

Available at www.sciencedirect.com

SciVerse ScienceDirect

journal homepage: www.elsevier.com/locate/IJMYCO

Case Report

Tuberculosis of the middle ear and nasal passage: A case report

Safaa Lmekki ^{a,*}, Jean Baptiste Lecanu ^b^a N°2 Résidence Ghita, rue Kamal Oudouane, ville nouvelle Fes 30000, Morocco^b Department d'O.R.L. et de chirurgie cervico-faciale, Institut Arthur Vernes 36, rue d'Assas, 75006 Paris, France

ARTICLE INFO

Article history:

Received 20 December 2012

Received in revised form

10 January 2013

Accepted 13 January 2013

Available online 18 February 2013

Keywords:

Tuberculosis

Middle ear

Nose

Eustachian tube

ABSTRACT

The following report highlights the case of a 55-year-old female with nasal and middle ear tuberculosis. The diagnosis was confirmed using imagery, histopathological biopsy reports, and Polymerase chain reaction (TB-PCR). The patient was treated with rifampicin (10 mg/kg), isoniazid (5 mg/kg) and pyrazinamide (25 mg/kg) for 9 months. No recurrence was observed after one year of follow-up examination. Both nasal tuberculosis and tuberculous otitis media are currently considered rare diseases, yet if they are evaluated rapidly, there will be a good response to therapy without the need for surgery.

© 2013 Published by Elsevier Ltd. on behalf of Asian-African Society for Mycobacteriology.

Introduction

Tuberculosis of the middle ear is not common. It is, however, the second most frequent disease of tuberculosis etiology seen by otolaryngologists and should be suspected in any tuberculous person who develops painless otitis media [1,2]. Tuberculous infection of the nose and nasal fossae has been said to be the rarest form of localized tuberculosis [1,3]. The findings of both of these conditions in a healthy adult appear to be extremely rare and prompted the report of this case.

Observation

A 55-year-old woman, without a past history of tuberculosis, complained one year ago from recurrent episodes of right

purulent otitis media with hearing loss. Otherwise, she presented with a right nasal obstruction and purulent rhinorrhea. She was periodically treated with topical ear drops and per oral antibiotics. Purulent otorrhea and rhinorrhea stopped intermittently but started again. On physical examination, the right tympanic membrane presented with a central perforation and was slightly domed and partially covered with a layer of grayish secretion. The right nasal mucosa presented with purulent crusts and an ulcerative lesion of the middle turbinate (Fig. 1). An audiogram revealed conductive hearing impairment on the right side. Computed tomographic (CT) scan of the temporal bone showed right mastoiditis with soft tissue in the middle ear, without evidence of bone erosion (Figs. 2 and 3). A biopsy of the middle ear's granulation and middle turbinate's ulceration was sent

* Corresponding author.

E-mail address: sfifoya@hotmail.com (S. Lmekki).

2212-5531/\$ - see front matter © 2013 Published by Elsevier Ltd. on behalf of Asian-African Society for Mycobacteriology.

<http://dx.doi.org/10.1016/j.ijmyco.2013.01.002>

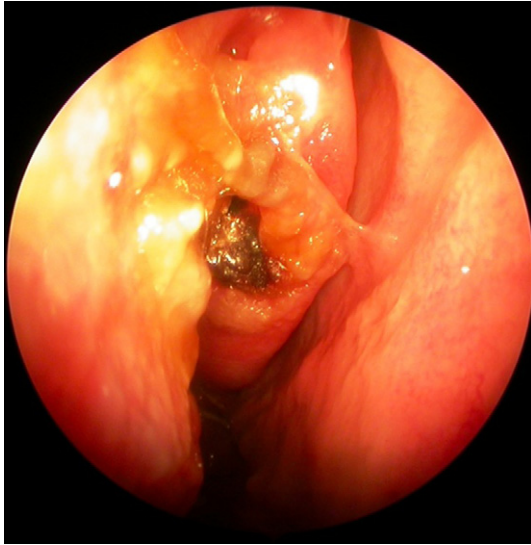


Fig. 1 – Endoscopic examination of the right nasal cavity showed an ulcerative lesion of the middle turbinate with purulent crusts.

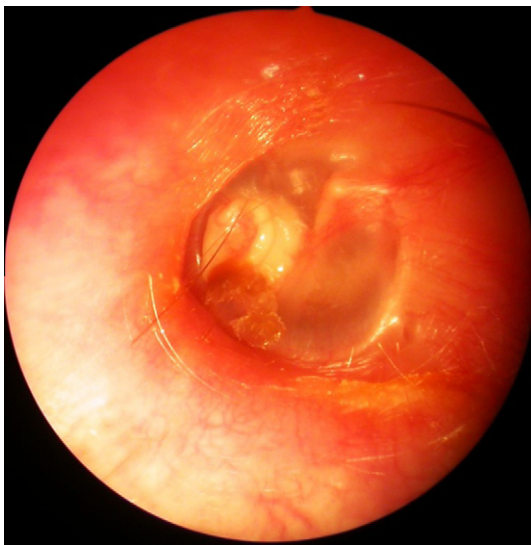


Fig. 2 – Right tympanic membrane presented a central perforation and was slightly domed and partially covered with a layer of grayish secretion.

for histological examination which showed features of a granulomatous process typical of tuberculosis. To confirm the diagnosis of tuberculosis, nasal crust and otorrhea were collected for polymerase chain reaction using IS6110 primer; a Lowenstein culture revealed *Mycobacterium tuberculosis*. Three-drug intermittent anti-tuberculosis therapies with rifampicin (10 mg/kg), isoniazid (3–5 mg/kg) and pyrazinamide (20–25 mg/kg) were administered for 9 months. On follow-up examinations, the nasal cavity lesions were undetectable and the central perforation closed spontaneously with the curing of the otorrhea, and hearing loss progressed well; the patient remained without evidence of any recurrence at the one year of follow-up examination.



Fig. 3 – CT image showing soft tissue occupation of the right tympanic cavity, with no bone erosion.

Discussion

Although the overall incidence of tuberculosis has declined since the middle twentieth century, there has been a recent resurgence of tuberculosis, which is felt to be attributed in part to the emergence of anti-tuberculosis drug-resistant strains and also as a result of the increase of immune-depressed hosts [4,5]. Since 1985, the incidence rate for tuberculosis has increased along with the occurrence of extra pulmonary tuberculosis, which now consists of up to 20% of the total incidence of tuberculosis [5,6]. Nasal tuberculosis was first reported in 1761 by Giovanni Morgani. It can be classified as spontaneous nasal tuberculosis, which occurs secondarily after pulmonary tuberculosis, and as primary nasal tuberculosis, which occurs without a prior pulmonary tuberculosis infection [7]. The reason why primary nasal tuberculosis is less common is thought to be because of the protection afforded by ciliary movements, bactericidal actions of nasal secretions and filtering by nasal vibrissae [1,8]. While primary tuberculosis of the middle ear has been said to occur, it must be very rare indeed. Infection may be direct by passage of infected material up the auditory tube by coughing or sneezing, or spread along the tube from a nasal or nasopharyngeal lesion, or by a hematogenous implantation. In this case, the spread of the organism to the middle ear is via the eustachian tube from the nasal focus [1].

Unfamiliarity with nasal and aural tuberculosis led to the delay in suspecting the etiology agent; the patient's good health was another factor contributing to the failure to consider an extra pulmonary tuberculous process. Symptoms of nasal tuberculosis include nasal obstruction, which is most common, followed by rhinorrhea, epistaxis and crust formation of the middle turbinate [9]. The symptoms were consistent with most of those symptom patterns. Tuberculous otitis media is characterized by painless otorrhea, multiple tympanic membrane perforations, abundant granulation tissue, bone necrosis, and hearing loss, which if left untreated causes extensive damage to the middle ear and surrounding structures [10,11]. Hearing impairment is usually conductive,

but sensorineural loss may occur if the labyrinth becomes involved. In making the correct diagnosis, a thorough history is paramount [12]. A past history of pulmonary tuberculosis is an especially definitive factor in determining the diagnosis. A definitive diagnosis can be made when typical tuberculous nodules or acid fast bacilli are found in the patient's nasal and aural discharge or tissue biopsy. However, it is hard to make a definitive diagnosis in cases where typical tuberculous nodules are not found and only granulomatous inflammatory lesions are discovered. Most recently, a method in which a piece of tissue from the lesion site is sampled and measured for tuberculous bacillus through Polymerase Chain Reaction (PCR) is available. However, there may still be some cases where a patient may have a positive tissue biopsy for tuberculosis with a negative PCR. Therefore, both tissue biopsy and PCR must be complementary in making a final diagnosis [5].

Primary treatment of aural tuberculosis in the past was surgery to prevent nerve paralysis and spread of the infection to the central nervous system. At the present time, anti-tuberculous medications are paramount in treating nasal and aural tuberculosis and, like pulmonary tuberculosis, a multi-drug therapy is required [13]. All reported cases in the medical literature underwent a 6-to-12-month course of anti-tuberculous therapy to produce a cure, with subsequent improvement with regard to clinical symptoms and physical signs.

Summary

The insidious development of painless otitis media, associated with early severe deafness, is sufficient cause to suspect tuberculosis as the etiologic agent. Diagnosing nasal tuberculosis requires a high index of suspicion. One case of tuberculosis of the middle ear and nasal passages in an apparently healthy woman is presented to elucidate the clinical characteristics of this extremely rare association and to discuss the diagnostic difficulties.

REFERENCES

- [1] B.G. McKibben, J.L. Sheehy, Tuberculosis of the middle ear and nasal passages, *AMA Arch. Otolaryngol.* 63 (3) (1956) 286-289.
- [2] L.J. Wallner, Tuberculous otitis media, *Laryngoscope* 63 (1953) 1058-1077.
- [3] M.C. Meyerson, Tuberculosis of the Ear, Nose, and Throat, Springfield, III, 1944. pp. 155-191.
- [4] L. Slutsker, K.G. Castro, J.W. Ward, et al, Epidemiology of extrapulmonary tuberculosis among persons with AIDS in the United States, *Clin. Infect. Dis.* 16 (1993) 513-518.
- [5] Y.M. Kim, A.Y. Kim, Y.H. Park, D.H. Kim, K. Rha, Eight cases of nasal tuberculosis, *Otolaryngol. Head Neck Surg.* 137 (3) (2007 Sep) 500.
- [6] A.M. Al-Serhani, Mycobacterial infection of the head and neck: presentation and diagnosis, *Laryngoscope* 111 (2001) 2012-2016.
- [7] S.R. Waldman, H.L. Levine, B.A. Sebek, et al, Nasal tuberculosis: a forgotten entity, *Laryngoscope* 91 (1981) 11-16.
- [8] L.A. Goguen, C.S. Karmody, Nasal tuberculosis, *Otolaryngol. Head Neck Surg.* 113 (1995) 131-135.
- [9] A.A. Butt, Nasal tuberculosis in the 20th century, *Am. J. Med. Sci.* 313 (1997) 332-335.
- [10] V. Vital, A. Printza, T. Zaraboukas, Tuberculous otitis media: a difficult diagnosis and report of four cases, *Pathol. Res. Pract.* 198 (2002) 31-35.
- [11] C. Sierra, J. Fortun, C. Barros, et al, Extra-laryngeal head and neck tuberculosis, *Clin. Microbiol. Infect.* 6 (2000) 644-648.
- [12] S. Davidson, D. Creter, G. Leventon, D. Katznelson, Tuberculosis of the middle ear in an infant, *Arch. Otolaryngol. Head Neck Surg.* 115 (1989) 876-877.
- [13] J.Y. Duclos, V. Darrouzet, M. Ballester, et al, Tuberculose de l'oreille moyenne. *EncyclMédChir, Oto-rhino-laryngologie, Scientifiques et Médicales Elsevier SAS, Paris, 1999.* 20-235-A-10.