CONJUNCTIVITIS WITH REGIONAL LYMPHADENOPATHY IN A TRAINEE MICROBIOLOGIST

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Running title: Ocular Tuberculosis in a Microbiologist

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ABSTRACT

We report a case of conjunctival tuberculosis in a trainee microbiologist caused by direct inoculation. The resident strain was analyzed by DNA fingerprinting and identical pattern was found in an isolate from sputum handled by the resident. After 6 months of treatment, the patient was cured.

CASE REPORT

A female resident microbiologist aged 28 years consulted an ophthalmologist in May 2007 with a five day history of pain in the left conjunctiva and preauricular area. The eye was “watering” especially at night and she had noticed two white spots on the conjunctiva. An initial suspicious clinical diagnosis of viral conjunctivitis was made and treatment with diclofenac, artificial tears and topical tobramycin was given. There was no response to therapy and after 3 weeks the eye was still red and preauricular lymphadenopathy was noted (figure 1A). Topical tobramycin was continued with local dexamethazone. Tarsal hypertrophy change in the involved eye led to the development of a lower lid entropion (figure 1B). There was no clinical improvement after 6 weeks when dexamethazone topically 2 hourly was prescribed. After revaluations more test were indicated. The PPD test was positive (14 mm). HIV test was negative. A fine needle aspiration puncture on an enlarged preauricular lymph node was performed and material was sent for both microbiological and pathological examination. Fluorescent staining showed abundant mycobacteria and routine bacterial and viral cultures were both negative. PCR (Cobas Amplicor. Roche®) and culture for mycobacteria were positive for Mycobacterium tuberculosis complex. A pathological diagnosis of necrotizing granulomatous lymphadenitis was made. Chest X-ray was normal. Treatment with isoniazid, rifampin, ethambutol and pyrazinamide was initiated. Two months later the susceptibility testing showed the isolate was susceptible to all four antituberculosis drugs prescribed, so
further therapy with pyrazinamide and ethambutol was discontinued. Both the purulent discharge and lymphadenopathy improved during the first 2 months of antituberculosis treatment and the lower lid entropion recovered. Between the third and fifth months of treatment an increase in size of cervical lymphadenopathy was observed. Fine needle aspiration of the largest gland was performed but the subsequent mycobacteria culture was negative. This clinical fact was interpreted as a paradoxical effect possibly due to an immune response against antigens of mycobacteria. All treatment was withdrawn after 6 months and after 10 months patient remains well, maintaining sharp visual acuity. The possibility that this mycobacterial infection was acquired whilst working in the mycobacterial laboratory was investigated. The DNA fingerprinting of the resident’s isolate strain was compared with all other isolated recently in our hospital by restriction fragment length polymorphism (RFLP) using the insertion sequence 6110 (5) and an exactly identical pattern was found in an isolate from sputum handled in the emergency laboratory by the resident before it was later processed in the mycobacterial laboratory. The transmission could have occurred inadvertently by direct inoculation (the resident might have touched and rubbed her eye), since the work is done in biological safety cabinets Class II Type B and the staff works with laboratory coats, gloves and bio-safety masks. This event required us to review the guidelines for the prevention of tuberculosis in our laboratory and to motivate workers to extreme the safety and healthcare practices in laboratories (10,11).

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Although ocular tuberculosis can present with choroiditis, chorio-retinitis, endophthalmitis and panophthalmitis, it is rare with only a few cases documented (9). Conjunctival involvement alone is very unusual and may result from either trauma or surgery (6). The present patient is very unusual in that the infection was due to involuntary direct inoculation without any other TB locus. The involvement of the lower eyelid and bulbar conjunctiva was also unusual as the majority of published cases report involvement of the upper eyelid and palpebral conjunctiva (7,4). Conjunctival tuberculosis results in granulomatous...
change with or without necrosis and associated inflammatory cell involvement. It must be
differentiated from other bacterial, fungal and viral infections. Molecular biologic techniques
like PCR can be a valuable tool in cases where stain or cultures were negative (1).

Microbiology laboratories constitute a special working environment that may pose a
risk of infectious disease to persons in or near them. In recent years, tuberculosis has once again
emerged as a significant public health issue that has become further complicated by the
appearance of multiple drug-resistant strains (8). In the context of these laboratories, risk
assessment is focused on the prevention of infections (2). Cases of laboratory-acquired
tuberculosis could be difficult to demonstrate because the source of infection is often unknown.
With the introduction of molecular typing techniques, that allow us to distinguish between
different strains of *Mycobacterium tuberculosis*, cases of laboratory contamination are no longer
difficult to identify (5). The activities performed in microbiology laboratories, including the
receipt of specimens and the disposal of specimens and cultures, involve the risk of infection to
the personnel who handle them. It is estimated in same studies that the incidence of tuberculosis
among persons who manipulate *M. tuberculosis* in the laboratory is between 100 and 200 times
more likely than the general public to develop tuberculosis (3). The diagnosis of ocular
tuberculosis should be considered in a risk patient with unilateral conjunctivitis not responding
to anti-inflammatory therapy with no previous history of trauma, surgery or obvious source of
transmission. Training laboratory workers should be monitored medically with periodic PPD
testing symptom checks, and chest radiography if warranted.
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REFERENCES


Figure 1. Panel A: preauricular lymphadenopathy; Panel B: tarsal hypertrophy.