

Pathology in Focus

Actinomycosis of the middle ear

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Abstract

Another case of actinomycosis of the ear is described in a nine-year-old boy, drawing attention to the increasing incidence of diseases of the ear considered to be rare. The patient presented with the clinical signs of chronic purulent otitis media, not responding to conservative treatment. After the diagnosis of actinomycosis was established the patient was treated by surgery and long-term antibiotic medication, responding favourably.

Key words: Actinomycosis; Otitis media; Mastoiditis

Introduction

Actinomycosis, caused by *Actinomyces bovis* or *Actinomyces israelii*, occurs mainly in the cervicofacial area and affects the neck, the face, the mandible and the tongue. The lungs and the intestinal tract are less frequently affected. The pelvic organs however may be infected from an intra-uterine device (IUD).

The paranasal sinuses and the orbit are uncommon sites but the ear may be more often infected by *Actinomyces* organisms, as first reported by Beck in 1906 (Shelton and Brackmann, 1988). Recent reports include (Friedmann, 1986; Kainz and Friedrich, 1988; Shelton and Brackmann, 1988; Tabaqchali, 1988; Olson *et al.*, 1989; Lester and Juhasz, 1990; Hoshino *et al.*, 1996; Ajal *et al.*, 1997). An unusual case of actinomycosis of the external auditory meatus was described by Chang *et al.*, 1993. Intracerebral complications may still occur even in patients treated with antibiotics (Smego, 1987; Donald *et al.*, 1990).

The differential diagnosis can be difficult, in particular from tuberculosis of the ear. Anaerobic cultivation is required but may fail (Burden, 1989). The ultimate, often delayed, diagnosis may rest on the histopathological evidence in a biopsy specimen and/or in autopsy material.

Another sporadic case of actinomycosis of the ear is reported drawing attention to the diagnostic and therapeutic difficulties faced by the clinician and histopathologist alike.

Case report

The patient is a nine-year-old boy who has been treated for otitis media as an out-patient. He failed to respond to this non-antibiotic treatment and was admitted to the Children's Hospital in Košice where a retroauricular abscess complicated by purulent mastoiditis of the right ear was diagnosed.

Histopathology

A biopsy specimen was embedded and sections were stained with haematoxylin-eosin, Ziehl-Neelsen, Gram and Grocott's methods. Macroscopy showed some haemorrhagic tissue containing small fragments of bone, embedded in inflammatory granulation tissue. Microscopy revealed scattered colonies of *Actinomyces* organisms in the inflammatory granulation tissue (Figure 1). There were no acid-fast bacilli present and the organisms stained positive with Gram, Grocott and periodic acid-Schiff stains (PAS).

He was treated surgically followed by intensive antibiotic medication. An anthromastoidectomy was performed confirming the clinical diagnosis. Antibiotic treatment was started with gentamicin: 120 mgm daily for five days followed by gentamicin 60 mgm daily for four days. Also nerolen 300 mgm daily for nine days and erythromycin, 800 mgm daily for another 10 days. These injections were accompanied by oral Penclen, a penicillen preparation 1,000,000 units daily for 14 days. Since then he

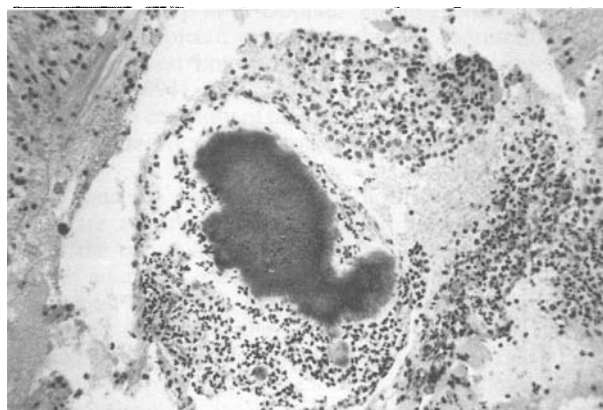


FIG. 1

Sulphur granule surrounded by purulent exudates (H & E; $\times 350$).

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has taken a daily oral dose of 1,000,000 units of Penclen. When last seen on 10 April 1998 he showed no clinical evidence of the infection and normal audiological function.

Discussion

There seems to be an enhanced awareness of some so-called rare diseases of the ear, e.g. tuberculosis, nocardiosis, actinomycosis and schistosomiasis.

Ajal *et al.* (1997) described a case of actinomycosis of the ear considered to be only the 25th reported case in the literature these authors have reviewed. Whether or not the presented case might be only the 26th such case is of minor interest. There are, we suggest, other cases slumbering in some textbooks or in the unpublished archives of departments of pathology, apart from the undiagnosed or misdiagnosed cases (Das, 1994).

Actinomyces israelii, an anaerobic organism, is the commonest causative organism. Cultivation may fail and the colonies may be sparse even in deep sections (Burden, 1989; Olson *et al.*, 1989). Dental plaque and tonsillar crypts may harbour the organism and various contributory factors have been incriminated (Gattaz and Naujoks, 1984; Tarabichi and Schloss, 1993). Utmost vigilance will ensure an earlier diagnosis and effective treatment.

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References

- Ajal, M., Turner, M. B., Fagan, P., Walker, P. (1997) Actinomycosis oto-mastoiditis. *Journal of Laryngology and Otology* **111**: 1069–1071.
- Burden, J. R. (1989) Actinomycosis. *Journal of Infectious Diseases* **19**: 95–99.
- Chang, C. Y., Lalwani, A. K., Lanser, M. J. (1993) Actinomycosis of the external auditory canal. *Otolaryngology and Head and Neck Surgery* **108**: 73–75.
- Das, D. K. (1994) Actinomycosis in fine needle aspiration cytology. *Cytopathology* **5**: 243–250.
- Donald, F. E., Firth, J. L., Holland, I. M., Hope, O. T., Ispahani, P., Punt, J. A. (1990) Brain abscess in the 1980s. *British Journal of Neurosurgery* **4**: 265–271.
- Friedmann, I. (1986) In *Nose, Throat and Ears*. Churchill Livingstone, Edinburgh p, 359.
- Gattaz, G., Naujoks, J. H. (1984) Zur Aktinomykose des Mittelohres. *HNO* **32**: 65–68.
- Hoshino, T., Amano, H., Tanaka, K. (1996) Actinomycosis of the middle ear. *European Archives of Otorhinolaryngology* **253**: 378–380.
- Kainz, J., Friedrich, G. (1988) Manifestations of actinomycosis of the head and neck. *HNO* **36**: 493–497.
- Lester, F. T., Juhasz, E. (1990) Actinomycosis of the ear. *Ethiopian Medical Journal* **28**: 41–44.
- Olson, T. S., Seid, A. B., Pransky, S. M. (1989) Actinomycosis of the middle ear. *International Journal of Pediatric Otorhinolaryngology* **17**: 51–55.
- Shelton, C., Brackmann, D. E. (1988) Actinomycosis otitis media. *Archives of Otolaryngology and Head and Neck Surgery* **114**: 88–89.
- Smego, R. A. (1987) Actinomycosis of the central nervous system. *Review of Infectious Diseases* **9**: 855–865.
- Tabaqchali, S. (1988) Anaerobic infections in the head and neck region. *Scandinavian Journal of Infectious Diseases (Suppl 57)*: 24–34.
- Tarabichi, M., Schloss, M. (1993) Actinomycosis otomastoiditis. *Archives of Otolaryngology and Head and Neck Surgery* **119**: 561–562.

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