

Epstein Barr Virus-Associated Lymphoepithelial Carcinoma in Middle Ear

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CASE REPORT

Histo-pathologically, lymphoepithelial carcinoma (LEC) is characterized by individual, sheets, or nests of poorly to un-differentiated epithelial cells. The malignant epithelial cells are surrounded and infiltrated by prominent components of small mature lymphocytes and plasma cells. The most frequent site of LEC occurrence is nasopharynx (nasopharyngeal carcinoma, NPC), where it is almost invariably associated with Epstein-Barr virus (EBV) infection. NPC is an endemic disease prevalent in south-eastern coastal provinces of China. Isolated non-nasopharyngeal LEC occurrence is rare, and its association with EBV remains controversial.

Primary temporal bone LEC is a rare disease entity.¹ To the best of our knowledge, only 4 patients have been reported in the literatures to date, all with confirmed EBV infection.² In this report we present the diagnosis and management of a rare LEC case that originated from middle ear. Its association with EBV is also addressed.

A 56-year-old otherwise healthy female (a native of Guangdong province, China)

presented to our clinic with aural fullness and hearing loss on her right ear for 1 year. Otoscopic examination revealed a lobulated mass extending out from middle ear space (Fig 1). There was no history of otorrhea. Her brother had had cured NPC for several years. The pure-tone audiometry (PTA 45 dB) revealed a mixed type hearing loss with 30 dB air-bone gap on the right side. The left side PTA was 18dB, showing a high-tone sensori-neural loss with no conductive component. High resolution temporal bone computerized tomography showed a middle ear mass with no bone or ossicle erosion.

Exploratory tympanotomy revealed that the multi-lobulated lesion was originated from promontory wall, filling whole meso-tympanum and partially extending into Eustachian tube. The tumor was removed piece-by-piece without disrupting ossicular chain. Patient received adjuvant radiotherapy (62 Gy, 31 fractions) over a period of 7 weeks.

Histo-pathology examination demonstrated irregular sheets of undifferentiated carcinoma intermingled with abundant lymphoid infiltrate (Fig 2).

Immuno-histochemical staining was positive for keratin and negative for leukocyte common antigen. The diagnosis of LEC was confirmed. In situ hybridization for

EBV encoded RNA was strongly positive. However, serum IgA antibodies against EBV capsid antigen (EBV VCA IgA) was negative. Nasopharynx biopsy reveal no evidence of LEC. Magnetic resonance imaging (MRI) excluded extra-temporal invasion and distant metastasis.

DISCUSSION

Tumor occurrences at temporal bone region are not commonly seen; most of them are squamous cell carcinoma. Primary LEC of middle ear is a rare entity. Non-nasopharyngeal LEC has been previously reported under various names, including undifferentiated carcinoma of nasopharyngeal type, undifferentiated carcinoma with lymphoid stroma, lymphoepithelioma, and lymphoepithelioma-like carcinoma. The profound infiltration of lymphoid cells in stroma makes it difficult to identify the malignant epithelial cells with routine hematoxylin and eosin-stain.

The association between EBV and nasopharyngeal LEC has been well established². Serum EBV titer check is a routine NPC screening test in the endemic area of China. However, the role of EBV in the pathogenesis of non-nasopharyngeal LEC remains unclear. Even though the serum EBV titer was negative, we were able to

demonstrate EBV infection in the present case using highly sensitive PCR amplification technique. The presence of EBV encoded RNA in the middle ear suggests that EBV infection may indeed play some role in the development of middle ear LEC.

Owing to the paucity of middle ear LEC, the optimal therapy regimen remains unknown. Non-nasopharyngeal LEC of head and neck is radiosensitive with high regional control rates.³ From the published data, surgery and post-operative radiotherapy is considered the appropriate protocol for middle ear LEC.

In this report we present the clinico-pathologic manifestations of middle ear LEC and its association with EBV. Further study is warranted to establish the appropriate radiation field and dose for the treatment of middle ear LEC.

The preparation of this report is in compliance with the Institution Review Board regulations in our hospital.

AUTHOR INFORMATION

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AUTHOR CONTRIBUTION

Leh-Kiong Huon: principle manuscript drafting, patient care.

Pa-Chun Wang: patient care, manuscript editing and finalization

Shih-Hung Huang: histo-pathological confirmation of diagnosis

FINANCIAL DISCLOSURE

None

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FIGURE LEGEND

Fig 1. Otoscopic examination revealed a lobulated mass extending from middle ear space

Fig 2. Hematoxylin and eosin stain demonstrated irregular sheets of undifferentiated carcinoma intermingled with abundant lymphoid infiltrate.

FIGURES

Fig 1



Fig 2

