**CASE REPORT**

Exogenous *Pseudomonas* endophthalmitis: a cause of lens enucleation

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Pseudomonas aeruginosa eye infection, although uncommon, may be a devastating disease if not recognised and treated appropriately, especially in premature infants. The case is presented of a premature baby who lost her right eye from invasive exogenous *Ps aeruginosa* eye infection.

Corneal infection due to *Pseudomonas aeruginosa* can completely destroy vision or lead to severe visual impairment. Damage to the corneal epithelium usually precedes bacterial invasion. When occult injury occurs in semicomatose or comatose patients, or patients too young to communicate, eye infection can develop without warning.

The following case report is presented in order to alert paediatricians to the serious problem of *Ps aeruginosa* corneal infection.

**CASE REPORT**

A female infant weighing 715 g was born at home at 25 weeks gestation by breech vaginal delivery to a 28 year old gravida 4 para 2 mother. She was transferred to the local hospital at the age of 15 minutes where she was found to be hypothermic, bradycardic, and gasping. She was intubated, stabilised, and then transferred to our unit.

She developed moderate respiratory distress syndrome and was treated for seven days with conventional ventilation, receiving two doses of surfactant. She was subsequently started on Infant Flow Driver nasal continuous positive airway pressure (CPAP) until day 65.

In view of the history of prolonged rupture of membranes (four days) and maternal pyrexia, she was treated with intravenous penicillin and gentamicin from birth and completed a five day course despite negative blood cultures. Maternal high vaginal swab taken before delivery was also negative on culture.

She developed physiological jaundice treated with phototherapy from day 3 to day 9 during which time the eyes were not covered with gauze patches. Oral feeds were introduced on day 2 and established by day 20; during this time she had recurrent episodes of abdominal distension, and she was started on total parenteral nutrition through a long line on day 4.

On day 12 she was unwell with temperature instability, hyperglycaemia, and abdominal distension. A full infection screen was performed, the long line removed, and initial treatment with intravenous fluoroquinolone and gentamicin introduced which was modified to ampicillin and gentamicin and continued for 10 days as blood culture grew *Streptococcus faecalis*.

On day 21, her right eye was noted to be sticky. An eye swab was taken and she was started on chloramphenicol eye drops. By day 22 there was a purulent discharge from the right eye and the cornea had become cloudy despite both topical and intravenous antibiotics. An urgent ophthalmological consultation was requested which showed a muco-purulent discharge from the right eye, oedematous red eyelids, a cloudy yellow cornea caused by a corneal abscess involving nearly the entire cornea and preventing any view of the anterior chamber or fundus. The left eye was normal. Further eye swabs were taken from both eyes. The right eye swab grew *Ps aeruginosa* and the treatment was changed, according to the culture and sensitivity result, to ceftazidime and gentamicin IV with ciprofloxacin 0.35% eye drops hourly.

Figure 1 Appearance of both eyes at age 3 months showing small phthisical right eye with opaque vascularised scarred cornea.
Despite this intensive treatment, the eye infection progressed, and on day 34 a gelatinous body, the lens of the right eye, was found on the right cheek. Systemic and topical antibiotics were continued for a total of four weeks, although eye swabs became negative after two weeks of treatment. The site of perforation healed with development of opaque vascularised corneal scar tissue, but the eye did not regain perception of light (fig 1). The left eye remained clinically normal and eye swabs were negative throughout. Swabs from the right eye were negative for *Gonococcus*, *Candida*, and *Chlamydia*. Cultures from blood, cerebrospinal fluid, urine, and respiratory secretions were all negative for *Pseudomonas* and other organisms. Subsequent examinations of the left eye showed retinopathy of prematurity grade 2, which eventually resolved.

Now at the age of 2 years she is developmentally normal. Her right eye has no perception of light, and a referral has been made to the artificial eye service with a view to providing her with a prosthesis. This will hopefully be of some immediate cosmetic benefit and also help to maintain the depth of the conjunctival fornices.

**DISCUSSION**

Although uncommon, *Pseudomonas* conjunctivitis can rapidly progress to an invasive eye infection, with corneal ulceration, perforation, and endophthalmitis, leading to poor vision or blindness.

It is not clear whether corneal epithelial damage preceded the invasive ocular infection in our baby, and, if so, by which mechanism. Our baby was being treated with Infant Flow Driver nasal CPAP, which involves application of the generator, with short prongs, to the nose of the infant. It is held in place with fixation straps, which pass around the head to the bonnet in the horizontal position. We have noticed on several occasions, both in this patient and other babies on Infant Flow Driver nasal CPAP that the straps can become accidentally malpositioned across the eyes, especially when babies are particularly active (fig 2). This suggests a possible mechanism for corneal epithelial injury which has, to our knowledge, never been described in the literature. Although there is no evidence that this mechanism played a part in our baby, this case serves as a reminder that great care must be taken to avoid injuring the cornea when using nasal CPAP and that it is essential to ensure correct positioning of the fixation straps to avoid such injury. Furthermore the size of the bonnet and nasal prongs may need to be changed for larger ones should the baby require nasal CPAP for a prolonged period.

*Pseudomonas* is isolated within a neonatal unit, prompt diagnosis of any sticky eye is indicated. Gram staining of the discharge should be performed urgently and swabs obtained for culture. As *Pseudomonas* spreads easily, both patient isolation and strict handwashing are indicated.

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REFERENCES