

Ophthalmia neonatorum due to *Branhamella* (*Neisseria*) *catarrhalis*

Case reports

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SUMMARY In two cases of conjunctivitis in neonates *Branhamella* (*Neisseria*) *catarrhalis* was identified as the causative organism. A misdiagnosis of gonococcal ophthalmia neonatorum would have been made in both cases if the diagnosis had been based on morphological grounds alone. Thus, full identification of the pathogen in cases of neonatal conjunctivitis is important to avoid the medical and social consequences of a misdiagnosis of gonorrhoea.

Introduction

Branhamella catarrhalis, usually considered a commensal of the upper respiratory tract, has been reported in association with endocarditis,^{1,2} septicaemia,³ meningitis,⁴ urethritis,⁵ sinusitis,⁶ otitis media,⁷ and lower respiratory tract infections.⁸⁻¹⁰ Only one case of neonatal conjunctivitis due to *B. catarrhalis* has previously been reported.¹¹ It has been suggested that a Gram-stained film alone is sufficient to make a diagnosis of gonococcal ophthalmia neonatorum.¹² The two cases reported here illustrate the importance of identifying the pathogen in order to avoid the obvious medical and social consequences of a misdiagnosis of gonorrhoea.

Case report (1)

CLINICAL FEATURES

A male infant weighing 3.8 kg was born in February 1978 after a normal pregnancy and delivery. On the second day postpartum a slight discharge was present in the left eye and was treated by lavage with normal saline. On the third day the discharge had increased and a swab was taken before treatment with chloramphenicol 1% ophthalmic ointment was started. A Gram-stained film of the discharge showed profuse polymorphonuclear leucocytes (PMNL) and intracellular and extracellular Gram-negative diplococci; on the following day a *Neisseria* species was isolated. Intramuscular penicillin 100 000 units twice daily was

given. Cervical and urethral swabs were taken from the mother and a urethral swab from the father. On the fifth day the *Neisseria* species was identified as *B. catarrhalis*. The chloramphenicol eye ointment and the penicillin were continued (the latter for three days only). On the eleventh day the eye discharge had completely cleared and the baby was sent home.

MICROBIOLOGY

The *Neisseria* species was identified as *B. catarrhalis* by its growth on nutrient agar at room temperature and by its failure to produce acid from 1% glucose, maltose, and sucrose.^{13,14} The organism was sensitive to penicillin and chloramphenicol by disc diffusion tests. *Neisseriae* were not isolated from the mother or father.

Case report (2)

CLINICAL FEATURES

A female infant weighing 3.5 kg was born in January 1981 after a normal delivery. The pregnancy was uneventful except for a vaginal infection with *Candida albicans* in the fourth month, which was successfully treated with nystatin. The puerperium was complicated by a dental abscess on the fourth day, which was treated with flucloxacillin. At birth the baby had a mild icterus and "spots" on the skin in the groin. The icterus was treated with phototherapy and the spots with flucloxacillin after a swab had been taken. On the fourth day postpartum the baby developed a discharge in the eyes, which was treated by lavage with normal saline. On the seventh day the discharge had not improved and a swab was taken before treatment with chloramphenicol 0.5%

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eyedrops was started. A Gram-stained film of the discharge showed profuse PMNL and intracellular and extracellular Gram-negative diplococci; on the following day a *Neisseria* species was isolated. Cervical and urethral swabs were taken from the mother. On the ninth day the *Neisseria* species was identified as *B catarrhalis*. As the discharge from the eyes had cleared no further action was taken and the baby was sent home.

MICROBIOLOGY

A Gram-stained film of the "spots" in the baby's groin showed profuse PMNL and Gram-positive cocci. *Staphylococcus aureus* was isolated and was found to be resistant to penicillin but sensitive to flucloxacillin by disc diffusion tests. The *Neisseria* species was identified by its growth on nutrient agar at room temperature, by its failure to produce acid from 1% glucose, maltose, and sucrose, and by its ability to reduce nitrate. It was sensitive to penicillin and chloramphenicol by disc diffusion tests. *Neisseriae* were not isolated from the mother's cervix or urethra.

Discussion

Ophthalmia neonatorum is defined as a conjunctivitis occurring in the first month of life. At one time *N gonorrhoeae* was the commonest causative organism but is now relatively rare.^{12 15} Clinically, ophthalmia due to the gonococcus is not easily distinguished from that due to other organisms. The baby is usually infected during or before delivery (the latter as a complication of premature rupture of the membranes). The incubation period is about 1-3 days. The eye discharge often occurs bilaterally and at first is slight. It may be accompanied by chemosis and swelling of the eyelids.¹⁶ If recognised and treated promptly no complications should occur.

B catarrhalis is a commensal of the upper respiratory tract and occasionally of the female genital tract.¹⁷ Only one case of its isolation from a neonatal conjunctivitis has been reported.¹² It was isolated from the eye of a 3-week-old girl with unilateral conjunctivitis who had received prophylactic tetracycline ophthalmic ointment at birth. The conjunctivitis had been present for at least nine days. It responded to sulphacetamide ophthalmic solution.

In the first of our cases the membranes ruptured 1¼ hours before delivery and *neisseriae* were not isolated from the parents' genital tracts. This suggests that the infection may have been acquired after delivery. In the second case the membranes ruptured 9½ hours before delivery but the presence of established staphylococcal sepsis at birth suggests that the period may have been longer than this. The

failure to isolate *neisseriae* from the mother's genital tract may have been because flucloxacillin had been given for a dental abscess; thus, it is difficult to assess when the baby was infected.

In both these cases and in the case of Spark *et al*¹¹ the *B catarrhalis* appeared to be acting as a sole pathogen although the presence of a coexisting infectious agent, such as a *Chlamydia* species, cannot be excluded. If a diagnosis had been made on the basis of a Gram-stained film alone in these cases, an erroneous diagnosis of gonococcal ophthalmia neonatorum would have been made. Misdiagnosis of gonorrhoea has obvious medical and social consequences and these cases emphasise the importance of fully identifying the organism in suspected cases.

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References

1. Douer D, Danziger Y, Pinkhas J. *Neisseria catarrhalis* endocarditis. *Ann Intern Med* 1977; **86**:116.
2. Pollock AA, Holzman RS. *Neisseria catarrhalis* endocarditis. *Ann Intern Med* 1976; **85**:206.
3. Burnett AK, Easton DJ, Gordon AM, Rowan RM. *Neisseria catarrhalis* septicaemia in acute lymphoblastic leukaemia. *Scot Med J* 1975; **20**:37-8.
4. Arora S, Chitkara NL. Non-pathogenic *Neisseria catarrhalis*: as cause of meningitis. *J Assoc Physicians India* 1973; **21**:855-7.
5. McCague JJ, McCague NJ, Altman CC. *Neisseria catarrhalis* urethritis: a case report. *J Urol* 1976; **115**:471.
6. Brorson JE, Axelsson A, Holm SE. Studies on *Branhamella catarrhalis* with special reference to maxillary sinusitis. *Scand J Infect Dis* 1976; **8**:151-5.
7. Kamme C. Evaluation of the in-vitro sensitivity of *Neisseria catarrhalis* to antibiotics with respect to acute otitis media. *Scand J Infect Dis* 1970; **2**:117-20.
8. McNeely DJ, Kitchens CS, Kluge RM. Fatal *Neisseria (Branhamella) catarrhalis* pneumonia in an immunodeficient host. *Am Rev Resp Dis* 1976; **114**:399-402.
9. Ninane G, Joly J, Piot P, Kratman M. *Branhamella (Neisseria) catarrhalis* as pathogen. *Lancet* 1977; **ii**:149.
10. Percival A, Cornill JE, Rowlands J, Sykes RB. Pathogenicity of and beta-lactamase production by *Branhamella catarrhalis*. *Lancet* 1977; **ii**:1175.
11. Spark RP, Dahlberg PW, LaBelle JW. Pseudogonococcal ophthalmia neonatorum. *Am J Clin Pathol* 1979; **72**:471-3.
12. Armstrong JH, Zacarias F, Rein MF. Ophthalmia neonatorum: a chart review. *Paediatrics* 1976; **57**:884-92.
13. Flynn J, Waitkins SA. A serum-free medium for testing fermentation reactions in *Neisseria gonorrhoeae*. *J Clin Pathol* 1972; **25**:525-7.
14. Cowan ST, Steel KJ. *Manual for the Identification of Medical Bacteria*. 2nd ed. Cambridge: Cambridge University Press, 1975.
15. Johnson D, McKenna H. Bacteria in ophthalmia neonatorum. *Pathology* 1975; **7**:199-201.
16. Duke-Elder S. *System of Ophthalmology*, vol 8. London: Henry Kimpton, 1977; 115-27.
17. Blackwell C, Young H, Bain SR. Isolation of *Neisseria meningitidis* and *catarrhalis* from the genitourinary tract and anal canal. *Br J Vener Dis* 1978; **54**:41-4.