Primary tuberculous otitis media

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The tubercle bacillus was discovered by Koch in 1882, and the following year it was isolated from a middle-ear lesion (2). Around the turn of the century 3–5 per cent of all cases of suppurative otitis media were found to be caused by this bacillus (1, 3), but after the introduction of antituberculous medication the tuberculous middle-ear infections have become rare. At the Royal National Throat, Nose and Ear Hospital, London, tuberculous otitis media was found in 11 out of 23,000 examined patients with suppurative otitis media, or in 0·05 per cent, during the period 1950–1959. In 5 of these patients it was not possible to demonstrate signs of present or past tuberculous infection in other organs, while the remaining 6 had a history of tuberculosis, in most cases pulmonary (Jeanes *et al.*, 1960).

Early diagnosis of tuberculous infection in the middle ear is of the utmost importance, as prompt institution of antituberculous treatment has a decisive influence upon the course and possible complications.

Often the diagnosis is delayed when the tuberculous middle-ear infection is the primary focus. It seems to be difficult to isolate Koch's bacillus on culture from the middle-ear discharge, presumably because of superinfection (Jeanes, Theissing, 1966). Therefore, the diagnosis must be based primarily upon the clinical findings. There are no definite pathognomonic signs, but certain characteristics may be emphasized. The clinical picture is characterized by aural discharge, no or very little pain, relatively severe hearing impairment, and tinnitus. Otoscopy shows the drum, before perforation, to be swollen, rather yellowish, hyperaemic, with dilated vessels. If perforation has occurred, there are at times characteristic multiple perforations (20–30 per cent) (Jeanes, Theissing.) In more advanced cases there may be a tuberculous abscess, possibly with fistulation behind the ear.

X-rays of the mastoid process often show the pneumatization to be less reduced than in non-specific chronic otitis media (Theissing).

A positive Moro or Mantoux test is of diagnostic value only in infants. False negatives occur occasionally in spite of bacteriologically confirmed middle-ear tuberculosis (Theissing).

The most reliable diagnosis is obtained by microscopic examination and culture from granulation tissue removed surgically (Jeanes, Theissing).

The course of tuberculous otitis media depends upon the patient's immunity condition. In infants having little or no immunity the entire middle and inner ear may rapidly undergo necrosis. Facial palsy is common (Theissing).

In older children and adults the course is usually subacute, and complications are rare. Propagation to the inner ear, if it does occur, manifests itself by slowly progressing irreversible hearing loss, first of the high tones, as a result of cochlear destruction. Involvement of the labyrinth is rare in older children and adults, but transient, irritative otogenic vertigo is often observed. Blood-borne dissemination may occur and entail intracranial complications. The dura mater constitutes an extremely resistant barrier and prevents direct propaga-

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tion to the brain (Theissing). A generalized dissemination from a primary middle-ear tuberculosis is extremely rare (Theissing).

The treatment consists primarily in antituberculous medication using streptomycin, pararaminosalicyclic acid, and isoniazid. This treatment is usually sufficient in uncomplicated middle-ear tuberculosis diagnosed early in the course. In more severe cases, with necrosis of bony tissue, operative cleansing of the ear is required (Theissing). Lastly, tympanoplasty may be considered in cases of major perforations of the drum which do not show any tendency to spontaneous healing.

Case report

The patient, a 51-year-old woman, was referred by an otological practitioner as a case of right-sided subacute suppurative otitis media. Her history was negative except for varices of both legs, which had been treated by operation in 1953. No family history of hereditary diseases, and no known cases of tuberculosis in the family or environment. At admission the patient stated that 3 months ago, during an attack of pleurisy, she had noticed marked hearing impairment in the right ear. Ever since, there had been discharge from the right ear and tinnitus, but no actual pain or dizziness. The pleurisy had rapidly subsided. The aural disease was treated by her otologist by irrigation and penicillin, but this treatment proved ineffective.

On admission the patient was in a good general condition. Her temperature, E.S.R., Hb, W.B.C., and differential count were normal. Chest radiography showed old pleural changes on the right, but no other abnormalities, in particular no signs of active tuberculosis.

Otoscopy showed the right drum to be inflamed with slightly blurred landmarks. In the upper posterior quadrant there was a circular, sharp-edged central defect, 3 mm. in diameter. The pars flaccida was intact. No reaction over the mastoid process. Fistula sign negative. Otoscopy of the left ear showed no abnormalities (Fig. 1).

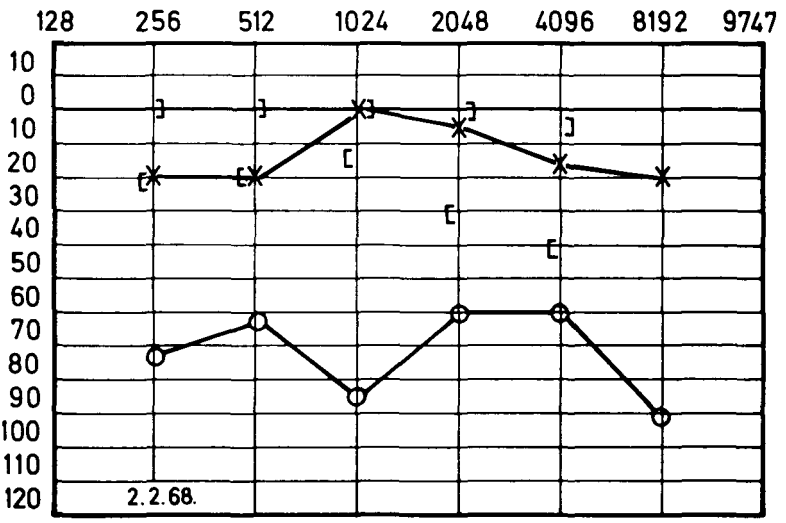


FIG. 1.

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Culture from the right ear revealed *Staph. aureus*. The patient was put on antibiotic medication (Fucidin^{R} and Lucopenin^{R}). The discharge from the right ear stopped, but returned 2 days after the antibiotic medication was discontinued. Moreover, a new perforation was seen anterior to the first one. Owing to the continued discharge, resection of the right mastoid process was performed one month after admission. The operation revealed a large system of cells which were normal throughout, except close to the antrum where a pad of granulations was situated at the floor next to the incus. Pus was scanty. During the operation the malleus and incus were seen to be mobile and in satisfactory contact. Histological examination showed the granulation tissue to be of polypoid structure, abundantly vascularized with acute to chronic inflammation; no malignancy and no signs of specific inflammation.

Postoperatively the patient was treated with irrigations of the ear and Doctacillin^{R} (ampicillin), 250 mg. twice daily. There was scanty discharge which gradually decreased, and the patient was allowed to leave the hospital, to have continued irrigations by her own otologist. Tympanoplasty was to be performed when the ear had remained dry for 3 months.

When re-admitted 3 months later the patient complained of bilateral aural discharge, hearing impairment (Fig. 2), and tinnitus. No pain in the ears and no dizziness. Otoscopy showed on the right a large, semicircular defect in the posterior part of the pars tensa. The edges of this defect were woolly and slightly granulating, and greenish pus was seen. On the left, in the infero-anterior part of the pars tensa, there was a kidney-shaped defect with woolly, slightly granulating edges. Scanty greyish pus. Specimens for culture were obtained from both ears. Shortly after admission the patient had one, brief attack of gyratory vertigo which subsided spontaneously.

After daily bactericidal irrigations (chlorpactin) the aural discharge stopped,

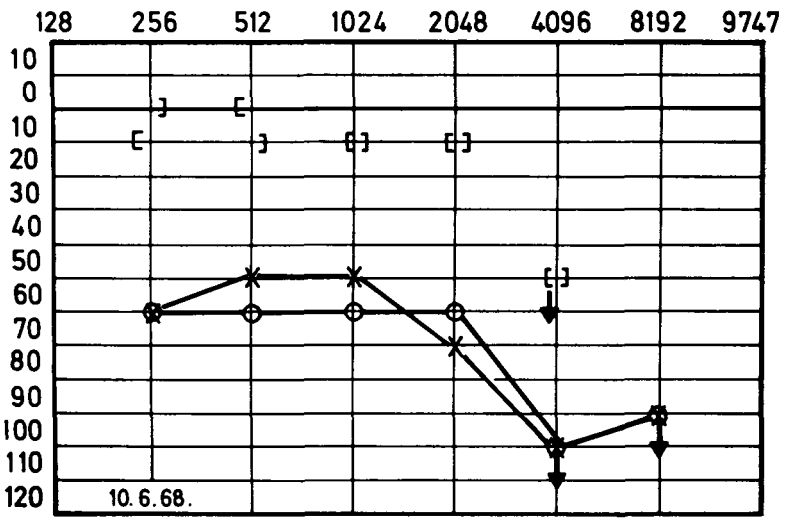


Fig. 2.

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and both ears were now dry. The patient was discharged for out-patient follow-up.

A short time after her discharge, the report on the culture was received from the bacteriological service which had found numerous tubercle bacilli in pus from the right ear.

Now, the patient was admitted to the Chest Department for investigation and treatment. No signs of active or healed tuberculosis were found in other organs. Antituberculous therapy was instituted by the customary principles, using isoniazid, streptomycin, and Tebamin^{R} (phenamisal). On out-patient follow-up here both ears have remained dry, but the tympanic defects show no tendency to heal. Hearing has improved somewhat (cf. Fig. 3). The patient was re-admitted for myringoplasty. On the right side the operation showed the ossicle chain to be intact, and the defect to be covered by a vein inside and by fascia outside. The graft healed, leaving a small semicircular defect posteriorly. Six months later a type I myringoplasty was done on the left ear with a good result. Figures 4 and 5 illustrate the hearing improvement after the anti-tuberculous treatment and myringoplastic operations.

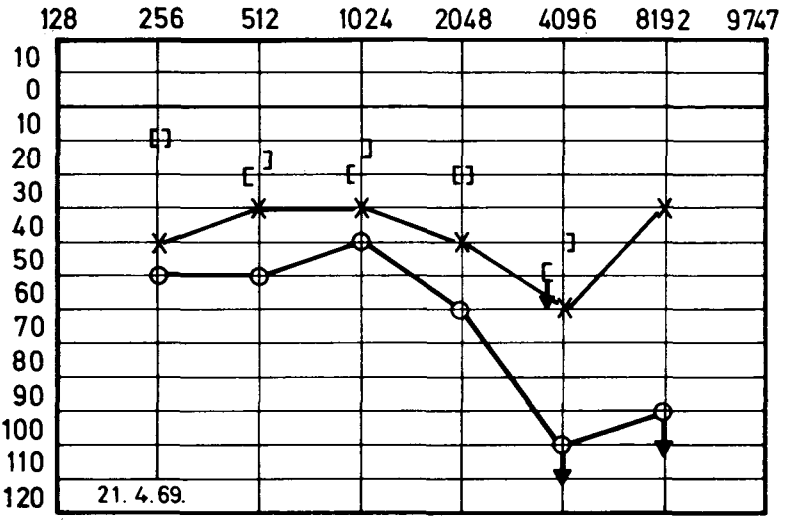


FIG. 3.

Discussion

Primary tuberculous otitis media is extremely rare. The present case exhibited the typical clinical appearances of aural discharge, no pain, marked hearing impairment with a large air-bone gap, tinnitus, and two perforations of the right drum. The persistent discharge from the right ear in spite of treatment according to the usual principles gave rise to a suspicion of tuberculous infection, and the diagnosis was confirmed by cultures. It is striking that microscopic examination of granulation tissue removed in the course of operation on the right ear did not show any signs of specific inflammation (Theissing). Culture from the left ear did not reveal tubercle bacilli, but the clinical course of

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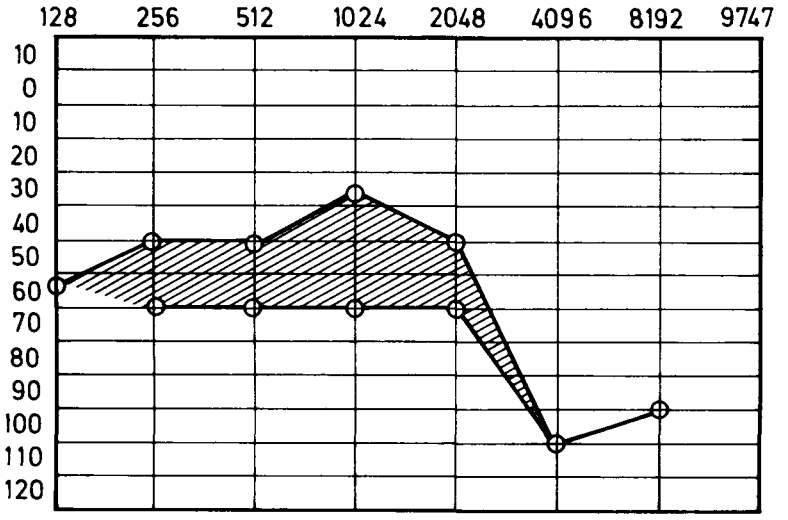


FIG. 4.

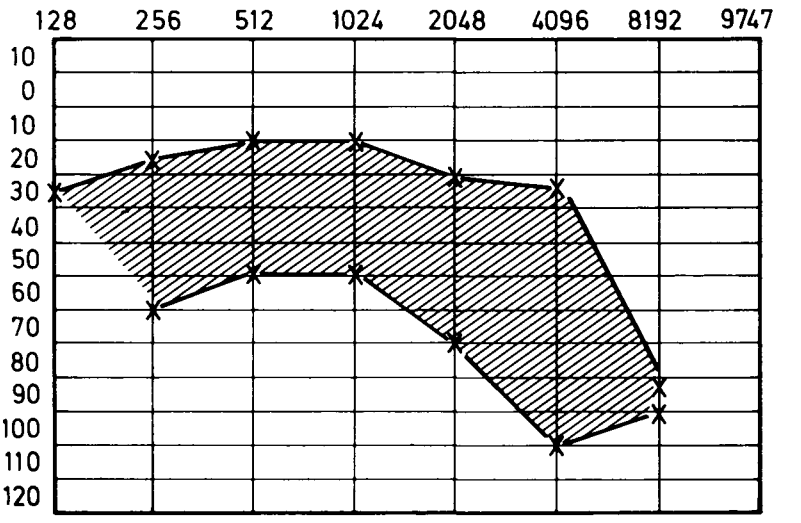


FIG. 5.

discharge, severe hearing loss, no pain, and prompt response to antituberculous therapy speaks for a tuberculous aetiology, also on the left. Figures 4 and 5 show the dramatic hearing improvement after antituberculous therapy and myringoplasty and illustrate the good therapeutic possibilities when the correct diagnosis is made and adequate treatment instituted.

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Summary and conclusion

A case of bilateral primary tuberculous otitis media with severe bilateral hearing impairment is reported. The clinical and diagnostic difficulties relating to this disease are described. The case illustrates the favourable therapeutic possibilities when the diagnosis is made.

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