



Fungal Mastoiditis of Temporal Bone in Immunocompetent Child: Case Report

Ahmed Abdelrahman Abdelziz^{1*}, Nasr Mohamed M Osman² and Mariana F Gayyed³

¹Department of Otorhinolaryngology, El Minia University Hospital, Egypt

²Department of Radiology, El Minia University Hospital, Minia, Egypt

³Department of Pathology, EL Minia Faculty of Medicine, EL Minia, Egypt

***Corresponding Author:** Ahmed Abdelrahman Abdelaziz, Assistant Professor of Otorhinolaryngology, El Minia University Hospital, El Minia, Egypt.

Received: August 29, 2019; **Published:** September 26, 2019

Abstract

Fungal mastoiditis is a very rare entity which is always seen in immunocompromised patients. A case of fungal mastoiditis in immunocompetent 7 years old girl was reported. The patient complained of left tender postauricular swelling. Computed tomography of temporal bone showed complete destruction of mastoid bone inspite normal middle ear structure. Cortical mastoidectomy was performed, which revealed granulomatous mass occupied mastoid cavity with the destruction of the sigmoid plate. Histopathological examination with Hematoxylin and eosin stain was showed inflammatory cellular infiltrate mainly lymphocytes, macrophages, giant cells and extensive necrosis with scattered fungi.

Keywords: Fungal Mastoiditis; Temporal Bone; Fungi

Introduction

Langerhans cell histiocytosis, tuberculosis of mastoid bone and fungal mastoiditis are very rare causes of mastoid bone destruction [1,2]. Fungal mastoiditis usually occurs in immunocompromised patients [3].

Case Report

A 7- years old girl was admitted at EL Minia university hospital in January 2017, with right postauricular swelling and otalgia of one- month duration. No history of otorrhea was reported. The girl sought medical advice before her admission and was treated with antibiotics with no improvement. On physical examination, there was left tender postauricular swelling, normal external auditory canal and normal tympanic membrane. There was no nystagmus or facial nerve palsy. Audiometry showed normal hearing in both ears. Lab investigations show mild normocytic normochromic anemia, mild leukocytosis, elevated CRP and elevated ESR. High

resolution computed tomography of temporal bone showed the destruction of the mastoid bone and normal middle ear anatomy (Figure 1). Diffusion weight magnetic resonance imaging (MRI) of temporal bone showed well defined abnormal intensity swelling seen involving the right petrous bone at its lateral aspect. The swelling appears hypointense at T1W1&hyperintense at T2W1 sequences. Additionally, a large subcutaneous component was seen at the right posterior auricular region (Figure 2). DWI, there is partially diffusion restriction with an average apparent diffusion coefficient (ADC) value ($1.3 \times 10^3 \text{ mm}^2/\text{s}$). Transmastoid approach was adopted. Postauricular incision revealed a pinkish granulomatous mass occupied mastoid bone (Figure 3). There is an erosion of sigmoid sinus (exposed sinus). Exploration of middle ear revealed normal anatomical structure. Histopathological examination Hematoxylin and eosin stain was showed inflammatory cellular infiltrate mainly lymphocytes, macrophages, giant cells (Figure 4). Extensive necrosis with scattered fungi was seen. Results were confirmed with Gomorii methenamine silver (GMS) (Figure 5).

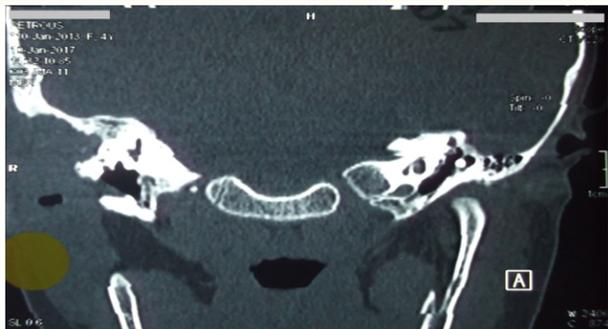


Figure 1: CT petrous axial cuts show the destruction of left the temporal bone.

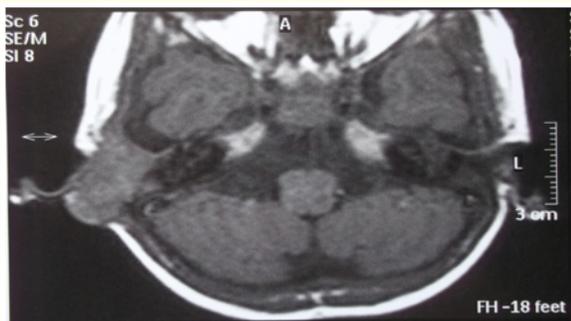


Figure 2: MRI Petrous bone shows large subcutaneous component is seen at the right posterior auricular region.



Figure 3: Mass after excision about 4x2 cm.

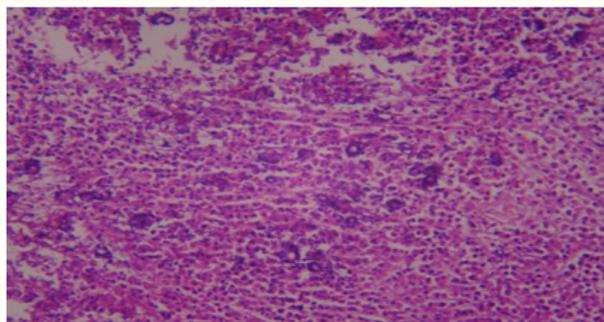


Figure 4: Fungal mastoiditis: Hematoxylin and Eosin stain (×400). Inflammatory cellular infiltrates mainly lymphocyte, macrophages, eosinophils, and giant cells indicate the presence of chronic specific inflammation (granuloma).

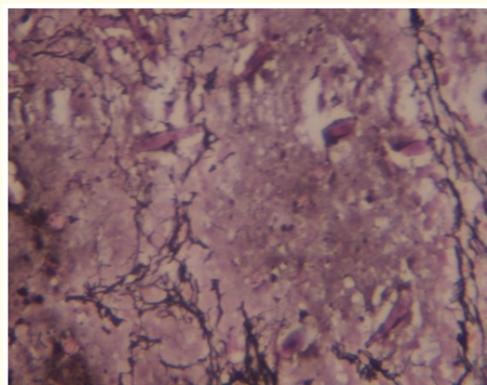


Figure 5: Fungal mastoiditis: Gomori Methenamine Silver (GMS) stain (×400). Fungi appear as black rhomboid structure.

Discussion

Fungal mastoiditis is a very rare condition and is mostly seen in immunocompromised patients [4]. Possible routes of entry of fungal mastoiditis into the middle ear are tympanogenic (through tympanic membrane perforation), meningogenic, haematogenic and through Eustachian tube (via nasopharynx) [5]. In this case, it cannot be confirmed which of this route is the pathway of fungal infection to the ear. All cases in previous studies; the middle ear and mastoid have been involved [4-7]. In this case, mastoid was only involved and middle ear structure is normal. Destruc-

tion of the mastoid bone structure might be attributed to a toxic substance (mycotoxins) produced by fungus or due to chronic specific inflammation [6]. Histopathology of this case showed inflammatory cellular infiltrate mainly lymphocytes, macrophages, eosinophils and, giant cells and these indicate the presence of chronic specific inflammation (granuloma). Lymphocytes secrete cytokines responsible for hypersensitivity reaction and tissue destruction. Treatment of fungal otomastoiditis consists of control of immunocompromised condition if present and surgical procedure to remove diseased tissue [7]. In this case, cortical mastoidectomy is efficient to control of the disease as it is limited to mastoid and the patient is immunocompetent.

Conclusion

Fungal mastoiditis must be involved in the differential diagnosis of diseases which cause mastoid bone destruction, even in an immunocompetent patient with normal middle ear structure.

Bibliography

1. Rho MH., *et al.* "Tuberculous otomastoiditis on high-resolution temporal bone CT: Comparison with nontuberculous otomastoiditis with and without cholesteatoma". *AJNR* 28 (2007): 493-496.
2. Ginat DT., *et al.* "Langerhans cell histiocytosis of the temporal bone". *Head and Neck Pathology* 10 (2016): 209-212.
3. Tol AV and Rijswijk JV. "Aspergillus mastoiditis, presenting with unexplained progressive otalgia, in an immunocompetent (older) patient". *European Archives of Oto-Rhino-Laryngology* 266 (2009): 1655-1657.
4. Slack CL., *et al.* "Fungal mastoiditis in immunocompromised children". *Archives of Otolaryngology-Head and Neck Surgery* 125 (1999): 73-75.
5. Varghese R., *et al.* "Fungal otomastoiditis: A case series in immunocompetent adults". *Indian Journal of Otolaryngology and Head and Neck Surgery* 66 (2014): 110-113.
6. Ohki M., *et al.* "Fungal mastoiditis in an immune competent adult". *European Archives of Oto-Rhino-Laryngology* 258 (2001): 106-108.
7. Zhu BZ., *et al.* "A case of allergic fungal otomastoiditis with aural polyps". *Otolaryngology Case Reports* 2 (2017): 4-6.

Volume 1 Issue 2 October 2019

© All rights are reserved by Ahmed Abdelrahman Abdelziz., et al.