Short reports

Haemophilus influenzae type b meningitis resistant to ampicillin and chloramphenicol

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SUMMARY We report two cases of meningitis due to *Haemophilus influenzae* type b resistant to ampicillin and chloramphenicol. In one child the meningitis was preceded by pneumonia and pleural effusion. Both children responded to treatment with cefotaxime.

Since 1980 eight cases of meningitis due to *Haemophilus influenzae* type b resistant to ampicillin and chloramphenicol have been reported. Three occurred in the United States,¹ four in Thailand,² and one in Great Britain.³ We report here two cases identified in Mexico, both of which responded to treatment with cefotaxime.

Case reports

Case 1. A 17 month old girl presented in April 1984 with pneumonia and pleural effusion. *H. influenzae* type b (sensitive to both ampicillin and chloramphenicol) was isolated from the effusion. She was given chloramphenicol for 13 days with good recovery. One day after the antibiotic had been stopped fever recurred, accompanied by irritability and convulsions. She was stuporous and disclosed a positive Brudzinski's sign. The spinal fluid had a white blood cell count of 902/mm³, and the glucose concentration was 139 mmol/l (2.5 mg/100 ml). Chloramphenicol (100 mg/kg/24h) was started with clinical improvement of the patient. Culture yielded *H. influenzae* type b, sensitive to ampicillin and chloramphenicol by the standardised disc diffusion method.

On the fifth day of treatment fever, meningism, and convulsions returned. A lumbar puncture showed a white blood cell count of 1650/mm³ and a glucose concentration of 111 mmol/l (2 mg/100 ml). *H. influenzae* type b resistant to ampicillin and chloramphenicol but sensitive to cefotaxime was

cultured. Cefotaxime (200 mg/kg/24h) was administered for 14 days, and the patient recovered satisfactorily. Follow up at six months showed spastic paralysis.

Case 2. A previously healthy 6 month old boy presented in September 1984 with a seven day history of rhinopharyngitis and two days of fever and irritability. On examination he was found to be lethargic and to have neck rigidity and Kernig's sign. Lumbar puncture showed a white blood cell count of 4050/mm³, and a glucose concentration of 583 mmol/l (10.5 mg/100 ml). Coagglutination test in spinal fluid was positive to *H. influenzae* type b, and treatment with chloramphenicol (100 mg/kg/24h) was begun. After three days of treatment his condition remained unchanged and a further test of the cerebrospinal fluid showed a white blood cell count of 6457/mm³ and a glucose concentration of 55.5 mmol/l (1 mg/100 ml). *H. influenzae* type b isolated from both cerebrospinal fluid and blood samples was resistant to ampicillin and chloramphenicol yet sensitive to cefotaxime. Treatment was changed to cefotaxime 200 mg/kg/24h for 14 days, and the patient underwent an uneventful recovery. No sequelae were found at follow up six months later.

Table Antimicrobial susceptibility of two strains of *Haemophilus influenzae* type b resistant to ampicillin and chloramphenicol

Antibiotic	Case 1		Case 2	
	MIC (mg/l)	MBC (mg/l)	MIC (mg/l)	MBC (mg/l)
Ampicillin	> 250.0	> 250.0	> 250.0	> 250.0
Chloramphenicol	62.5	250.0	31.2	125.0
Cefotaxime	1.9	3.9*	0.2	0.2

MIC=minimum inhibitory concentration; MBC=minimum bactericidal concentration.

Antimicrobial susceptibility

Strains of *H. influenzae* type b isolated from spinal fluid in both cases were resistant to ampicillin and chloramphenicol by disc diffusion test. Minimum inhibitory concentrations and minimum bactericidal concentrations were determined in duplicate by standard tube dilution methods using heminmenadione broth culture and inoculum of 10^5 colony forming units. The results are shown in the Table.

Discussion

In 1981, 14% of the strains of *H. influenzae* b found in Mexico were resistant to ampicillin, but no resistance to chloramphenicol had been found.⁴ Chloramphenicol was therefore the drug of choice for severe infections caused by this micro-organism. Clinicians and microbiologists need to be warned of the recent emergence of strains resistant to both ampicillin and chloramphenicol throughout the world to recognise such cases promptly and be able to provide appropriate treatment.

Resistance of *H. influenzae* b to ampicillin and chloramphenicol is due to plasmid R responsible for β -lactamase and acetyltransferase, respectively.¹ Such resistance strains may therefore increase. As other authors suggest,^{5,6} we believe that third

generation cephalosporins such as cefotaxime or latamoxef (moxalactam) should be considered the drugs of choice in the treatment of such patients.

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Suspected rotavirus encephalitis

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SUMMARY A 9 month old boy with suspected rotavirus encephalitis developed infantile spasms and delayed psychomotor development. Anti-rotavirus antibodies in cerebrospinal fluid, blood, and faeces were studied.

Rotavirus is an important agent of acute viral gastroenteritis in children.¹ There are few reports of central nervous system involvement associated with rotavirus infection. Salmi *et al* described two patients, one of whom developed fatal Reye's syndrome and the other encephalitis with slow recovery.² Afebrile convulsions in patients with rotavirus gastroenteritis have been noted especially in Japan.^{3,4} It is not clear whether the aetiology of central nervous system involvement is the direct

invasion of the virus into the central nervous system. The present paper describes a case of acute encephalitis accompanying rotavirus gastroenteritis. During the course of disease, the patient suffered infantile spasms and delayed psychomotor development as sequelae. Rotavirus antigens and antibody titres were examined in sera, cerebrospinal fluid (CSF), and stool specimens.

Materials and methods

Complement fixation test against human rotavirus, Odelia strain, serotype 4, was determined by micro-complement fixation method. Enzyme linked immunosorbent assay (ELISA) for detecting anti-rotavirus IgG, IgA, and IgM antibodies was carried out by methods described previously.⁵ Sera were diluted 100-fold and CSF 10-fold with buffer.