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Internal Carotid Artery Pseudoaneurysm Associated with Otomastoiditis Revealed by Otorrhea in a 16-Year-Old Patient: A Case Report

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ABSTRACT

Pseudoaneurysm of the internal carotid artery (ICA) is a rare but life-threatening vascular complication that may occur in the setting of severe otogenic infections. We report the case of a 16-year-old patient presenting with otorrhea in the context of acute otomastoiditis. Imaging revealed a pseudoaneurysm of the petrous segment of the internal carotid artery associated with adjacent inflammatory changes of the middle ear and mastoid air cells. This case emphasizes the critical role of early CT angiography and MRI in identifying vascular complications of ear infections and preventing fatal hemorrhagic events.

KEYWORDS :

Internal carotid artery pseudoaneurysm, Otomastoiditis, Otorrhea, CT angiography, Petrous ICA.

MAIN ARTICLE

INTRODUCTION

Pseudoaneurysms of the internal carotid artery (ICA) are rare vascular lesions characterized by disruption of the arterial wall with contained blood flow. In the skull base region, they are most commonly associated with trauma, iatrogenic injury, or severe infections such as otomastoiditis.

Infectious involvement of the temporal bone can erode vascular structures and lead to pseudoaneurysm formation, which carries a high risk of massive and potentially fatal hemorrhage [1,2].

CLINICAL PRESENTATION

A 16-year-old male patient was admitted for persistent left-sided otorrhea associated with otalgia and fever evolving over several days.

Clinical examination revealed:

- Purulent otorrhea
- Mastoid tenderness
- Conductive hearing loss
- Signs consistent with acute otomastoiditis

MRI Findings

MRI of the brain and skull base demonstrated:

- Extensive left otomastoiditis with hypersignal of the mastoid air cells and middle ear cavity on T2-weighted and FLAIR sequences
- Marked inflammatory enhancement of the temporal bone and adjacent soft tissues
- Flow-void structure at the left petrous carotid canal corresponding to a vascular lesion
- Focal saccular outpouching arising from the petrous segment of the left internal carotid artery, compatible with pseudoaneurysm
- No intracranial abscess or parenchymal ischemic lesion
- No dural venous sinus thrombosis

The association of otomastoiditis with a vascular flow-void lesion strongly suggested an infectious pseudoaneurysm of the ICA.

DISCUSSION

Internal carotid artery pseudoaneurysm is a rare complication of otitis media and mastoiditis. Infection can spread to the skull base, leading to:

- Bone erosion of the carotid canal
- Vascular wall weakening
- Formation of pseudoaneurysm

The petrous ICA is particularly at risk due to its proximity to the middle ear.

Clinical Presentation

Symptoms are often nonspecific until complications occur. They may include:

- Otorrhea (sometimes persistent or bloody)
- Otalgia
- Fever
- Pulsatile tinnitus
- Sentinel bleeding (warning sign of rupture)

In this case, otorrhea was the primary symptom leading to imaging evaluation [2].

Radiological Features [3]

MRI played a central role in diagnosis by demonstrating:

- Inflammatory otomastoid disease
- Skull base involvement
- Vascular flow void suggesting ICA abnormality
- Saccular vascular lesion compatible with pseudoaneurysm

MRI is particularly useful in children and adolescents as a non-ionizing modality for early detection.

Differential Diagnosis

Differential diagnoses include:

- Carotid-cavernous fistula
- Glomus jugulare tumor
- Cholesteatoma with skull base erosion
- Temporal bone abscess
- True ICA aneurysm

MRI findings are generally characteristic and allow confident diagnosis [3, 4].

Management

Management requires urgent multidisciplinary care:

- Endovascular treatment (coil embolization or stent-assisted exclusion)
- Antibiotic therapy targeting otogenic infection
- ENT surgical drainage if required
- Close hemodynamic monitoring due to risk of rupture [3,5].

CONCLUSION

This case highlights a rare but severe complication of otomastoiditis: left internal carotid artery pseudoaneurysm. MRI was sufficient to suggest the diagnosis and identify the vascular lesion in an emergency context. Early recognition is essential to prevent fatal hemorrhagic outcomes.

FIGURES



Figure 1: Axial T2-weighted MRI showing left otomastoiditis with hyperintense signal in mastoid air cells and middle ear cavity.

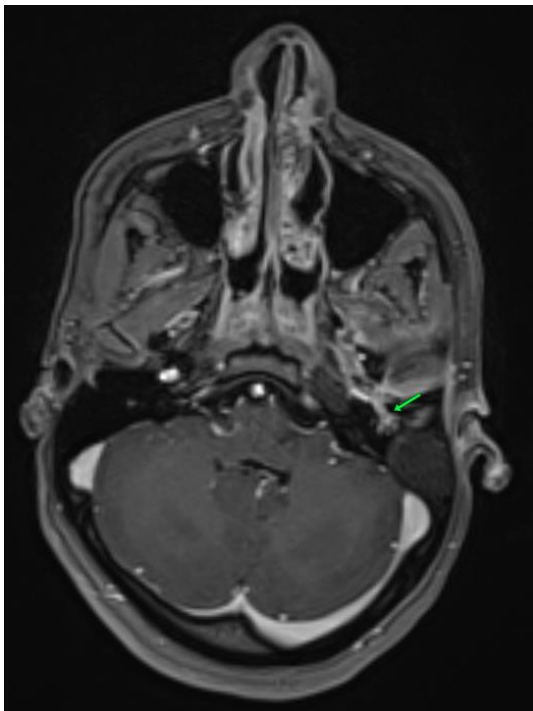


Figure 2 : Axial T1 post-contrast MRI revealing saccular outpouching of the left internal carotid artery consistent with pseudoaneurysm.



Figure 3 : 3D T1 post-contrast MRI revealing saccular outpouching of the left internal carotid artery consistent with pseudoaneurysm.

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REFERENCES

- [1] Miller RG, et al. Skull base infections and vascular complications: imaging review. *Radiographics*. 2021;41(6):1725-1742.
- [2] Lee CC, et al. Otogenic vascular complications involving the internal carotid artery. *AJNR Am J Neuroradiol*. 2022;43(3):389-396.
- [3] Wang Y, et al. Management of internal carotid artery pseudoaneurysms: endovascular approaches. *J Neurointerv Surg*. 2020;12(9):877-883.
- [4] de Freitas DJ, Sekhar LN. Internal carotid artery pseudoaneurysms: diagnosis and treatment strategies. *Neurosurgery*. 2021;88(2):E190-E199.
- [5] Patel PD, et al. Endovascular therapy of carotid pseudoaneurysms: current perspectives. *Neurosurg Rev*. 2023;46(1):45.