

Post Inflammatory Medial Canal Fibrosis: A Case Report

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Abstract

Medial canal fibrosis is an interesting type of acquired meatal atresia that is characterized by formation of a solid core of fibrous tissue in the medial part of the external auditory meatus abutting the tympanic membrane. A review of the literature showed that many different terms have been used interchangeably to report the same or similar condition. This is a case of medial canal fibrosis being reported to emphasize the importance in diagnosing this rare but easily treatable disease. A 16 yrs old female presented with bilateral conductive hearing loss & history of recurrent rhinitis & sinusitis. CT Temporal bone showed soft tissue density lesions in bilateral bony EAC (External auditory canal) with no bony erosion & normal middle ear. A diagnosis of Medial canal fibrosis was given. The patient was operated & biopsy of the specimen came out to be inflammatory granulation tissue.

Keywords: External auditory canal (EAC), Granulation tissue, Post inflammatory medial canal fibrosis.

Case Details

A 16 year-old girl presented with hearing loss since 2yrs and long-standing previous history of rhinitis. She had no history of ear surgery.

Our otologic examination revealed that the both ear canal were short and terminated with a skin-covered barrier. Audiology examination revealed conductive hearing loss. Computed tomographic (CT) (Bright speed velocity CT scanner; GE Medical

Systems) evaluation of the temporal bone was performed, and 0.6-mm sections were obtained in the transverse & subjected to postprocessing reconstruction in coronal and sagittal imaging planes. All images were obtained with a thin-section bone algorithm and a small field of view (9.6 cm).

Imaging Findings

Thin-section CT (0.6-mm-thick transverse coronal and sagittal sections) of the bilateral temporal bone revealed soft tissue density lesion along the entire length of bony external auditory canal with no bony erosions (Fig 1, 2). This finding was

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Fig 1: CT axial & coronal images of 16 year old girl shows soft tissue density lesion along entire length of bony canal sparing the cartilaginous external meatus on right side.

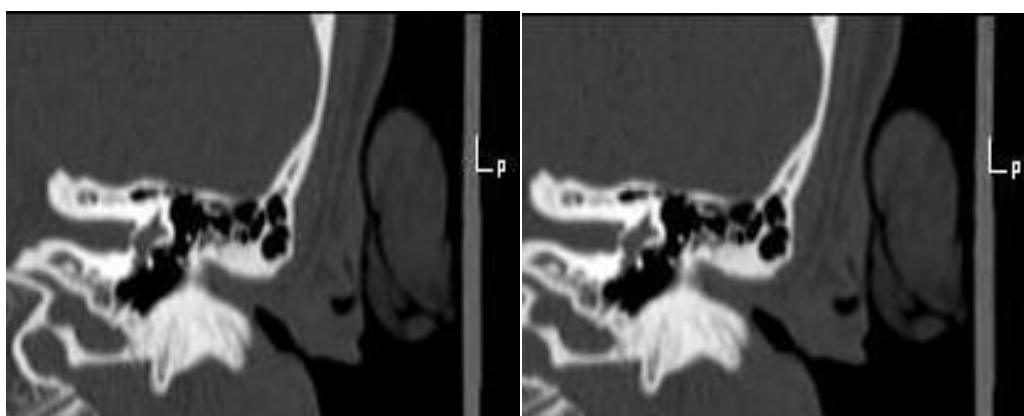


Fig 2: CT coronal reconstructed images of left ear shows soft tissue density lesion along entire length of bony canal sparing the cartilaginous external meatus. Middle ear appears normal.

consistent with the diagnosis of medial canal fibrosis.

Discussion

Post inflammatory medial canal fibrosis is a distinct entity characterized by the formation of fibrous tissue in the medial bony external auditory meatus. Other terms for this lesion are acquired medial canal fibrosis, post inflammatory acquired atresia of the EAC and post inflammatory medial meatal fibrosis.^{1, 2, 3}

The term acquired medial canal fibrosis best describes this entity with regard to the pathology and the pathophysiology of the condition. This term distinguishes the condition from congenital meatal atresia, and from non-fibrotic atresia (eg. neoplasm) which have different pathogenesis. On the other hand, it includes all acquired causes of meatal fibrosis such as inflammation (otitis externa and media), allergy (dermatitis), and trauma (surgical or non-surgical).

The pathophysiology of this disorder is only speculative, as there are no experimental animal models.⁴ An insult to the external

auditory meatus and tympanic membrane epithelium initiates the process. This may be infectious or traumatic or arises de novo in patients with associated dermatitis. This initial insult produces granulation tissue on the tympanic membrane and the external canal wall epithelium. Subsequently, the granulation tissues become infected and form fibrous plugs occluding the external auditory meatus lined by skin. Most cases seem to follow chronic otitis externa and/or media or as a complication of ear surgery. Most authors found AMCF to be more prevalent in females for no apparent reason. This condition may occur at any age.

The history, clinical examination and audiometry establish the diagnosis of AMCF. In most cases, there is usually a history of otitis externa or media, dermatitis or an ear operation. In 'complete' AMCF cases, ear examination shows shortened external canal with funneling of its medial part. The canal ends in a skin-covered barrier and not in tympanic membrane. Pure tone audiometry usually shows a 20-40 dB conductive hearing loss. Tympanometry typically demonstrates a low compliance and a flat curve with absence of the acoustic reflex. Also, equivalent volume measure of the external auditory meatus is usually less than normal.

The differential diagnosis includes external auditory canal cholesteatoma, gummatous lesions of tertiary syphilis, lupus erythematosus and primary carcinoma of the external auditory meatus.⁴ Histology should be performed on all cases. The cholesteatoma is not exclusively seen in

cases occurring following surgery & usually associated with bone erosion.

Once the diagnosis of AMCF is secured, the only effective treatment is surgical reconstruction of the external auditory meatus. The main aim of surgery is to restore and maintain patency of the canal for the normal sound conduction and self-cleaning functions. Another important purpose for the treatment is to control canal cholesteatoma.

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