness should be considered malignant lymphoma in case of past history.

Informed Consent: Written informed consent was obtained from the patient who participated in this study.

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