Ophthalmia Neonatorum Caused by Multidrug-Resistant *Neisseria gonorrhoeae*

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Ophthalmia neonatorum is a frequent form of infection in the first month of life and represents a threat to vision [1]. The most common infectious agents are: *Chlamydia trachomatis*, *Neisseria gonorrhoeae* and herpes simplex virus [1]. The infection is usually restricted to the eye but can also spread systemically and cause arthritis, septicemia and meningitis [1].

N. gonorrhoeae was a more common cause of conjunctivitis in the past, but due to the widespread use of 1% silver nitrate following the observations of Credé in 1881, its prevalence as a causative agent of ophthalmia neonatorum has decreased in the industrial world from 10% to 0.3% [2]. As a result of extensive antenatal and postnatal care in industrialized countries and screening for sexually transmitted diseases, prophylaxis has been largely abandoned, including at our medical center.

In Israel, the prevalence of gonorrhoea has been steadily increasing since 1997 [3]. A substantial proportion of cases are caused by the country-wide dissemination of the ciprofloxacine-resistant strain, which also exhibits the CMRNG and TRNG phenotype [3]. We report the first case in the last 20 years of ophthalmia neonatorum caused by multidrug-resistant *N. gonorrhoeae*, which occurred in the Negev region in southern Israel.

Patient Description

A 7 day old male infant was admitted to our medical center because of swelling around his left eye with a purulent discharge that started 2 days prior to admission without history of fever. The infant was born at term to a 29 year old healthy woman in her ninth pregnancy by vaginal delivery. The birth weight was 2,880 g. The parents, first-degree cousins, belong to a local traditional community. The infant was discharged at 36 hours of age after an uneventful course in the neonatal unit.

On admission his temperature was 37.2°C, pulse 137/minute, blood pressure 84/48 mmHg and respiratory rate 47/min. His weight was 3,036 g (50th percentile) and head circumference 34 cm (50th percentile). The left eye was closed due to swollen eyelids; the conjunctiva was red and edematous with a purulent discharge. The rest of the examination was normal.

His white blood cell count showed 17,690 cells/ml with a differential of 38% polymorphonuclear cells, 45% lymphocytes, 14% monocytes and 3% eosinophils. Cultures from cerebrospinal fluid, urine and blood were sterile. Gram stain from the purulent discharge revealed only leukocytes without organisms, but culture was positive for *Neisseria gonorrhoeae*. The isolate was resistant to penicillin (minimal inhibitory concentration > 1 μg/ml), ciprofloxacin (MIC >4 μg/ml) and tetracycline, susceptible to ceftriaxone and negative for beta-lactamase. Tests for human immunodeficiency virus and syphilis (VDRL) were negative.

The infant was initially treated with intravenous amikacin and ampicillin in addition to local treatment of chloramphenicol and gentamycin. Systemic antibiotic treatment was changed to intravenous ceftriaxone after culture and antibiotic susceptibility became available.

Vaginal culture from the mother was positive for *N. gonorrhoeae*. The father was treated in a private clinic previous to the delivery and his urethral culture was negative. Further history-taking revealed that the father of the infant and his uncle had visited prostitutes in the Tel Aviv area prior to the infant's birth. The uncle was treated by his primary care physician for a purulent urethral discharge 3 weeks before the birth of the infant. Culture of the exudate grew *N. gonorrhoeae* with the same antibiotic susceptibility pattern as that of the mother and infant. The infant recovered uneventfully and was well at a follow-up visit.

Comment

We describe the first case in 20 years of *Neisseria gonorrhoeae* ophthalmia neonatorum due to a multidrug-resistant strain in southern Israel. Signs of conjunctivitis due to *N. gonorrhoeae* usually begin by the third day of life, but may appear up to 3 weeks after birth. The clinical signs include swollen eyelids, extreme hyperemia, chemosis and purulent discharge (similar to our case). This infection can be complicated and cause blindness. It can also disseminate and cause septicemia, meningitis and arthritis, thus the workup should consist of the evaluation of these sites [1]. Vaginal and urethral samples from the mother and her sexual partners should also be obtained for culture. In our case the symptoms appeared in the infant at age 5 days in accordance with vertical transmission. The systemic evaluation proved negative.

MIC = minimal inhibitory concentration

Antibiotic resistance of *N. gonorrhoeae* has emerged in the last few years in many parts of the world including Israel. Recently, a survey of drug susceptibilities of *N. gonorrhoeae* that was conducted in a central laboratory serving the Tel Aviv area found that 61% of 100 successive isolates were resistant to ciprofloxacin [4]. In another study that surveyed southern Israel and the Jerusalem area, ciprofloxacin-resistant strains were more prevalent among isolates with chromosomally mediated resistance to penicillin and tetracycline [3]. The strain isolated from the presented family that was found to be resistant to penicillin was also resistant to tetracycline and ciprofloxacin. The antibiotic resistance pattern of these isolates was similar to those described in the above studies and, combined with the history, is highly suggestive that its source is from the Tel Aviv area.

Until recently, routine neonatal care in our institution did not include prophylaxis for ophthalmia neonatorum, mainly due to the practical absence of *N. gonorrhea* neonatal conjunctivitis during the last 20 years. Easier transportation, international population migration and sexual promiscuity expose communities, even closed traditional ones, to resistant infectious agents, including those that are sexually acquired, originating in distant places [5]. This case prompted us to reconsider the policy in our institution and to reinstitute prophylactic eye treatment with tetracycline ointment for ophthalmia neonatorum.

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