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**Chlamydophila abortus-induced keratoconjunctivitis in a dog**

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MEMBERS of the family Chlamydiaceae are Gram-negative, obligate intracellular bacteria that are differentiated from other prokaryotes by their unique developmental cycle (Ward 1988). Both human beings and animals are susceptible to chlamydial infections. In a wide variety of vertebrates, predominantly in avian and mammalian hosts, infection can be clinically inapparent or can result in a broad range of disease conditions. In addition, animal chlamydial species are transmissible to, and pathogenic for, human beings and are, therefore, of public health significance (Shewen 1980, Longbottom and Coulter 2003).

Dogs are susceptible hosts for chlamydiae. Seroepidemiological studies confirm that clinically inapparent infections appear to predominate (Schnatz and others 1977, Shewen 1980). Finding clinical disease in dogs after experimental infection with ovine chlamydial agents has provided evidence for a pathogenic role for chlamydiae in dogs (Maierhofer and Storz 1969, Young and others 1972). However, information on the pathogenic significance of chlamydiae in dogs is limited as only a few cases of natural chlamydia-induced diseases – conjunctivitis, encephalitis and respiratory disease – have been reported to date (Voigt and others 1966, Krauss 1982, Werth 1989, Arizmendi and others 1992, Gresham and others 1996). Most cases of canine clinical chlamydiosis were published before modern methods for the molecular classification of bacteria were established to allow clear taxonomic classification of chlamydiae. Thus, the chlamydial agents isolated from canine disease remain unclassified, with the exception of three cases where the chlamydia isolates from first, the thoracic fluid of a five-month-old male bull mastiff dog suffering from acute pyrexia and shifting leg lameness; secondly, a case of canine keratoconjunctivitis; and thirdly, a dog suffering from acute febrile pneumonia, were identified as members of the avian species *Chlamydia psittaci* (Krauss 1982, Arizmendi and others 1992, Gresham and others 1996).

This short communication describes an ocular *Chlamydia abortus* infection in a six-year-old male poodle. The dog was presented with signs of mucopurulent conjunctival discharge from the left eye. Clinical examination revealed a unilateral follicular keratoconjunctivitis with a limbal erythema. Conjunctival scrapings and swabs were collected from the diseased eye and handled in accordance with standard protocols (Quinn and others 1994). Bacterial DNA extraction and PCR amplification of a 1060 base pair (bp) DNA fragment from the chlamydial *ompA* gene were performed as described by Hoelzle and others (2003). The sequence of the PCR product was compared with known chlamydial *ompA* gene sequences in GenBank by multiple-sequence alignment using HUSAR (Heidelberg Unix Sequence Analysis Resources).

Red intracytoplasmic inclusions were detected in epithelial cells by light microscopy (magnification ×1000) of a smear from a conjunctival scraping stained by the method of Gimenez (1964). The morphology of the intracytoplasmic inclusions provided strong evidence of a chlamydial infection. After 48 hours of aerobic incubation, bacteriological cultures of a conjunctival swab yielded a low grade growth of *Staphylococcus intermedius*. Mycological culture yielded no growth after 72 hours of incubation. On PCR amplification, the nucleotide sequence of the 1060 bp PCR product was 99.5 per cent homologous with databank entries of the *ompA* gene of the ovine abortion *C. abortus* reference strain *B577* (M73036). In comparison, the homology with the *ompA* gene of *Chlamydophila felis* reference strain FP Cello (AF169258), the causative agent of feline chlamydial keratoconjunctivitis, was only 82.1 per cent.

Initially, the dog was treated for infective conjunctivitis with a combination of neomycin, polymyxin B, sulphates and dexamethasone (Maxitrol; Alcon Pharmaceutical). However, this treatment was unsuccessful. Based on the diagnosis of a chlamydial infection, the treatment was changed to oxytetracycline and dexamethasone ocular suspension (Terracortil; Pfizer) and continued for a further seven days, achieving a clinical cure.

*S. intermedius* is the leading pus-forming bacterium in dogs. In the present case, the staphyloccocal isolate was susceptible in vitro to neomycin and polymyxin B; however, treatment with a combination of these antibiotics was unable to resolve the ocular clinical signs in the dog. Therefore, the finding of *S. intermedius* in the diseased eye was considered to be clinically insignificant. The microscopic findings as well as the PCR results strongly argue for an aetiological role for chlamydiae in this case. To the authors’ knowledge, this is the first report of a *C. abortus*-induced conjunctivitis in a dog.

There are two reports describing the experimental induction of disease in dogs after inoculation with ovine chlamydiae (Maierhofer and Storz 1969, Young and others 1972). Based on the present case and these reports of canine chlamydial infections, the contribution of ruminant *C. abortus* to, for example, ocular chlamydial disease in dogs might be greater than is currently appreciated. Further studies are required to determine if infection with *C. abortus* is associated with an increased frequency of infectious ocular disease in dogs.

The source of infection of the dog in this case could not be traced. However, it lived in the countryside and so there were many possible infection routes, such as faeces from inapparently infected sheep at grass or close contact with uterine fluids or fetal membranes of lambing ewes. This report is intended to make veterinary surgeons aware of the possible involvement of *C. abortus* in canine infectious ocular disease and to encourage them to perform the necessary microbiological investigations, such as PCR and nucleotide sequence analysis of PCR products, in such clinical cases (Elñíro and others 1999). The results of antibiotic treatment have, on the whole, been promising following the use of tetracycline, which is effective against chlamydiae.

**References**


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