fluid protein and glucose concentrations were 0.7 g/l and 0.3 mmol/l (5.4 mg/100 ml) respectively (serum glucose concentration was 5.2 mmol/l (94 mg/100 ml), and Gram staining showed numerous Gram negative coccobacilli. Culture yielded a profuse growth of *H influenzae* type b, and this was sensitive to sulphamethoxazole, trimethoprim, and latamoxef and resistant to ampicillin and chloramphenicol by the comparative method of disc diffusion. Resistance to ampicillin was confirmed by demonstrating production of β lactamase (Intralactam Strip, Mast Laboratories). Resistance to chloramphenicol was reported the following day after it had been rechecked. A further sample of cerebrospinal fluid obtained on day 3 showed no change from the initial sample, but a sample obtained on day 4 (after treatment had been changed) contained only 0.435×10^9 white blood cells/l, and culture yielded no growth.

Minimum inhibitory concentrations of the drugs were ampicillin 128 mg/l, chloramphenicol 12 mg/l, and latamoxef 0.06 mg/l. An inoculum of 10^5 colony forming units was used, and the medium was Levinthal's. Chloramphenicol acetyltransferase production was shown by the method of Slack *et al.*³

Throat swabs were taken from family contacts but failed to yield a growth of *H influenzae*.

Comment

Although resistance of capsulate strains of *H influenzae* to ampicillin is now fairly common, resistance to chloramphenicol is rare. Only one case of haemophilus meningitis due to a chloramphenicol resistant strain has been reported in this country, and this strain was sensitive to ampicillin.⁴ As it is common practice to treat cases of haemophilus meningitis, at least initially, with a combination of ampicillin and chloramphenicol the isolation of a strain resistant to both of these agents has grave implications for future treatment. Prompt recognition of such resistance is important, and we believe that the method of Slack *et al* for the rapid demonstration of chloramphenicol acetyltransferase production should now be routinely applied to strains of *H influenzae* isolated from patients with meningitis.

We thank Dr D C Turk of the public health laboratory, Sheffield, for confirming the identity of the isolate, and Dr M P E Slack of the bacteriology department, University of Oxford, for determining the minimum inhibitory concentrations.

¹ Uchiyama N, Greene GR, Kitts DB, Thrupp LD. Meningitis due to Haemophilus influenzae type b resistant to ampicillin and chloramphenicol. *J Paediatr* 1980;**97**:421-4.

² Simasathien S, Duangmani C, Echeverria P. Haemophilus influenzae type b resistant to ampicillin and chloramphenicol in an orphanage in Thailand. *Lancet* 1980;iii:1214-7.

³ Slack MPE, Wheldon DB, Turk DC. Rapid detection of chloramphenicol resistance in Haemophilus influenzae. *Lancet* 1977;ii:1366.

⁴ Kinmonth A-L, Storrs CN, Mitchell RG. Meningitis due to chloramphenicol-resistant Haemophilus influenzae type b. *Br Med J* 1978;ii:694.

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District General Hospital, Warrington WA5 1QG

RONAN J P GARVEY, MRCPATH, consultant microbiologist
G PETER McMULLIN, FRCP, consultant paediatrician

Correspondence to: Dr R J P Garvey.

A fishy tale: trout borne *Aeromonas hydrophila* septicaemia

We report a case of septicaemia in a man receiving haemodialysis, from whom *Aeromonas hydrophila* was isolated from blood and a skeletal muscle abscess; the organism was also isolated from trout that had been prepared for him by his wife before helping him insert dialysis needles.

Case report

A 62 year old rector had been receiving haemodialysis for seven years for chronic renal failure. Three days after his last home haemodialysis he was admitted with severe loin pain, fever, rigors, diarrhoea, and vomiting. His history included polyarthropathy with subsequent analgesic nephropathy and multiple urothelial malignancies that had required extensive

surgery. Since starting haemodialysis he had had four episodes of fistula associated *Staphylococcus aureus* (phage type 29/79) septicaemia.

On examination he was confused with a uraemic flap, temperature was 39.5°C, and tender masses were palpable in the left loin, left quadriceps muscle, and above the fistula in his left forearm. White cell count was 20×10^9 /l. A clinical diagnosis of septicaemia with abscess formation was made and empirical treatment begun with intravenous ampicillin and flucloxacillin. The three soft tissue masses continued to enlarge and his condition worsened. After two days an oxidase positive, Gram negative rod was isolated from two blood cultures. It was resistant to ampicillin, carbenicillin, and azlocillin, sensitive to the aminoglycosides and trimethoprim, and was at first thought to be a pseudomonad; later it was identified as *A hydrophila*. Antibiotics were changed to intravenous gentamicin with rapid clinical improvement, and later to oral trimethoprim. One week later the masses in the leg and loin had resolved, but the mass in his left forearm had become fluctuant and required surgical drainage. *A hydrophila* with the same sensitivity pattern as the isolates from the blood was grown in pure culture from the 20 ml of pus obtained. Four days later he developed a vasculitic, purpuric rash that settled spontaneously over the next two weeks and his subsequent recovery was uneventful.

The patient recalled that his wife had prepared trout, obtained fresh from a fish farm, before helping him insert dialysis needles shortly before he became unwell. A second trout was obtained from the family freezer, one gram of its flesh homogenised in broth, and duplicate serial 10-fold dilutions of this subcultured to blood and MacConkey agars. The total aerobic bacterial count was 3×10^9 colony forming units/g, of which 1.5×10^9 were *A hydrophila*. Strains from the patient were identified as subspecies *hydrophila* but that from the trout as subspecies *anaerogenes*.

Comment

Septicaemia is the second most common cause of death in patients receiving haemodialysis¹ and is usually due to *Staph aureus* associated with fistula or shunt infections. *A hydrophila* is widely distributed in fresh and stagnant waters and is a well recognised pathogen of cold blooded animals. It has been reported as a rare cause of four syndromes in man: cellulitis or wound infection associated with exposure to water or soil, acute diarrhoea of short duration, septicaemia in immunocompromised patients, and various local conditions including surgical wound and urinary tract infections, meningitis, otitis media, peritonitis, and endocarditis.² In several reports *A hydrophila* septicaemia has been followed by metastatic abscess formation, particularly in skeletal muscle, and by the development of a vasculitic rash similar to the ecthyma gangrenosum of *Pseudomonas aeruginosa* septicaemia.

The oxidase positive *A hydrophila* is frequently mistaken for *Ps aeruginosa* on initial isolation, but it is usually resistant to the anti-pseudomonal penicillins such as carbenicillin and azlocillin by virtue of a β -lactamase.³ Two other reports of *A hydrophila* sepsis in home dialysis patients suggested contamination of the dialysis equipment or contact of recently used vascular access sites with flood water as sources of infection, but results of environmental cultures in these cases were negative.^{4,5} In our patient organisms were almost certainly transferred from the fish to the patient's fistula when his wife was inserting the dialysis needles. It seems unlikely that *A hydrophila* survived grilling, although the history of diarrhoea makes the enteric route of infection a possible alternative.

We thank Dr A L Furniss, of the Public Health Laboratory, Maidstone, for biotyping the organisms and Dr A J Wing for permission to report this case.

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⁵ Ramsay AM, Rosenbaum BJ. Aeromonas hydrophila sepsis in a patient undergoing hemodialysis therapy. *JAMA* 1978;**239**:128-9.

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St Thomas's Hospital Medical School, London SE1 7EH

M FARRINGTON, MB, lecturer, department of microbiology
H H GRAY, MB, MRCP, registrar, department of medicine

Correspondence to: Dr M Farrington.