A case of actinomycosis of the middle ear

R Ologunde, J Doshi

Birmingham Heartlands Hospital, Bordesley Green East, Birmingham, B9 5SS, UK

Introduction

Actinomycosis infection of the ear is a rare slowly progressive granulomatous and suppurative disease, with less than 50 cases reported in the literature worldwide. We report a case of middle ear actinomycosis and discuss the importance of histopathology guided diagnosis.

Case

A 66-year-old lady presented to the otology clinic with a 5-year history of chronic left sided otorrhoea. Past medical history included a left parotidectomy and subsequent radiotherapy, 24 years prior, for a tumour of unknown histology. Computed Tomography scanning revealed extensive opacification of the external canal and left mastoid cavity in addition to bony erosion of the external canal and posterior aspect of the middle ear cavity but an intact ossicular chain. Magnetic Resonance Imaging confirmed the diffuse enhancement of the changes in the left mastoid and middle ear cavity in keeping with an inflammatory aetiology or a diffuse destructive soft tissue process.

A variety of topical steroid and antibiotic treatments were unsuccessful over a period of years before she was referral to the otology clinic. Histopathological examination of an ear biopsy suggested actinomycosis but the organism was not identified on culture. The patient was commenced on a 12-month course of oral amoxicillin. At 12months, the ear was dry and this clinical improvement was reflected in repeat MR imaging .

Imaging

Literature Review

TABLE I CASES OF MIDDLE-EAR ACTINOMYCOSIS*					
Author	Age (y), sex	Disease extent	Treatment	Outcome	Location
Gazzano <i>et al.</i> , 2010 ⁷	8, F	Middle ear, mastoid	Amoxicillin or pristinamycine, 3 mth po	Resolved	Dijon, France
Budenz <i>et al.</i> , 2010 ⁸	12, F	Middle ear, mastoid, petrous apex, inner ear	Petrosectomy, clindamycin + ampicillin sulbactam IV, clindamycin 6 mth po	Resolved	New York, USA
Shishegar <i>et al.</i> , 2009 ⁹	24, M	Middle ear & mastoid	Mastoid exploration, antibiotics not documented	Not documented	Shiraz, Iran
Mehta <i>et al.</i> , 2007 ¹⁰	11, M	Middle ear, mastoid, inner ear	Mastoidectomy, partial labyrinthectomy, ampicillin sulbactam 9 wks IV	Resolved	Pittsburgh, USA
Sivaramasingam & Rajan, 2007 ¹¹	78, M	Middle ear, mastoid	Mastoidectomy, ampicillin 6 wks po	Resolved	Malaysia
Sobol <i>et al.</i> , 2004 ¹²	14, F	Middle ear, mastoid	Mastoidectomy + grommet, penicillin 6 mth po	Resolved	Pennsylvania, USA
Ajal <i>et al.</i> , 1997 ³	10, M	Middle ear, mastoid	Mastoidectomy + grommet, penicillin 4 wks IV, penicillin 3 mth po	Resolved	Darlinghurst, Australia
Hoshino <i>et al.</i> , 1996 ¹³	24, F	Middle ear, mastoid	Myringotomy, cefuroxime 4 d + unspecified on-going treatment	Resolved	Hamamatsu, Japan
Tarabichi & Schloss, 1993 ¹⁴	7, F	Middle ear, mastoid	Mastoidectomy + grommet, penicillin 4 wks IV, penicillin 3 mth po	Resolved	Wisconsin, USA
Olson <i>et al.</i> , 1989 ¹⁵	6, M	Middle ear, mastoid	Mastoidectomy, penicillin 6 mth po	Resolved	California, USA
Shelton & Brackmann, 1988 ¹⁶	10, M	Middle ear, mastoid	Mastoidectomy, penicillin 6 mth po	Resolved	California, USA
Miglets & Branson, 1983 ¹⁷	37, M	Middle ear, mastoid	Mastoidectomy, penicillin 3 mth po	Resolved	Ohio, USA
Leek, 1974 ¹⁸	8, F	Middle ear, mastoid	Mastoidectomy, penicillin 3 mth po	Resolved	Chicago, USA
Fletcher, 1956 ¹⁹	73, M	Middle ear, mastoid, petrous apex, foramen magnum	Mastoidectomy, aureomycin 1 week, chloromycetin 10 d, gantisin 2 wks	Resolved	California, USA
Townrow & Barrie, 1945 ²⁰	64, M	Middle ear, mastoid, sigmoid sinus, jugular bulb, subarachnoid, subdural	Mastoidectomy, sulphanilamide 2 d po	Death	Sheffield, UK
Oudidi <i>et al.</i> , 2005 ²¹	58, M	Middle ear, mastoid	Mastoidectomy, penicillin 5 mth po	Resolved	Fes, Morocco [†]
Skladzien <i>et al.</i> , 2002 ²²	—	—	—	—	Poland [†]
Boor <i>et al.</i> , 1998 ²³	—	—	—	—	Slovakia [†]
Lester & Juhasz, 1990 ²⁴	—	—	—	—	Ethiopia [†]
Gattaz & Nanjoks, 1984 ²⁵	—	—	—	—	Germany [†]
Gladkii <i>et al.</i> , 1983 ²⁶	—	—	—	—	Russia [†]
Kunel'skaia <i>et al.</i> , 1977 ²⁷	—	—	—	—	Russia [†]
Sinel'nikov & Novikova, 1970 ²⁸	—	—	—	—	Russia [†]
Szlezak & Sowinski, 1965 ²⁹	—	—	—	—	Poland [†]
Kulina, 1958 ³⁰	—	—	—	—	Russia [†]
Preobrazhenskii, 1957 ³¹	—	—	—	—	Russia [†]

*Cases presented in the worldwide literature since 1945. [†]Foreign language articles. Y = years; F = female; mth = months; po = per os (by mouth); IV = intravenous; M = male; wks = weeks; d = days

Reproduced with permission.

Kullar PJ, Yates P. Actinomycosis of the middle ear. *J Laryngol Otol.* 2013;127(7):712-5

Conclusion

The differential diagnosis in this case included osteoradionecrosis (secondary to previous radiotherapy) and recurrence of the parotid tumour. The actinomycosis colony was an entirely incident finding on biopsy. Diagnosis of this condition is made difficult because of the non-specific nature of the clinical signs and the difficulty in culturing the organism.