PNEUMOCOCCAL DACRYOCYSTITIS

(Three Interesting Cases)

Dr S JOSHI*, Lt Col S GOKHALE+,
Lt Col NK DEBATA+, Sqn Ldr D JOSHI#,
Col M DESHPANDE, VSM**

MJAFI 1995; 51 : 62-64

KEY WORDS : Dacryocystitis; *Streptococcus pneumoniae*.

Introduction

Acute suppurative dacryocystitis or lacrimal abscess is an inflammation of the lacrimal sac or suppuration of the pericyclic tissues. Among various microbial etiologies, *Streptococcus pneumoniae* is an important cause of acute dacryocystitis. The condition often occurs as a consequence of chronic pneumococcal infection of nasal origin. However, it has not been frequently reported from our country.

Ocular involvement by virulent strains of pneumococcus can give rise to hypopyon, conjunctivitis and rarely, dacryoadenitis [1]. However, there is a risk of violent post-operative endophthalmitis after intraocular surgery in patients with asymptomatic chronic dacryocystitis, who harbor virulent strains of pneumococcus. Many of the chronic dacryocystitis patients suffer only from occasional watering from the eyes and hence go undetected.

We report three cases of acute on chronic dacryocystitis caused by *Streptococcus pneumoniae*.

Case 1

A 50-year-old female presented with pain over the left eye of four months duration accompanied with a purulent discharge from the left lower punctum. She had no past history of respiratory tract infection or ocular surgery.

Corrected vision was 6/6 in both eyes. Both eyes were

white and quiet. Direct smear examination of the purulent discharge revealed numerous pus cells and gram positive cocci. The discharge was cultured on 5% sheep blood agar (SBA) under 5% CO₂. Throat and nasal swabs from the patient were also cultured on SBA.

Streptococcus pneumoniae was isolated from the lacrimal discharge and the throat swab. The nasal swab did not yield any pneumococci. These were identified by the characteristic colony morphology, alpha haemolysis, sensitivity to optochin disc (5 µg/disc), bile solubility and the microscopic appearance of gram positive diplococci on Gram stain. Both these isolates were subjected to antibiotic susceptibility testing (AST) by the Strokes method. These were sensitive to penicillin, tetracycline, chloramphenicol and erythromycin and resistant to trimethoprim and sulphamethoxazole.

The patient was managed with oral chloramphenicol for 5 days. The acute symptoms subsided though occasional epiphora persisted which did not necessitate drainage surgery.

Case 2

A 23-year-old male presented with complaints of redness and discharge from the left eye of one year duration. There was no pain or swelling in the eye. He had no previous history of respiratory tract infection or ocular surgery.

On examination, vision was 6/6 in both eyes. Conjunctiva was not congested. There was no tenderness over the lacrimal area. There was a purulent discharge from the lower punctum. The purulent discharge, throat swab and nasal swab were cultured. *Streptococcus pneumoniae* was isolated from the discharge and throat swab but not from the nasal swab. These isolates were sensitive to penicillin, tetracycline, chloramphenicol and erythromycin and resistant to trimethoprim and sulphamethoxazole.

He was treated with oral chloramphenicol with good response followed 4 weeks later by dacryocystorhinotomy (DCR) for persistent epiphora.

*Post Graduate Student, Dept of Microbiology; +Reader, Dept of Microbiology; **Professor and Head of Ophthalmology, AMFC; #Graded Specialist (Ophthalmology), CH (SC); Pune.

Case 3

A 32-year-old male presented with purulent discharge from the left eye, with pain and redness, of two months duration. He had been having such episodes intermittently for the past one year. He had no past history of respiratory tract infection or ocular surgery.

On examination, vision was 6/9 in both eyes. Both the eyes were white and quiet. There was a purulent discharge from the left lower lacrimal punctum along with pain, redness and swelling over the lacrimal area. *Streptococcus pneumoniae* was isolated from the discharge but not from the throat or nose. The isolate was resistant to trimethoprim and sulphamethoxazole and sensitive to penicillin, chloramphenicol, tetracycline and erythromycin.

Acute infection was managed with oral chloramphenicol followed 4 weeks later by nasolacrimal duct intubation surgery. However, the patient had a block of lacrimal drainage passages on syringing during the early post-operative period along with some amount of discharge. This discharge, on plating on SBA, showed a growth of *Staphylococcus aureus*, which was resistant to penicillin, tetracycline, chloramphenicol, trimethoprim and sulphamethoxazole and sensitive to methicillin, gentamicin, erythromycin and norfloxacin. The patient was put on oral ciprofloxacin for 5 days followed by revision surgery wherein the tube was removed and a conventional DCR done which resulted in reduction of epiphora.

Discussion

Streptococcus pneumoniae is a commensal in the nasopharynx of 9% to 38% of asymptomatic people [1,2]. It is rarely isolated from the normal uninfected conjunctiva [3,4]. The normal human lacrimal system effectively bars ascending pneumococcal colonization and infection from the upper respiratory tract [3,4].

Obstruction of the nasolacrimal outflow system may result in tear stasis and predispose to ascending colonization and infection of the lacrimal system and conjunctiva by the normal nasopharyngeal commensals, particularly pneumococci [5]. The reduced oxygen tension may further contribute to the preferential growth of pneumococci [6]. The common causes of nasolacrimal obstruction are congenital, deviated nasal septum, nasal polyp or a hypertrophic inferior turbinate. Pathological obstruction of the nasolacrimal ducts is more common in women (83%) than in men (17%) because of narrower ducts in women [7]. There were two male and one

female patients in the present study; none of the above causes of nasolacrimal obstruction were present in them. In unilateral cases of obstructed nasolacrimal duct, the left side is more commonly affected than the right [7]. All three patients in this study had unilateral dacryocystitis of the left side.

Pneumococcal dacryocystitis is characterised by minimal symptoms like watering but all our patients had symptoms of recurrent purulent discharge from the affected eye varying from 4 months to one year. None of the patients had a history of respiratory tract infection or ocular surgery. Two patients had tenderness over the lacrimal sac. The last case had failed primary drainage surgery and revision surgery resulted in partial relief of epiphora.

In our cases pneumococci, commensal of the nasopharynx, were isolated from the discharge and throat but not from the nose. Perhaps this endogenous infection spreads by droplets from nose and not ascending infection from nose as suggested by Mahajan et al [5]. In a review of pneumococcal ocular infection by Okumoto et al [8], pneumococci were isolated maximally from conjunctivitis cases (50% of cases), followed by 19.9% isolation from infected lacrimal sac. They did not find any particular serotypes to cause ocular infection. Agarwal et al [9] while studying the bacteriology of ophthalmic infections found that out of 22 patients of chronic dacryocystitis, bacteria were isolated in 19, five of them being *Streptococcus pneumoniae*. Lopez et al [10] found *Streptococcus pneumoniae* as the causative agent in 21% of the endophthalmitis cases associated with previously untreated chronic ipsilateral nasolacrimal obstruction.

Streptococcus pneumoniae can cause acute as well as chronic infection. Virulent pneumococcal infection can lead to post operative complications. Awareness of ocular pathogenicity of *Streptococcus pneumoniae*, and its adequate treatment is essential to prevent chronicity as well as post operative complications. All cases of chronic epiphora and acute or chronic dacryocystitis should be

investigated for *Streptococcus pneumoniae* infection before undertaking surgery.

REFERENCES

1. Hendley JO, Sande MA, Stewart PM, Gwaltney JM Jr. Spread of *Streptococcus pneumoniae* in families. Carriage rates and distribution of types. J Infect Dis 1975; 132 : 55-9.
2. Dowling JN, Shee PR, Feldman HA. Pharyngeal pneumococcal acquisitions in "normal" families. A longitudinal study. J Infect Dis 1971; 124 : 9-17.
3. Seal DV, Barrett SP, McGill JL. Aetiology and treatment of acute bacterial infection of the external eye. Br J Ophthalmol 1982; 66 : 357-60.
4. Mahajan VM. Acute bacterial infections of the eye. Their aetiology and treatment. Br J Ophthalmol 1983; 67 : 191-4.
5. Mahajan VM, Bareja U, Prakash K, Ghose S. Pneumococci in ocular disease of children and their treatment. Ann Trop Paediatr 1987; 7 : 270-80.
6. Austrian R. *Pneumococci*. In : Davis BD, Dulbecco R, Eisen HN, Ginsberg HS (eds). Microbiology, Including Immunology and Molecular genetics. 4th ed., New York : JB Lippincott Co 1990 : 515-24.
7. Roper-Hall MJ. In : Stallard's Eye surgery. 7th ed., Bombay : Varghese publishing House, 1989 : 237.
8. Okumoto M, Smolin G. Pneumococcal infections of the eye. Am J Ophthalmol 1974; 77 : 346-52.
9. Agarwal R, Chaudhry R, Mathur SP, Talwar V. Bacteriology of ophthalmic infections with special reference to anaerobes. Indian J Med Res 1992; 95 : 148-51.
10. Lopez PF, Robert AB, et al. Pneumococcal endophthalmitis associated with nasolacrimal obstruction. Am J Ophthalmol 1983; 116 : 56-62.