VETERINARY TODAY INTERNATIONAL
ISSN 2583-8288

Some common diseases of Cat (Felis catus) and their treatment

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DOI:10.5281/Vettoday.16603250

Introduction

Cats are wild and domestic varieties, domestic cats remain in house owner corner, access to fresh water, a litter box, and opportunities for play with toys and enrichment. Cats are obligate carnivores, fed on meat mainly however cats can eat certain human foods. Cat's vision with Tapetum lucidum layer behind retina help to reflects light much even with low light can help to detect motion images with high sensitivity with green and blue hues. Cat also hears with its typical ear structure sharply. Normal physiological parameters of body temperature between 100-102, heart rate between 120-140 beats per minute, and a respiratory rate 20-30 per minute. People rear cat for their companion as to play, care, relief tension and healthy life. Cat could be a good vector for disease transmission to humans. Some common disease that affects normal health are described below. Modern days cat is a very good pet animals used as friends and family members. Care for cat must be taken to save its full life and to restrict disease transmission. Several diseases occur in cat are as follow (Racine,2023)

Key Words: Feline, Diseases, therapy, aetiology

Viral disease

Feline Immunodeficiency Virus (FIV):

Hosts: Domestic cat, wild cat, tiger and hyena. The FIV weakens a cat's immune system, making them susceptible to other infections. Common disease in cat caused by a RNA virus transmitted through bites, saliva and scratches of infected animals and even with fomites. The incubation period is long and infected cat remains non clinical for years. Due to immunosuppression, it invites other infections. Clinical signs of FIV infection are acute phase for 1-3 months of incubation infects lymphocytes and lymph nodes, and progressive phase. Aute phase with fever, depression, and lack of appetite. Asymptomatic phase lasts for months when virus multiplies in immune cells (WBC) with low counts, increased blood protein and regression of body condition. Progressive phase when cat enters into immunocompromised state invites secondary infections on skin, eyes, urinary tract, and upper respiratory tract infections, gun and dental condition gingivitis, weight loss, seizures, behavioural changes and neurological disorders. The FIV virus and AIDS virus has many similarities but doubt to contaminate from cat

Diagnosis by presence of antibody of FIV by means of enzyme-linked immunosorbent assay (ELISA) but the positive result may be verified by western blot or immunofluorescence (IFA). Another test is RT quantitative polymerase chain reaction can be done. The **treatment** of the condition with antibiotic to check bacterial infection. Antiviral Zidovudine (Zidovir), Stavudine, didanosine, lamivudine can be used for gum and dental lesions @5-10mg/kg BD for month. Avoid cat bites and mixing with other mates. Provide balance diet, isolation, dental care and antioxidant like vitamin C, E and Selenium (Tab ACES).

Feline Leukemia Virus (FeLV):

Host: Cats, other feline like lions**, tigers, leopards, jaguars, cheetahs, pumas,**

Feline leukaemia virus (FeLV) is one of important infectious diseases in cats, affecting 2-3% population and cat may remain asymptomatic others remain fatal. Incubation period may vary few weeks to few years

Its retrovirus of RNA genome (A, B, C, T sub types). Morbidity may up to 30%) and mortality may be as high as 90% within three years of suffering. FeLV also compromises the immune system and can lead to various cancers and other illnesses. Spectrum of diseases caused are neoplastic condition (Lymphoma and Leukaemia), non-neoplastic (anaemia, Immunosuppression, respiratory condition). Transmission by close contact, saliva, as well as in faces, urine and milk, wound, feed, litter etc. Oronasal inoculation leads to oropharyngeal lymph nodes to lymphocytes and monocytes and also affect spleen, epithelial cells of GIT, bladder and bone marrow.

Clinical signs- Acute cases with occurs 2-6 weeks post-infection, clinically characterized by mild fever, lethargy, and lymph node enlargement. After infection it goes through progressive infection related viraemia, malaise, lymphadenopathy, cytopenia and fatal condition. Young kitten is much sufferers. High mortality due to lymphoma, leukaemia, anaemia, diarrhoea, secondary infection, enlarged lymph node, persistent fever, pale gum, secondary attack on skin, eyes, gum, bladder, nervous and respiratory tract and other complications. other clinical signs are Progressive loss of condition. Diagnosis can be made by Enzyme-linked immunosorbent assay (ELISA), indirect immunofluorescent antibody assay (IFA), Polymerase chain reaction (PCR)

Therapeutic intervention with antibiotic to restrict complication, isolation, avoid infected fomites and food. If vaccine available immunization can be done to other animals.

Feline Infectious Peritonitis (FIP)

Hosts: Domestic cat **C**heetahs, bobcats, caracals, cougars, jaguars, leopards, lions, lynx, sand cats

Feline infectious peritonitis (FIP) is a viral disease of cats caused feline coronavirus (RNA). It has two serotypes I and II. Serotype I is most prevalent. Most strains of feline coronavirus are found in the gastrointestinal tract and do not cause significant disease. A serious and often fatal disease caused by a mutated. Risk factors are young age, congested population, purebred (British Shorthair, Bengal, Birman, Ragdoll, Maine Coon) and stress factors. Transmission by faeco-oral route, inhalation and close contact. Incubation period varies from days to months but antibody growth may be within 1-2 weeks. The corona virus has typically multiplied in apical columnar epithelial cell of small intestinal, caecum and duodenum. Clinically, wet effusion and dry-non effusion in the abdomen and chest. Symptoms of vague, sometimes fever, lethargy, weight loss, dyspnoea and abdominal swelling. Dry (non-effusive) characterized by inflammation in eye, brain, liver, kidneys, lungs, skin, seizures, neural signs, jaundice, and organ failure. Confirmation by history, physical observation, effusion fluid analysis, blood test for protein, cells and imaging for organ structure

Currently there is no therapeutic interventions but some symptomatic treatment can be done including fluid therapy, nutritional support, thinning population etc

Rabies: **Lyssa**

Host: All warm-blooded animals but in bird's rare incidence

Rabies in wild and domestic cats transmitted through bites, scratches, saliva and in house hold cat may be infected with rodents and other pray animals. Who are the carriers of rabies virus? Raccoons, bats, foxes, and skunks are the most frequent carriers of rabies. Human to human transmission is extremely rare. Clinical signs of rabies in cats are behavioural change, drooling saliva, poor appetite, paralysis, seizure, dysphagia, fever, irritability, difficult movement, hyperesthesia etc. There is no treatment of rabies except immunization prebite and post bites

Rabies free countries-Australia, New Zealand, Iceland, Denmark, Japan, UK, Fiji, Mexico from Dog

Prebite vaccination: Single dose at 3 months and booster after 1-3 years

Post bite: Dose given 0, 3, 7, 14, and 28day post exposure

Marketed Vaccines: Rabipur, Rabisyn, Rabivac,Rabigen,Raksharab, Canvar-R, Nobivac RL,

Canine distemper

Host: Canine-domestic dogs, wolves, foxes, ferrets, racoon **Feline**-Lion, Tiger, Leopard

Canine distemper is a highly viral infectious systemic of dogs and cats round the world

The virus (CDV), is a negative-sense single-stranded RNA Canine morbillivirus virus. Transmission of virus-The virus is spread through respiratory secretions (coughing and sneezing) and other body discharges. Incubation period is 3-7 days post exposure, morbidity and mortality up to 50%.

Commonly exhibit systemic clinical signs of fever, lethargy, loss of appetite, respiratory signs (nasal discharge, pneumonia), and GI signs of diarrhoea, dehydration, variably followed by neurologic signs of muscle twitching, focal or generalized seizures, circling, head tilt, nystagmus (rapid eye movement), paralysis. Chronic canine distemper with encephalitis ataxia, head pressing

PM lesions- thymic atrophy, hyperkeratosis ate nose and footpads, and signs of secondary bacterial infections like bronchopneumonia, enteritis, and skin pustules. nervous lesions are neuronal degeneration, gliosis, inflammatory demyelination, perivascular cuffing, on suppurative leptomaningitis,glial cells contains intranuclear inclusion bodies.

Diagnosis- Clinical and pathological changes, virus isolation, RT-PCR, antibody detection tests-ELISA, immunofluorescence assay-IFA

Therapy- Broad spectrum antibiotics to restrict bacterial invasion, electrolyte, administration nutrition and also use antipyretics, analgesics, and anticonvulsants and nursing care.

Vaccination at 6-8 weeks booster every 3-4 week until 6 weeks of age and in adult booster at 1-3 years.

Feline Panleukopenia Virus (Feline Distemper), Feline parvovirus

Host: Kitten mostly all wild and domestic felid animals like raccoons, mink, and foxes

The condition highly contagious, fatal disease in hosts worldwide characterized by depression, anorexia, high fever, vomiting, diarrhoea, and high dehydration. The disease caused by a single-stranded, nonenveloped DNA with two serotypes Carnivore protoparvovirus 1(CPV-1) and Carnivore protoparvovirus (2). Transmission of virus through direct contact with infected animals and their discharged fluids, like faeces, urine, nasal secretions, faeco-oral route, fomites and vertical transmission. Incubation period 2-14 days, morbidity 90% and mortality 25-60%. Morbidity and mortality in adult cat are 25%.

Clinical Signs-Fever, depression, loss of appetite, vomiting, and diarrhoea, severe dehydration. Leukopenia, a significant decrease in white blood cells counts, is a hallmark of the disease. Risk factors for high mortality are low age, unimmune cats, marked leukopenia, dehydration and shock. Post mortem lesion in GIT with dilated and thickened, haemorrahagic walls, with petechiae or ecchymoses and lymphoid tissues (necrosis of lymphocytes).

Therapy with supportive care, fluid therapy, nutritional support, use of antiemetics, antibiotics and isolation of the infected animals. Prognosis is poor in kitten but some response in older animals. Vaccinate at 6-8week, booster 4 weeks interval up to 20 weeks then booster1-3 years **Vaccine-Feligen CRP** and **Nobivac** Tricat Trio (Calci, herpes, and panleukopenia)

Bacterial infection of feline

Infection Pyoderma

Host: Several animals

Pyoderma in cats is a skin infection caused by bacteria but mostly secondary to other disease consequence. The most potential causes are allergies (flea allergy, atopy), parasites (fleas, mites), systemic diseases like FIV/FeLV that weaken the skin's integrity, making it susceptible to bacterial infection. Mange due to demodectic,notedric (Scabies) and Chyletiella blakki,

Clinical signs- pyoderma with crusts, pustules, and papules, alopecia, erosion or ulceration, miliary dermatitis (small, crusty bumps) and deep pyoderma

Treatment with dressing of wound, antibiotic both oral or parenteral, acaricide (antimine) like benzyl benzoate, ivermectin, Amitraz etc

Pneumonia in feline

Host: domestic cat, lion, tiger, leopard etc

The causes of pneumonia in feline both in captive and feral condition are many (Howe, 2022)

Viral infection- Feline calicivirus virus, Feline herpesvirus type 1(feline viral rhinotracheitis), feline immunodeficiency virus (FIV), feline leukaemia virus (FeLV)

Bacterial infection- *Mycoplasma felis,* *Chlamydia psittaci*,*Chlamydia felis*, *Pasteurella multocida, Bordetella bronchiseptica,*

Fungal infection- *Blastomyces dermatitidis*, *Cryptococcus* neoformans, *Histoplasma capsulatum*, and *Aspergillus* (Sino nasal and sino-orbital infection).

Parasitic- Two rare parasite may affect lungs with Aelurostrongylus abstrusus and *Troglostrongylus brevior* infection

Aspiratory pneumonia- Inhalation of foreign bodies, irritant gases and defective drenching medicine can cause this pneumonia.

Clinical signs- Shallow or labour breathing, breathing rate and rhythm may change, coughning of different natures, respiratory sounds may prevail, nasal discharge, fever and change in appetence. In vomiting in aspiratory pneumonia may be seen.

Diagnosis: Clinical history, *Dyspnoea, coughing*, basal discharge, lung sounds and other clinical signs are primary indication. Radiology and imaging of respiratory tactful examination for larvae and eggs worms in lungs.

Therapeutic intervention of feline pneumonia varies with relation to etiologies. For bacterial infection Amoxicillin-clavulanate, Clindamycin, Doxycycline, Fluoroquinolones and Penicillin derivatives. To check up breathing problem oxygen, nebulization can be done and close monitoring. Vaccina available may administered. Nutritional management and lysine may restrict viral propagation (competitive antagonism with amino acid arginine for DNA) Parasitic- Moxidectin, fenbendazole, ivermectin, levamisole can be used for parasitic pneumonia. Fungal treatment with itraconazole, fluconazole, and amphotericin B.

Supportive care by cleaning discharges, providing steam therapy, and ensuring adequate nutrition are important for recovery.

Septicaemia in Cat

Host: All felines

Also called blood poisoning in feline may be due to various bacterial infections. A wide range of bacteria like *E. coli, Salmonella enterica*, propagation *(campylobacter or C.upsaliensis, C. jejuni, and C. helveticus, Actinomyces bowdenii, Actinomyces viscosus* are very common

Risk factors-Food and water contamination, fomites, immunosupresion, environment etc

Clinical signs- Preliminary signs of lethargy, chills, fever, rapid cardiac fibrillation, respiratory distress rapid and shallow breathing, occasional vomiting, diarrhoea, inappetence, pale gum, mouth, abdominal pain and flatulence. In severe cases septic shock hypothermia, weak pulse etc.

Diagnosis- Clinical signs, physical examination of patients, laboratory tests like Complete Blood Cell count (CBC), Urine analysis, neutrophil - lymphocyte ratio (2-3 Normal), above 3 and below 0.7 pathological. Blood culture for bacterial isolation, Serum amyloid-A testing (SAA), normal 0-0.36µg/mL but pathologically 33.65 µg/mL (inflammatory change).

Therapy-The life-threatening condition may be treated immediately with fluid therapy, antibiotics, oxygen support, dexamethasone and potentially blood transfusions, along with addressing the underlying cause of the infection.

Parasitic diseases

Roundworms (*Toxocara* sp), hookworms (*Ancylostoma braziliense*, *Ancylostoma tubaeforme*), tapeworms (*Dipylidium caninum*), heartworms (*Dirofilaria immitis*), and protozoan parasites like Giardia, Coccidia, *Toxoplasma gondi*,

Clinical signs- heart and lung worm cause coughing, difficulty breathing, vomiting, decreased activity, and weight loss, hookworms cause anaemia, dark stool, skin irritation, tape worm causes anal irritation, diarrhoea etc, protozoan parasites cause diarrhoea. *Toxoplasma gondi* causes fever, lethargy, inappetence anaemia. Diagnosis of the parasitic infection may be wide, faecal examination and isolation and identification of causative worms and protozoa. Therapeutic intervention with specific cause and specific drugs

Ring worm

Also known as Dermatophytes that occurs on skin, nail, hairs, it is highly the common fungal species are *Microsporum canis, Microsporum gypseum* and *Trichophyton mentagrophytes*. Hosts are lions, tigers), primates, ruminants and other animals. Transmission through direct contact during specific climatic conditions with high humidity and worm environments. Clinical signs alopecia, scaling, crusting, raised circular erythema on the skin. Marked itchy and sometimes develop into pustules or kerions (pus-filled). Diagnosis by clinical finding and physical check up, wood lamp (UV light) can detect *Microspore canis* and skin scraping for microscopic examination for typical filamentous structures. Fungal culture may be done in Sabouraud's agar medium. For treatment several antifungal agents may be used tropically and orally, like Azole derivatives (Clotrimazole, miconazole, econazole, ketoconazole), Allylamines (Terbinafine). Oral Preparation with Griseofulvin, Terbinafine, Itraconazole etc

Other Diseases

Chronic Kidney Disease

Chronic kidney disease (CKD) in cats is a progressive and irreversible condition where the kidneys gradually lose their functional ability. It happens in aged feline creating health issues. The causes may be various other functional diseases of kidney along with accumulation of waste and water in renal system with Idiopathic Tubulointerstitial Nephritis, renal fibrosis, toxins, pyelonephritis and genetic conditions. Risk factors are advance age, breed, hypertension, proteinuria, and prior acute kidney injury.

Clinical signs including Increased Thirst and Urination, loss of weight and condition, weakness, vomiting and dehydration along with other signs of ulcers in oral cavity, foul breath, constipation, and behavioural changes. This old age condition may be maintained low phosphorus and protein diet, fluid therapy, hydration with watery food and parenteral administration of water.

Diabetes Meletus

Diabetes, a metabolic disorder affecting the body's ability to metabolize blood sugar in feline species like cats, lions, and tigers. Several underlying reasons are obesity, old age, prolong use of steroid, and less exercise and activity. Some other risk factors are genetic makeup, diet, and different stress. Two main mechanisms of diabetes manifestation are **Insufficient insulin** production: and insufficient response with insulin to enter glucose into mitochondria i.e. **insulin resistance**. The pancreas, which produces insulin, may not produce enough insulin to regulate blood sugar levels. In feline type 2 diabetes occurs

Clinical signs are increased thirst, more urination, weight loss, and increased appetite, gradual lethargy, weakness, vomiting in cat, dehydration poor hair coat and cataract. Therapy for cat with insulin, dietary management with high proteins, oral therapy with glipizide

Dental problem in feline-

Reduced appetite and general health issues in cat is considered due to dental issues include gingivitis, Inflammation, Malocclusion of teeth, stomatitis, and weakening of the tissues surrounding the teeth periodontitis, and tooth resorption. The dental issues may lead to bad breath, excessive salivation, difficulty eating, and tartar accumulation. Regular veterinary dental checkups and regular care, such as brushing, cleaning prevent dental damage (Morrison, 2023)

Hypothyroidism

Hypothyroidism in cats a rare endocrine disorder characterized by insufficient production of thyroid hormones, particularly thyroxine (T4) and triiodothyronine (T3). In adult cats, hypothyroidism is not uncommon, it may be congenital (absent thyroid gland, acquired (immune related), primary and secondary hypothyroidism. it can occur as a congenital condition or as an iatrogenic complication of treating hyperthyroidism. An overactive thyroid gland, more common in older cats.

Clinically in congenital hypothyroidism are Stunted growth, disproportionate dwarfism (cretinism), mental dullness, lethargy. In acquired hypothyroidism Lethargy, weight gain, decreased appetite, mental dullness, and coat changes (though less severe than in dogs)

Hypothyroidism treated with Levothyroxine (Lethyrox-25mcg)

Obesity

Feed intake and obesity has correlation, several risk factors may pursue like Physical inactivity, chronic administration of corticosteroids and progestins, indoor environment, castration (neutering), middle age, genetic (Siamese or Abyssinians, Labrador Retrievers, Beagles), over eating and high caloric diet, metabolic disease (thyroidism, diabetes), little exercise, pathological conditions (Cushing's disease, thyroidism, heart, liver, kidney conditions**)** etc.

Consequence of obesity are many like diabetes, heart disease, joint ill, respiratory distress. Therapeutic interventions like caloric adjustment (50-60 calorie /kg body weight), dietary adjustment- with protein and fibres, and lower in fat, Increased physical activity. Treatment prevailing disease conditions

Eosinophilic granuloma complex

Eosinophilic Granuloma Complex (EGC) is an allergic condition clinically, erosive lips, raised, thickened red areas at abdomen, inner thighs, around the anus or in footpads. The primary causes are flea bites, food allergens, dust, mites, environmental pollen, microbial infections, keds, mites, insect bites and others

Clinical signs like allergic reaction, excessive licking, rubbing or scratching, patches of erosive spots, reddish skin inflammation, later rash, sore and scab formation.Other clinical signs are wheezing, coughing and vomiting, diarrhoea and flatulent

Handling of cat allergy providing dust free litter, change of allergic food (beef, fish, chicken, shrimp). Bathing of cat with special shampoos, cleaning bedding free from mites, irritant and dust, avoid smoke and fragrance nearby. Medicinal intervention use of Corticosteroid (dexamethasone 1mg/kg 12hourly), **Triamcinolone 0.1-0.2mg/kg every 72 hours**, cyclosporin – immunosuppressant that inhibit T lymphocyte activation reduces inflammation (5-10mg/kg for 2-3 weeks and other action against underlying causes.

Inflammatory Bowel Disease (IBD)

Inflammatory Bowel Disease (IBD) in cats is a chronic condition in aged cat when the gastrointestinal (GI) tract becomes inflamed with various digestive problems. Clinically characterized infiltration with inflammatory cells in GI tract walls, thickening and disrupting usual digestion and metabolism. The exact cause is unknown however immunological abnormalities, diet, gut bacteria, environment and genetic composition play role**.** Initial tachycardia, anxiety, fever, anaemia, diarrhoea, dehydration, toxic megacolon with pain, bleeding, abdominal distention and extreme lethargy. The disease is similar to Crohn disease.

Therapeutic intervention with change of diet particularly protein feed, fibre rich diet, use of probiotic and prebiotic. Drugs like corticosteroids (Dexamithasone@1mg/kg for 2-4 week,

Metronidazole (10-15 mg/kg for 1-2 week), powerful corticosteroid like Chlorambucil (2mg/cat 72hrs interval) or Czathioprine(2mg/kg). Short term disease where prognosis may be good but prolong cases not much

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