Infectious diseases of felines: causes, treatments and nursing

Author : Sandy Griffith

Categories : RVNs

Date : October 1, 2009

Sandy Griffith RVN, BFRP, looks at the disease spread and the causative agents for some common infectious diseases of cats

VACCINATION protocols protect individuals against disease caused by bacteria and viruses; they also prevent infection and transmission of agents within a population. When a large proportion of the feline population is routinely vaccinated, the amount of infectious diseases seen is reduced. When vaccination exceeds 70 per cent of a population (shown by antibody prevalence) “herd immunity” results, which is a safeguard against epidemics.

Vaccination has advantages not only for vaccinated animals, but also for the unvaccinated population. The latter is indirectly protected because opportunities for transmission of the virus are reduced, due to the herd immunity concept (Horzinek and Thiry, 2009).

Some diseases still appear seasonally or sporadically, so although these are less commonly encountered in practice, they have not been eradicated.

The VN plays a crucial role in client education and preventive healthcare by highlighting the importance of core vaccinations (those that all cats should receive for protection against life-threatening diseases). Core vaccines for cats are those that protect against feline panleukopaenia virus, calicivirus and herpes virus infection.

The VN is responsible for the intensive nursing care of infectious patients, and vigilant control of

the environment to prevent disease spread to other patients or in-contact humans (if zoonotic). Some bacterial infections – for example *Bordetella bronchiseptica* – may pass between dogs and cats, and have zoonotic and reverse zoonotic potential. Some viral infections infect more than one species – for example, 10 to 20 per cent of canine parvovirus isolates cause disease indistinguishable from that caused by feline panleukopaenia virus (Truyen, 1999).

Upper respiratory disease and conjunctivitis (cat ’flu)

Feline caliciviris (FCV), feline herpesvirus (FHV), *Chlamydophila felis* (formerly *Chlamydia psittaci*) and *Bordetella bronchiseptica* are four of the organisms causing upper respiratory disease and ocular signs in the cat. FCV and FHV are the viruses most commonly associated with cat ’flu.

The disease is spread through direct and indirect contact. Large amounts of virus are present in saliva, ocular and nasal secretions (FCV may also be shed in urine and faeces). More than 90 per cent of cats have been exposed to FHV. Eighty per cent of exposed cats become infected for life, shedding the virus intermittently. Virus shedding occurs approximately a week following stress for up to two weeks. Spread occurs through grooming, shared feeding bowls and via sneezed droplets as an aerosol. FCV survives for approximately one week outside the cat and FHV survives for a day.

Clinical signs – FCV

FCV cat ’flu is less severe than FHV ’flu. FCV is frequently found in cats with chronic gingivostomatitis. It has also been associated with “fading kittens” and a limping syndrome that causes shifting lameness. Affected cats are pyrexic, they sneeze and they typically have painful ulcers on the tongue and soft and hard palates.

Virulent feline calicivirus infection outbreaks have been reported recently in the UK. It is an extremely contagious infection, causing jaundice, oedema, sloughing of footpads and up to 40 per cent mortality.

Clinical signs – FHV

This is also known as feline viral rhinotracheitis. FHV causes much more severe cat ’flu than FCV. Signs include sneezing, anorexia, depression, oculonasal discharge, pneumonia and even death. Kittens have swollen eyes, corneal ulceration – even ruptured eyeballs under still-closed eyelids. Survivors of FHV infection continue into adulthood with chronic or recurrent rhinitis and conjunctivitis.

FHV is associated with fading kittens (postmortem findings are usually pneumonia, thymic atrophy and lung congestion).

Corneal ulceration is the most common sign of FHV and, if untreated, may rupture, requiring emergency enucleation. Uveitis, eosinophilic keratitis, corneal sequestrum, keratoconjunctivitis sicca, chronic or recurrent conjunctivitis, and adhesions in the eyelids may occur. Diagnosis is via viral isolation swabs (FCV – oropharynx; FHC – oral or conjunctival).

Treatment

Treatment is symptomatic with supportive nursing care, including:

• Bathing nose and eyes to remove discharges.

• Nebulisation (with or without Olbas Oil) to clear the nasal passages.

• Coaxing the cat to eat by offering warmed aromatic foods and placement of feeding tubes where necessary.

• Broad-spectrum antibiotics and eye medication for secondary bacterial infections.

• Corneal ulcers can be treated under anaesthesia.

Prevention

Methods to prevent the disease include vaccination and client education:

• FHV – test breeding queens by virus isolation, but shedding is intermittent and occurs post-stress.

• Cats entering a disease-free colony should be quarantined for three weeks, and virus detection attempted twice weekly before mixing with other cats.

• Patient isolation and thorough environmental disinfection.

Bordetella bronchiseptica

Bordetella bronchiseptica is primary pathogen of domestic cats, particularly in high-density populations. It is spread by direct and indirect contact. It is shed in oral and nasal secretions. Dogs with respiratory disease are an infection risk for cats.

Clinical signs

Signs range from fever, coughing, sneezing, ocular discharge and lymphadenopathy to severe pneumonia with dyspnoea, cyanosis and death.

Diagnosis

Samples for isolation can be taken via swabs from the oropharynx or via a transtracheal wash.

Treatment

Antibacterial therapy is indicated, even for mild signs. Cats with severe infection require supportive therapy and intensive nursing care.

Chlamydophilia felis

Chlamydophila felis is a gram-negative bacteria; its primary target is the conjunctiva. Most cases of chlamydiosis occur in cats under one year of age, and there is a high incidence in pedigree cats.

It is spread through direct contact. Transmission requires close contact with infectious ocular secretions. The bacterium does not survive outside the host.

Clinical signs

Clinical signs of infection include:

• Unilateral ocular disease progressing to bilateral.

• Chemosis of the conjunctiva is a characteristic feature of chlamydiosis.

• Occular discharges are initially watery, becoming mucoid/ purulent. Intense conjunctivitis, with extreme hyperaemia of the nictitating membrane, blepharospasm and ocular discomfort.

• Transient fever, inappetence and weight loss.

Diagnosis

This is via PCR from ocular swabs.

Treatment

Antibiotics, supportive nursing care and, once clinical signs have been controlled, vaccination

Cats housed singly and good hygiene practice should prevent cross infection.

Feline infectious enteritis (FIE)

Also known as feline parvovirus or feline panleukopaenia (pan means all, leuko means white, and paenia lack of, so together it means “all-white shortage”). Feline distemper is caused by a parvovirus. Parvoviruses are dangerous, surviving long periods in the environment and are resistant to many disinfectants. Canine parvovirus is a mutation of the feline distemper virus.

FIE has a very high mortality rate, particularly in unvaccinated kittens. Whether illness develops after the virus enters the body depends on the immunity of the individual cat.

The disease is spread by direct faecaloral contact and also indirectly following contamination of the environment. Cats can become infected through dogs shedding parvovirus. Transplacental spread to unborn kittens leads to underdevelopment of the cerebellum. Infected kittens show uncoordinated movements and walk with a wide-legged gait; muscle tremors are also often present.

Clinical signs

If the immune response is inadequate, the virus infects rapidly dividing cells. Lymph nodes of the throat are affected first, followed by bone marrow and intestines, where rapidly dividing cells of the lining of the gut are destroyed. White blood cell production is suppressed.

Infected cats are pyrexic, depressed and inappetent, with a low white cell count. Severe vomiting and haemorrhagic diarrhoea rapidly develops.

Treatment

No specific treatment is available; therefore, it is vital that suspected cases are nursed in isolation. Protective clothing must be worn and strict hygiene rules followed when handling a suspected FIE case. Where possible, patients should have dedicated isolation nurses to care for them.

Cats often die from dehydration and massive secondary infection; therefore, veterinary treatment and good nursing care is essential. There is little chance of survival without hospitalisation, intravenous fluids, anti-emetics and feeding small, easily digestible meals when vomiting has resolved. Cats that beat the infection generally recover without permanent damage and have lifetime immunity.

Prevention and control

FIE is far better prevented than treated. Vaccines are available and all cats should be vaccinated – including indoor cats. The virus is shed for up to six weeks after recovery, so vaccination must be combined with good infection control.

Feline infectious peritonitis (FIP)

FIP is a leading infectious cause of cat death. It occurs when a cat reacts inappropriately to feline coronavirus (FCoV) infection and is common where large numbers of cats are kept together. Up to 40 per cent of household cats are infected (increasing to 80 to 100 per cent in multi-cat households).

Most cats shed FCoV for one to two months, mount an immune response, and eliminate the virus without any problems. However, if the FCoV virus is not cleared it mutates within the infected cat. The mutated form causes FIP.

The precise cause of viral mutation is unknown, but several factors may play a role. The majority of FIP cases are younger cats. A poor immune response combined with stress factors, such as rehoming, neutering, or concurrent disease, make younger cats more vulnerable to FIP. However, FIP can develop in any age of cat and predisposing or risk factors are not always evident. Genetics may also play a role – purebred cats appear to be at greater risk.

FIP is a vasculitis rather than an inflammation of the peritoneum. Clinical signs depend on which blood vessels are damaged and which organs these damaged vessels supply.

It is spread by direct contact via the faecal-oral route.

Clinical Signs

Clinical manifestations are diverse, reflecting the variability of the distribution of the vasculitis and polygranulomatous lesions. There are two main forms of FIP.

Wet (effusive) FIP

This is the acute form of the disease where many blood vessels are severely damaged and fluid leaks into the abdomen. Ascites is the most obvious manifestation of the effusive form. Thoracic and pericardial effusion may also occur, causing dyspnoea.

Dry (non-effusive) FIP

Initial clinical signs are vague: lethargy, weight loss, inappetence and icteric membranes. Typically, a cat with dry FIP will show occular or neurological signs.

Ocular signs include: inflammatory lesions, uveitis, keratic precipitates, changes in iris colour, anisocoria secondary to iritis, and possible bleeding into the eye (hyphaemia) may occur, resulting in visual disturbances.

Neurological signs include: ataxia, hyperaesthesia, behavioural changes, tremors, seizures, nystagmus and cranial nerve deficits. The disease is rapidly progressive and fatal.

Diagnosis

There is no specific diagnostic test for FIP; definitive diagnosis is usually made on postmortem examination. If FIP is suspected, a thorough clinical examination, including eye examination and neurological assessment, should be performed.

Treatment

There is no cure for FIP – treatment is symptomatic and palliative. Keep the cat as comfortable as possible, until it begins to deteriorate or suffer.

Feline leukaemia virus (FeLV)

FeLV is a retrovirus that may induce depression of the immune system, anaemia and/or lymphoma.

The main method of spread is by direct contact through grooming, and also through bites. Virus is shed in the saliva, nasal secretions, faeces and milk. Risk factors include: young age, high population density and poor hygiene. In large groups of unvaccinated cats, 30 to 40 per cent will develop persistent viraemia, 30 to 40 per cent transient viraemia and 20 to 30 per cent seroconvert. Young kittens are particularly susceptible. The virus does not survive long outside the host.

Clinical signs

Common signs of persistent FeLV viraemia are: immune suppression, anaemia and lymphoma. FeLV-induced tumours are the most common in cats. They are classified according to their anatomical location: thymic or mediastinal, multicentric or peripheral, alimentaryatypica or extranodal forms.

Less common signs include: immune-mediated disease, chronic enteritis, and peripheral neuropathies (anisocoria, mydriasis, Horner’s syndrome, urinary incontinence, abnormal vocalisation, hyperaesthesia, paresis and paralysis).

Most persistently viraemic cats die within two to three years.

Diagnosis

Doubtful positive results in healthy cats should be confirmed by PCR. Asymptomatic FeLV-positive cats should be retested. All cats with uncertain FeLV status should be tested prior to vaccination.

Cats positive at second testing should be considered permanently infected and handled accordingly.

Treatment

Supportive therapy and good nursing care; patients are immunocompromised, so should be kept away from other patients suffering infections such as respiratory disease.

Virus transmission can be avoided in hospital by simple precautions and good hygiene.

Vaccination against common pathogens should be maintained and these cats should remain indoors.

Feline immunodeficiency virus (FIV)

FIV is endemic in domestic cat populations worldwide. FIV-positive cats may be asymptomatic for years, but eventually develop immune system suppression, becoming susceptible to other infections, which can cause severe illness and death.

Bite wounds are the primary route of virus transmission. Rarely, FIV is transmitted to kittens by an infected queen during birth or via infected milk. Sexual transmission is not a major means of disease spread.

Clinical signs

Most signs are the consequence of immunodeficiency or secondary infection – chronic gingivostomatitis (one of the most common presenting signs in FIV-positive cats, which significantly impairs quality of life), chronic rhinitis, lymphadenopathy, weight loss and immune-mediated glomerulonephritis.

Diagnosis

A blood test detects the presence of antibodies. These are detectable eight to 12 weeks post-infection. It is rare for cats to eliminate infection, so the presence of antibodies is a positive indicator of infection.

Treatment and control

Symptomatic and supportive care for immunosuppressed cats. Cats should not be euthanised on the basis of an FIVpositive result; they may live as long as uninfected cats, with appropriate management.

The virus loses infectivity quickly outside the host, and is susceptible to all disinfectants. FIV-positive cats should be kept indoors to prevent disease spread and reduce exposure to infectious agents. Asymptomatic FIV-infected cats should be neutered to avoid fighting and virus transmission.

Acknowledgements

Clare Rusbridge, Sally Turner, Andrew Torrence and Kate Stalin.

References and further reading

- Addie D (Dr). FIP and Corona virus, www.dr_addie.com and www.fabcats.org
- Horzinek M C and Thiry E (2007). Vaccines and vaccination: The principles and the polemics *JFMS* **11**(7): 530-537
- Ramsey I and Tennant B (eds) (2001). *BSAVA Manual of Canine and Feline Infectious Diseases*, BSAVA, Gloucester. Truyen U (1999). Emergence and recent evolution of canine parvovirus. Review. *Vet Microbiol* **69**(1-2): 47-50.