
Fatal meningitis in a child due to a multi-drug resistant *Streptococcus pneumoniae*

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Introduction

Streptococcus pneumoniae is the commonest cause of community acquired bacterial infection in young children and the elderly [1]. The recent global emergence of drug resistant *Streptococcus pneumoniae* (DRSP) has become a concern due to clinical failures in patients treated with routinely used antibiotics.

Penicillin was the mainstay of treatment since its

discovery but penicillin intermediate-resistant strains appeared in 1967, followed a decade later by highly penicillin-resistant and multi-drug resistant strains [2]. Recently, a novel penicillin, cephalosporin, and macrolide resistant strain was isolated in Taiwan [3]. Resistance to vancomycin is yet to appear [2]. We report the first case of multi-drug resistant *Streptococcus pneumoniae* isolated from Sri Lanka.

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Case report

A male infant from the Central Province was admitted to the paediatric unit of the Teaching Hospital, Kandy in September 2005. At 7 months he was treated for an ear discharge, and since then had several courses of antibiotics for upper respiratory tract infections.

The child presented to the local hospital with a 5 days' history of fever, ear discharge and cough. In hospital he had developed generalised seizures, was clinically diagnosed to have pyogenic meningitis, and started on benzylpenicillin and chloramphenicol. On day 3 of admission he developed a right-sided hemiparesis and remained febrile. He was then transferred to our hospital for neuroimaging and further management.

On admission to our hospital, he was conscious but drowsy with an axillary temperature of 40°C. The anterior fontanelle was bulging. Cefotaxime was added to the antibiotic regimen after taking blood for culture, but lumbar puncture was performed later. Following a continuous generalised seizure he was admitted to the intensive care unit and ventilated, but he became deeply unconscious and later hypothermic. Ultrasonography and computed tomography of the head excluded focal brain lesions.

A highly penicillin-resistant and multi-drug resistant *Streptococcus pneumoniae* was isolated from the blood after 24 hours of aerobic incubation and confirmed by standard methods. Vancomycin was then added, and benzylpenicillin and chloramphenicol were omitted. Cerebrospinal fluid examination confirmed pyogenic meningitis. The infant did not improve and died after 6 days.

The minimum inhibitory concentration (MIC) for penicillin using broth dilution method was >2mg/l. The strain was resistant to oxacillin, chloramphenicol, erythromycin, cotrimoxazole and cefotaxime, and sensitive to vancomycin, by Clinical and Laboratory Standard Institution (CLSI) method. The cefotaxime MIC could not be performed due to unavailability of resources.

Discussion

The emergence of DRSP has become a major concern due its clinical implications. Treatment failures are common with meningitis and otitis media, even with strains with reduced susceptibility to penicillin [5].

A multi-centre surveillance study for pneumococcal resistance among clinical isolates in Asia, the ANSORP study group in 2001 [6] has shown that the majority of these strains are penicillin resistant, especially in children <5 years. Pneumococcal isolates from Sri Lanka have shown the second highest prevalence for pneumococcal

resistance in the region in that study, with the majority of strains being intermediate-resistant. Furthermore, in comparison with the previous ANSORP studies done in 1996 and 2001 on clinical isolates, and in 1999 on carriage isolates, the prevalence of resistance to penicillin is markedly increasing in Sri Lanka: 41.2% (1996), 71.5% (1999) and 84.7% (2001).

Several studies [5,7] have implicated recent antibiotic use, younger age, attendance at day care centres, and otitis media as markers of DRSP. Recent antibiotic use has been implicated as the strongest risk factor.

This case emphasises three areas that need early attention to control the spread of drug resistant organisms. Rapid identification methods to determine resistant antibiotic patterns, knowledge of local epidemiology of antibiotic resistance, and programmes to promote judicious antibiotic use aiming at both the public and clinicians are extremely important. Studies [5] have shown that such programmes had reduced antibiotic use and emergence of drug resistant strains.

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