PENICILLIN RESISTANT PNEUMOCOCCUS

FARIDA JAMAL
MOTILAL TIRATHRAM
ZAITON HAJI HUSSIN

SUMMARY

*The isolation of a penicillin resistant strain of **Streptococcus pneumoniae** is being reported and indicates the need to screen pneumococcal isolates for resistance towards antibiotics.*

INTRODUCTION

Penicillin resistant pneumococci have been encountered in laboratory surveys and occasional cases in many parts of the world. [1,2,3]

Resistance to other antimicrobial agents and chloramphenicol has also been reported. [4,5] Multiple resistant strains have been responsible for infection with a high mortality rate. [5] To our knowledge, isolation of penicillin resistant pneumococci has not been documented in this region. We report the isolation of a penicillin resistant strain from the throat of an eleven-month old baby boy and the result of screening of his family contacts for a carriage of the resistant strain.

CASE REPORT

An eleven-month old baby boy was admitted to the paediatric ward with the complaints of dry, infrequent cough associated with a running nose and an episode of convulsions. On examination, his temperature was 37.8°C. Throat was not injected. His respiratory and cardiovascular systems were normal. There was no neck stiffness and Kernig's sign was negative. After admission, he had another episode of convulsions, which lasted 2 — 3 minutes. Lumber puncture was done to exclude meningitis and cerebrospinal fluid was submitted for laboratory investigation. Cerebrospinal fluid cytology and biochemistry were normal and culture for bacteria was subsequently negative. Results of other investigations were as follows: TWBC: 6000/ul urine microscopy: Few organisms seen, no pus cells observed. Urine culture:- no significant growth. Throat swab culture yielded a growth of *Streptococcus pneumoniae* which was subsequently found to be resistant to penicillin, with a minimum inhibitory concentration of 2 ug/ml and minimum bactericidal concentration of 4 ug/ml towards it. The strain was non-penicillinase producing when tested with chromogenic cephalosporin. The specimens were processed according to standardized laboratory techniques. [6]

Streptococcus pneumoniae was identified on the basis of sensitivity toward optochin (5 ethyl hydrocupreine hydrochloride) and a positive coagglutination reaction with the phadebact pneumococcus identification Kit (Pharmacia Diagnostics) minimum inhibitory concentration (MIC) was determined by the tube dilution method in Todd Hewitt Broth.

The child had an uneventful recovery. No further convulsions were observed and he was discharged on the second day of admission. Later, throat swab culture results were available. He was called back to

Farida Jamal, MBBS, MSc, MRCPath,
Department of Microbiology.

Motilal Tirathram, MBBS, MRCP,
Department of Paediatrics.

Zaiton Haji Hussin, BSc (Hons),
Department of Microbiology.

The Faculty of Medicine,
Universiti Kebangsaan Malaysia,
Kuala Lumpur.

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the paediatric clinic and treated with oral erythromycin 30 mg/kg body weight in four divided doses for five days. Repeat throat swab and nasal swab cultures collected after two weeks of commencing treatment were negative for *Streptococcus pneumoniae*. Screening of patient's family contacts for the resistant strain yielded negative results.

DISCUSSION

To our knowledge, this is the first report of isolation of a penicillin resistant pneumococcus from this part of the world. Although the strain did not cause invasive disease, its isolation is of epidemiological significance. The MIC of 2 ug/ml towards penicillin is well above 01 ug/ml which is generally the MIC for penicillin sensitive strains. [7] The patient had not been given any medication prior to the isolation of the strains and it is unlikely that the emergence of resistance was associated with previous antibiotic therapy. Attempts made in some studies to link antibiotic resistance with previous antibiotic usage have yielded controversial results. [8] We were unable to isolate the strain from patient's family members. The source and the prevalence of the strains outside this small group remains obscure. Hospital contacts were not included in the screening.

We have been testing pneumococcal isolates for susceptibility towards penicillin since 1977. Although this is the only penicillin resistant strain isolated so far, we recommend that susceptibility towards penicillin is determined for all pneumococcal isolated of clinical significance. This is not unwarranted in view of the high mortality from systemic infections caused by *Streptococcus pneumoniae* and reports of such infections caused by multiple resistant strains from other parts of the world.

REFERENCES

[1] Howard A J, Hince C J and Williams J D. Antibiotic resistance in *Streptococcus pneumoniae* and *Haemophilus influenzae*. *BMJ* 1978, **1**, 1657-60.

[2] Radetsky S, Istre G R, Johansen T L, Parmelee S W, Laver B A, Wiesenthal A M and Glode M P. Multiple resistant pneumococcus causing meningitis: Its epidemiology within a day care centre. *Lancet* 1981, ii: 771-73.

[3] Anderson K C, Manser M S and Dajani A S. Pneumococci relatively resistant to penicillin: A prevalence study in children. *J Pediatr* 1980, **97:** 939-41.

[4] Jacobs M R, Mithal Y, Robins-Browne R M, Gasper M N and Koornhoff H J. Antimicrobial susceptibility testing of pneumococci. Antimicrob agents chemother 1979. **16:** 190-197.

[5] Hansman D. Chloramphenicol resistant pneumococci in West Africa. *Lancet* 1978, **i:** 1102-03.

[6] Stokes J E. Clinical Bacteriology. 4th Edition. Edward Arnold 1975.

[7] Garrod L P, Lambert H P and O'Grady F. Antibiotics and chemotherapy. Fourth edition. Churchill Livingstone, 1975.

[8] Jacobs M R *et al.* Emergence of multiply resistant pneumococci. *N. Engl. J Med* 1978. **299:** 735-40.