

Case report

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Reactive arthritis developing after pneumococcal conjunctivitis: a case report

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Abstract

Background: *S. pneumoniae* is a known cause of bacterial conjunctivitis and can be transmitted through contact with infected carriers.

Case presentation: A 38-year-old ophthalmologist developing reactive arthritis following clinic-acquired pneumococcal conjunctivitis.

Conclusion: (1) Despite the frequency and largely self-limiting nature of infective conjunctivitis, it should be appropriately assessed and managed, as the natural history can occasionally be associated with significant morbidity. (2) Hygienic measures are required to be implemented by both patients and ophthalmic staff to reduce the likelihood of transmission.

Background

Streptococcus pneumoniae is a known cause of bacterial conjunctivitis. Outbreaks associated with this pathogen have been reported in the medical literature within the past few years [1-3]. Spread through contact with infected carriers has been implicated, as has contact lens wear [1].

We describe the case of an ophthalmologist developing the previously unreported complication of seronegative reactive arthritis after clinic-acquired bacterial conjunctivitis. This case highlights both the potential hazards faced by staff within the clinic setting and the possible morbidity associated with this condition.

Case presentation

A 38 year-old male ophthalmologist was seen at the Ophthalmic Accident and Emergency Department with a five-hour history of a right watery red eye. He had been exposed to several conjunctivitis patients during the preceding few days, whilst working at the same department.

An initial diagnosis of probable viral conjunctivitis was made, and the patient was prescribed chloramphenicol eye drops. Conjunctival swabs were taken and sent to the microbiology laboratory for analysis. A day later the conjunctivitis had become bilateral and purulent. Several hours after the conjunctivitis became bilateral the patient also developed a sore throat. The previous swab cultures isolated *Streptococcus pneumoniae* as the infective pathogen. Three days later, the patient noticed tenderness and swelling of the proximal interphalangeal joint of the index finger in the left hand, which became progressively more swollen and tender over the next couple of days. The patient had become febrile; however, there were neither chills nor rigors. He was prescribed oral amoxicillin 500 mg TID and flucloxacillin 500 mg QID, in the belief this was septic arthritis.

Two days after the swelling started he was seen by a rheumatologist, who made a diagnosis of reactive arthritis. The patient was fully investigated (see following text and

Table 1: Selected blood test results. Values both at the time of initial investigation and after two months following the start of treatment with anti-inflammatory drugs.

Test	Blood test result at time of diagnosis	Blood test result after 2 months	Reference range (and units)
White Cell Count	4.7	4.4	3.7 – 9.5 ($\times 10^9$ /litre)
Neutrophils	2.01	1.65	1.7 – 6.1 ($\times 10^9$ /litre)
Lymphocytes	2.07	2.25	1 – 3.2 ($\times 10^9$ /litre)
Monocytes	0.25	0.21	0.2 – 0.6 ($\times 10^9$ /litre)
Eosinophils	0.25	0.15	0.03–0.46($\times 10^9$ /litre)
Basophils	0.02	0.03	0.02–0.09 ($\times 10^9$ /litre)
Platelets	308	269	143 – 400 ($\times 10^9$ /litre)
CRP	< 5	< 5	0 – 5 (mg/litre)
ESR	17	8	1 – 10 (mm/hour)

Table 1). Plain X-ray showed a little soft tissue swelling over the proximal interphalangeal joint of the left index finger. The patient was negative for antineutrophil cytoplasmic antibodies (ANCA), rheumatoid factor (RF), anti-DNA antibodies and antinuclear antibodies; complement factors C3 and C4 were within the reference range. No pathogen could be grown in blood culture and joint aspiration (performed by the rheumatologist) yielded no synovial fluid. The patient was HLA-B27 negative. A firm diagnosis of reactive arthritis as a sequel to pneumococcal conjunctivitis was made. Anti-inflammatory drugs resolved the swelling and pain within 48 hours. The conjunctivitis had already recovered though the antibiotics were continued until the course was completed.

Discussion and conclusion

Reactive arthritis was initially used to describe the development of sterile inflammatory arthritis as a sequel to remote infection. Although no specific criteria exist for the diagnosis of reactive arthritis, it is often based clinically on the development of acute oligoarticular arthritis within 2–4 weeks of a preceding infection. [4]. Over the past two decades, a clinical entity termed 'post-streptococcal reactive arthritis' (PSRA) has been used to describe a cluster of symptoms sharing features with both acute rheumatic fever and HLA-B27-related spondyloarthropathies. Although sore throat is the common feature and the most frequent site for positive cultures is the throat, streptococcal isolates have been also been obtained from blood cultures and high vaginal/endocervical swabs [5]. Whilst conjunctivitis has been reported as an associated feature in three PSRA cases [6,7], we believe this is the first report of reactive arthritis developing as a consequence of primary pneumococcal conjunctivitis.

Reactive arthritis has usually been described in the context of preceding urogenital or enteric infections. However, in common with both urogenital and enteric infections, streptococci can invade mucosal surfaces. Cell surface components and extracellular products facilitate streptococcal tissue invasion [8]. The precise mechanism(s) by

which reactive arthritis could develop remain uncertain [9].

Hygienic measures such as frequent hand washing, disinfection of ophthalmic equipment particularly after infected cases, and the use of disposable tonometer prisms are designed to reduce the risk of infection transmission in the clinic setting. Studies have shown that hand hygiene is not always practised by a substantial proportion of ophthalmic healthcare workers [10] and that ophthalmologists can carry a significant microbial load on their hands [11]. This case shows the risk faced by healthcare workers whilst treating infected patients and highlights the importance of the implementation of hygienic measures by both patients (through education on the importance of frequent hand washing and avoiding the sharing of eating utensils/towels) and healthcare workers to reduce the risk of transmission. It also emphasizes that regardless of the frequency of presentation; rare serious consequences of infective conjunctivitis can and do occur and need to be recognised and managed appropriately, using a multi-disciplinary approach if required.

Competing interests

The author(s) declare that they have no competing interests.

Authors' contributions

All authors were involved in writing/reviewing the manuscript. All authors approved the final manuscript.

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