Lesson of the Week

Recurring meningitis: beware the normal looking ear

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We report two cases of recurrent meningitis eventually found to be due to a concealed subarachnoid fistula in the middle ear. In each case initial assessment of the ears by physicians and ear, nose, and throat surgeons did not show an otological abnormality that they thought would account for the meningitis.

Case 1
A 74 year old woman with no history of trauma had four episodes of meningitis, one meningococcal and three pneumococcal in origin, within three years. After the second and third attacks extensive investigations including computed tomography and ear, nose, and throat assessment failed to show a cause for the infection. Throughout she had no symptoms or history of ear disease; results of otoscopic examination of her tympanic membrane were normal, and her hearing on audiological testing was reasonable for her age.

She suffered her fourth attack of meningitis in October 1985, and on this occasion tomography of the mastoid showed a radiolucent defect in the left mastoid air cells, which was not seen on plain radiography or computed tomography. Exploration of the mastoid showed that the middle fossa dura had prolapsed into the mastoid with no bony covering, and a leak of cerebrospinal fluid was identified. The defect was repaired from below using temporalis fascia and a free muscle graft, and she was well nine months after surgery.

Case 2
A 30 year old woman had suffered 10 episodes of pneumococcal meningitis since the age of 2. She had been totally deaf in her right ear and partially deaf in her left ear since her second episode of meningitis at the age of 5. There was no history of trauma. In 1961 and 1976, after attacks of meningitis, she complained of otalgia; on each occasion the right mastoid was explored surgically but no abnormality was found to explain the otalgia or meningitis. On recovery from the 10th episode of meningitis in January 1986 she did not have any symptoms referable to either ear, and apart from the old right postauricular scar the tympanic membrane appeared normal; her loss of hearing had remained the same for 25 years.

Previous extensive investigation including computed tomography had not shown any cause for the meningitis, but after the 10th episode computed tomography showed an abnormality at the petrous apex. This was further investigated by air mastography, which showed loculation of air in the subarachnoid space around the internal auditory meatus and what seemed to be a bubble of air extradurally, suggesting a break in the dura. Right suboccipital craniectomy and exploration of the right posterior fossa and cerebellopontine angle showed no evidence of a dural defect. Under the same anaesthetic the old mastoid cavity was explored, showing a bony defect on the middle fossa dura, which was thin, scarred, and covered with granulation tissue. The defect was repaired from below using temporalis fascia and a free muscle graft. After the operation she remained well.

Discussion
Bacterial meningitis results from the interplay of many factors, not all of them recognised or understood. Of these factors, the virulence of the infective organism and the competence of the patient’s immune defence mechanisms and of the meningeal covering are of prime importance. Compromise of these last two factors by disease or its treatment may permit access to any bacteria, including those not pathogenic to man in normal circumstances.

In cases of recurrent meningitis a careful search should be made for a communication between the central nervous system and the exterior. In some cases the defect is obvious, but, as shown by our two cases, it may be exceptionally difficult to find, even with the most sophisticated radiological investigations. The lack of otological symptoms and signs does not necessarily exclude the ear as source of recurrent infection.

References

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Can air conditioning systems in coaches cause legionnaires’ disease?

The organism of legionnaires’ disease is transmitted by small water droplets thought to come from contaminated cooling water that inadvertently leaks into the atmosphere and is discharged into the area being air conditioned. The apparatus carried on coaches works on an entirely different principle. There is no contaminated water reservoir to leak into the air of the coach. Thus there is no specific risk of legionnaires’ disease developing in the air conditioning systems in coaches, buses, or trains.—PETER F MITCHELL, FRCS, consultant physician, London.