

Meningitis from canine *Pasteurella multocida* following mastoidectomy

P. F. DAMMEIJER, A. W. McCOMBE (Liverpool)

Abstract

A case of *Pasteurella multocida* meningitis, following a mastoidectomy is presented. The association of close contact with pets, many of which harbour *Pasteurella multocida* as part of their normal buccal flora. This case confirms the potential benefit of taking an ear swab prior to mastoid surgery and in seeking an appropriate 'pet' history.

Introduction

Pasteurella multocida is a small Gram negative coccobacillus, commonly found as a commensal in the oral flora of many animals including most dogs and cats.

It is a major pathogen in wound infections caused by animal bites and scratches and can cause cellulitis, abscess, osteomyelitis, septic arthritis and a variety of other infective conditions.

Meningitis caused by *Pasteurella multocida* is very rare. We should like to report the first case of its occurrence following a modified radical mastoidectomy.

Case report

In January 1990, a fit and well 42-year-old school teacher with no significant past medical or drug history, was admitted to the Royal Liverpool Hospital for a re-exploration of his left mastoid cavity for a recurrent cholesteatoma. An earlier cortical mastoidectomy had been performed in 1988 when a small localized attic cholesteatoma had been removed. This cavity was converted to a modified radical mastoidectomy and all the cholesteatoma was removed. His dura was exposed above the additus and in the sinodural angle by the more recent surgery.

There was no sign of any leak of CSF to indicate that the dura had been breached. A BIPP pack was placed in the cavity at the end of the operation.

Twenty-four hours later the patient developed a pyrexia of 38.5°C, rigors, headache and neck stiffness. Examination was otherwise normal and a provisional diagnosis of meningitis was made. Blind treatment was commenced with intravenous cephalosporin and metronidazole following a lumbar puncture, blood cultures and a full blood count. His white cell count displayed a leucocytosis (80 per cent neutrophils); no organisms were seen in the CSF, at this time. His condition steadily improved over the next 48 hours at which time his CSF culture grew *Pasteurella multocida*, sensitive to penicillin. His antibiotics were altered accordingly and he continued to make an uneventful and complete recovery. He was discharged home 10 days after his operation. He remains well at clinical follow-up with no neurological sequelae.

Prior to his discharge, further questioning revealed that he had two pet dogs with whom he came into frequent and very close contact, often allowing them to lick his face and ears!

Comment

Meningitis caused by *Pasteurella multocida* is rare and to

date there are about 25 cases in the literature in non-immunocompromised patients. Most cases so far have occurred as the result of direct trauma such as a bite or scratch. There has been one previous report of a *Pasteurella* brain abscess following mastoidectomy (Svendson, 1947) but our case represents the first recorded case of *Pasteurella multocida* meningitis following mastoidectomy.

Currently *Pasteurella multocida* infections are being recognized with increasing frequency (Weber *et al.*, 1984; Rhodes, 1986). This may reflect an improvement in culture techniques and perhaps a real increase in the incidence of these infections. It is also being appreciated that *Pasteurella* may exist as a commensal in healthy humans who have had close exposure to animals (Stern *et al.*, 1981).

Pasteurella multocida has been the organism cultured in cases of cerebral abscess and subdural empyema associated with chronic otitis media and an ethmoid polypectomy respectively (Harris *et al.*, 1953; Stern *et al.*, 1981). These patients were in close contact with their pets.

Meningitis is a well recognized complication of mastoidectomy especially when the dura has been exposed as in our case (Paperella and Shumrick, 1980).

One can postulate that the organism was present as a harmless commensal in the ear of our patient pre-operatively and that the operation, by breaching anatomical boundaries, upset the existing natural balance and allowed the organism access to the meninges. The presumed source of the organism in this case being our patient's dogs. However we have not cultured the animals' saliva.

Fortunately *Pasteurella* is sensitive to a number of antibiotics including penicillin and the cephalosporins; appropriate treatment was instituted early, allowing a complete and uneventful recovery, although our patient's hospital stay was prolonged by eight days.

A chronically infected ear provides an ideal environment for a variety of organisms (Harker and Koontz, 1987), including as our case suggests, *Pasteurella multocida*. As the organism is common in domestic animals and so many of our patients have pets, this case led us to the conclusion that a 'Pets history' and where appropriate a pre-operative ear swab would be of potential benefit, to anticipate or avoid complications in patients about to undergo mastoidectomy.

References

Harris, B., Veazie, L., Lehman, W. L. (1953) Fatal cerebral

- abscess caused by *Pasteurella multocida*. *Western Journal of Surgery, Obstetrics and Gynaecology*, **61**: 237–8.
- Harker, L. A., Koontz, F. P. (1977) Bacteriology of cholesteatoma: clinical significance. *Otorhinolaryngology Head and Neck Surgery*, **683–86** (July/August).
- Paperella, M. M., Shumrick, D. A. (1980) *Otolaryngology* Vol 2, second edition. WB Saunders Company: Philadelphia, p 1534.
- Rhodes, M. (1986) *Pasteurella multocida* meningitis in a dog lover (or don't kiss pets). *Journal of the Royal Society of Medicine*, **79**: 747–748.
- Stern, J., Bernstein, C. A., Whelan, M. A., Neu, H. C. (1981) *Pasteurella multocida* subdural empyema. *Journal of Neurosurgery*, **54**: 550–552.
- Svendson, M. (1947) Brain abscess caused by *Pasteurella septica*. *Acta Pathologica et Microbiologica Scandinavica*, **24**: 150–154.
- Weber, D. J., Wolfson, J. S., Swartz, M. N., Hooper, D. (1984) *Pasteurella multocida* infections. Report of 34 cases and review of the literature. *Medicine (Baltimore)*, **63**: 133–154.

Address for correspondence:
Mr A. W. McCombe,
Department Otorhinolaryngology,
University of Liverpool,
PO Box 147,
Liverpool L69 3BX.

Key words: Meningitis; *Pasteurella multocida*; Mastoid surgery; Bacteria