

FELINE CHLAMYDIA PSITTACI INFECTION EPIDEMIOLOGY

- The disease tends to be more of a problem in colonies of cats, rather than any other animal.
- A UK survey has shown that 30% of swabs from cats with conjunctivitis were positive for *C. psittaci*. Infection was most common in kittens between 5 weeks and 9 months of age.
- Like the feline respiratory viruses, chlamydial infection is probably transmitted primarily by direct or any other object like mouth and feet which come into contact with infectious discharges, and possibly over short distances by aerosol.
- Chlamydiae, like the feline respiratory viruses, are relatively unstable outside their host, being inactivated by a number of lipid solvents and detergents.
- The organism is shed predominantly in conjunctival secretions: shedding from the conjunctivae has been demonstrated for up to 18 months after experimental infection. Chlamydiae have also been detected in vaginal and rectal swabs for several months after infection. The clinical and epidemiological significance of this is not known.
- Once the infection is enzootic in a colony, clinical signs may persist in individuals for weeks, and recurrent episodes are common. It has been suggested that some of these recurrent episodes may be induced by stress, such as kitting and lactation, which may facilitate transmission of the organism between mothers and their kittens. However, there is some evidence suckling kittens are usually protected from infection from their dam, presumably by colostrally derived antibodies, for the first 6 weeks of age.
- Thus, natural immunity to the disease appears to be relatively inefficient and incomplete, and infection appears to be perpetuated in a colony situation for some months, if not for years.

PATHOGENESIS AND CLINICAL SIGNS

- Conjunctival epithelium is the main target tissue for feline *C. psittaci*. However, the organism may also generalise, and has been found in gastric mucosa and in rectal and vaginal swabs.
- The incubation period ranges from 3 to 5 days experimentally to up to 14 days under natural conditions.
- The predominant clinical sign is a persistent conjunctivitis.
- Co-infection with the respiratory viruses, or secondary infection with bacteria or mycoplasmas, may lead to more severe disease, but generally, apart from marked conjunctival signs, the disease is mild.
- In the acute stages there is a marked serous ocular discharge (which later becomes mucopurulent) and blepharospasm, and the conjunctivae are hyperaemic and swollen.
- Initially only one eye may be affected, but usually both eyes eventually become involved.

- Mild nasal discharge, sneezing, and coughing may also occur, and there may be mild pyrexia in the initial stages of the disease. Affected cats generally stay well and continue to eat.
- Mild pulmonary lesions may be detected occasionally at necropsy, but pneumonitis is not usually apparent clinically.
- Follicular hyperplasia of the conjunctival lymphoid tissue has been reported, and corneal ulceration and keratitis have been described; however, it is probable that other agents, such as the respiratory viruses, were involved in such cases.
- Severe conjunctivitis generally persists for 3-4 weeks or so, but milder clinical signs may persist for some months: although most animals eventually recover, recurrent episodes may occur.
- Experimentally, there is some evidence that chlamydiae may infect the genital tract of cats, but the relevance of this to the field situation is not known. Although abortion has been noted in some cats infected with *C. psittaci*, in general it appears that *C. psittaci* is not involved in feline reproductive disease.
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INFECTION DIAGNOSIS

Chlamydial infection may be diagnosed to a large extent on the characteristic clinical signs, specifically a marked, often persistent conjunctivitis. Another aid in differentiation between chlamydial and viral infection of the respiratory tract is that chlamydial infection may respond to certain antibiotics.

Diagnosis may be confirmed in untreated cases by the following approaches:

- A Giemsa-stained conjunctival scraping or smear may be directly examined for the presence of inclusion bodies. These are most numerous in the first 7 days of clinical disease, and are only occasionally seen up to 14 days. However, the results can be difficult to interpret.
- More reliably, some specialist laboratories offer attempted isolation of organism in cell culture from a firmly taken conjunctival swab. Chlamydia are intracellular parasites, and it is important that epithelial cells be present in the sample. Specialised transport media are required, and either rapid transport to the laboratory or -70°C storage before collection. Either immunofluorescence or histochemical stains can then be used to confirm the identity of the intracytoplasmic inclusions in the cell cultures.
- Several commercial kits have been developed for use in diagnosis of human chlamydial infections and can be used for diagnosis in cats. These kits use a genus-specific monoclonal or polyclonal antibody which is either used in an immunofluorescent test on conjunctival smears, or has been incorporated into an ELISA. These techniques are not as sensitive as culture in the later stages of the disease, but have the advantage that both viable and non-viable organisms can be detected.

- In unvaccinated cats a positive serologic response or demonstration of a significant rise in antibody titre may also be helpful in diagnosis. The indirect immunofluorescent test is generally more reliable in detecting antibody than the older complement fixation test.

TREATMENT

- Although several antibiotics may have some effect on relieving the clinical signs of chlamydial infection, tetracyclines remain the drugs of choice.
- As systemic infection has been demonstrated it is probably advisable to treat both systemically and topically.
- Ophthalmic ointment containing tetracycline should be applied 3-4 times daily. Currently only chlortetracycline is available in the UK.
- Oxytetracycline (20 mg/kg, 3 times daily) or doxycycline, a tetracycline derivative, (10 mg/kg, once a day), should be given systemically.
- All cats in the household should be treated simultaneously for at least 34 weeks or for at least 2 weeks after clinical signs have disappeared.
- Systemic tetracyclines are theoretically contraindicated in pregnant cats or in young kittens where there is calcification occurring. There is little evidence that treatment does, in fact, affect kittens' teeth but owners should be aware of the possibility.
- Erythromycin and tylosin may also be effective treatments, but no controlled trials have been carried out in cats.

PREVENTION AND CONTROL

- Because chlamydial infection is thought to be transmitted in a manner similar to that for the feline respiratory viruses, similar control measures to stop the spread of infection should apply.
- Because persistent or recurrent infection in a colony situation is common, it is important to treat all individuals in a cattery at the same time.
- Vaccination against feline *C. psittaci* infection has been employed in the USA for some years, and more recently in the UK and some other countries. Early vaccines were produced in eggs, but cell culture-derived vaccines have been developed. There has been some discussion as to the efficacy of the vaccines in the past. However, more recent studies have demonstrated significant but not always complete protection against disease, but not necessarily against shedding. Protection appears to last for at least 1 year.
- Although there are only isolated case reports of possible zoonotic infection with the feline strain of *C. psittaci*, it is nevertheless wise to suggest taking hygiene precautions when handling or treating an infected pet.