Abstract

Objectives: To understand the diagnostic challenge of recurring middle ear cholesteatoma (MEC) causing facial paralysis.

Study design: Retrospective case series.

Methods: Chart review of two patients presenting with longstanding facial paralysis who were found to have missed MECs involving the facial nerve was performed.

Results: Patients A and B presented with facial paralysis (grade VI and V, respectively) for facial reanimation. Both patients had a history of cholesteatoma resection 20 and 15 years prior and reported facial paralysis for 7 and 1 year respectively. In addition, temporal bone imaging was initially reported negative by both patients and the radiologists. On MRI imaging, Patient A showed infiltration of the geniculate ganglion. On MRI, Patient B showed cholesteatoma expansion around the superior semicircular canal involving the geniculate ganglion. Both had resection via a middle cranial fossa approach. Patient A experienced no improvement in facial function postoperatively while patient B improved from grade V to III.

Conclusions: Cholesteatomas located on the floor of the middle fossa can be missed by traditional imaging techniques and require a high index of suspicion to be detected. The reading radiologists overlooked both lesions in these two cases. To confirm a diagnosis, a non-echoplanar diffusion weighted image (DWI) is beneficial for assessing the possible presence of cholesteatoma on the floor of the middle fossa. In addition, these cases show that patients with a history of cholesteatoma resection must obtain radiological non-echoplaner DWI surveillance if no second look surgery is performed.

Introduction

- MEC has a prevalence of 9.2 per 100,000.1
- The invasion of these growths are unpredictable, and can have devastating neurological consequences.
- In rare cases, a cholesteatoma can invade medially to the middle fossa and alter facial nerve function.
- Due to the radiological difficulty in diagnosing these lesions, and the need for multispecialty interventions, these patients can prove to be challenging.
- Due to its uncommon occurrence, only a few cases of middle fossa invasion have been described in the literature.
- In this case series we describe two patients that present with facial nerve deficits as a result of cholesteatoma invasion and describe its radiographic challenges.

Methods and Materials

- Retrospective review of two CC patients presenting to our neurotology clinic at a tertiary care academic center.

Discussion

- In both cases presented here, cholesteatoma recurrence and history of distant tympanomastoidectomy may complicate radiologic findings.
- Since multiple radiologists initially missed the lesion using conventional methods- more sensitive modalities should be used for patients with a high index of suspicion.
- Non-echoplanar (Coronal HASTE) DWI served as the optimal diagnostic modality in these patients.
- A non-echoplaner DWI sequence has been recognized as a more specific test for detecting cholesteatoma.2
- Conventional axial diffusion weighted MRI has been shown to have poor sensitivity.3
- Therefore, we suggest consistent radiologic surveillance using non-echoplaner DWI for patients with a history of MEC for 3 years post-op if a second look is not performed.
- In both cases, surgical resection did not completely restore facial movement due to the significant nerve damage.

Conclusions

- Patients with a history of MEC should be closely monitored due to the significant likelihood of recurrence.
- An axial DWI will likely miss a cholesteatoma at the brain/temporal bone junction due to the artifact created at this junction.
- A non-echoplanar DWI (coronal HASTE) sequence is necessary to evaluate cholesteatoma when using radiologic studies to monitor recurrence.
- These consequences can be mitigated with routine radiologic surveillance using non-echoplaner DWI.

References