



Cholesterol Granuloma in the Petrous Apex with Headache: a Case Report

Francisco Leandro Fonteles Moreira; Samara Pereira de Almeida; Yves Damon Gonçalves Feitosa;
Thayanne Karoline Coimbra Soares; Bruzo Ralden Araújo Ferreira; Alessandra Alves Gomes Cunha;
Nathália Denise Nogueira Peixe Sales; André Rodrigues Façanha Barreto; Daniel Gurgel Fernandes Tavora;
Diego Ximenes Soares; Cláudio Régis Sampaio Silveira; Roberto Guido Santos Paiva

Instituto São Carlos de Ensino e Pesquisa - ISCEP, Fortaleza - CE - Brazil.

Introduction

Cholesterol granuloma is a type of granulation tissue, representing the most common cystic lesion of the petrous apex. It most commonly affects young and middle-aged patients with a history of chronic otitis media. Its clinical presentation is variable, with symptoms varying according to the affected sites. However, headache is not a commonly encountered finding in this condition.

Objectives

We present a challenging case of a patient with this condition and clinical presentation of headache.

Case Report

D. P. R., male, 42 years old, with a history of headache and a previous computed tomography scan that showed a lesion in the petroclival region, requiring an MRI examination with contrast, as well as spectroscopy and perfusion for better investigation. The examination revealed an expansive lesion with lobulated contours, with heterogeneous high signal in all sequences, with focus of low signal in SWI, without contrast enhancement, centered on the right petrosal apex and extending to the clivus. It is related to the petrous portion of the ipsilateral internal carotid artery, projecting to the cerebellar pontine cistern and involving the sixth cranial nerve. Spectroscopy and perfusion showed no relevant changes. The pathogenesis of cholesterol granuloma is controversial, with two explanations. The vacuum-obstruction theory, which is believed to be associated with auditory tube dysfunction due to an underlying abnormality, which causes edema and recurrent episodes of bleeding. Another theory is the exposed marrow, where the hyperplastic mucosa invades the underlying bone and exposes the bone marrow, which causes bleeding. In both scenarios, the blood undergoes degeneration and sets up a chronic inflammatory response. Regarding imaging aspects, it presents high signal on T1 due to the cholesterol and methemoglobin component, with a halo of low signal due to the deposition of hemosiderin. In T2-weighted sequences, high central signal and low signal border are observed. It is unusual to present contrast enhancement, but it is difficult to distinguish due to the high intrinsic signal on T1 sequences, even with fat saturation. Given this signal behavior, cholesterol granuloma can be easily distinguished from lesions that frequently affect the petrous apex, such as cholesteatomas, skull base tumors, asymmetries in the fatty marrow and other collections in the petrous apex.

Conclusion

Granuloma of the petrous apex accompanied by headache is unusual and has a typical behavior on magnetic resonance imaging, with high diagnostic presumption. Its detection is important in the context of symptomatic patients, as is its location and involvement of adjacent structures, contributing to the decision and planning of surgery.

Keywords: cholesterol granuloma; petrous apex; headache.