

DIAGNOSIS AND THERAPY IN FELINE CALICIVIROSI

Oana TANASE, Ștefan APOSTOL, Florentina DARABAN, Constantin PAVLI,
Elena VELESCU

The University of Agricultural Sciences and Veterinary Medicine Iasi,
Faculty of Veterinary Medicine
E-mail: tanase_oana@yahoo.com

Abstract

Feline infectious respiratory complex may represent a major problem in cat shelters (cattery) since the disease occurs most often in young kittens, before weaning - usually around age 4 to 8 weeks, when the maternal immunity decreases. The source of infection is often the mother cat, which carries the virus and the latent infection has been reactivated during lactation. Therefore, the vaccinations of the mother-cat should be carried out prior to mating. This study was conducted during September 2013 - December 2015 and took place in the Clinic of Infectious Diseases, Faculty of Veterinary Medicine in Iasi. The research involved a total of 94 cats which were presented to the clinic with suspicion of an infectious disease, of which 76 had respiratory infections and 18 cats were suspected for other infectious diseases. Following the physical examination and establishing the diagnosis, the cats were subjected to a local and general therapy, and according to the severity of symptoms several schemes of therapy were applied. One of the protocols included Virbagen Omega product, a recombinant omega interferon for cats. Antibiotic therapy has been used for the treatment of the secondary bacterial infections, while for viral infections, there was no specific treatment. The animals remain virus carrier and eliminator after passing through the disease. Therapy with interferon may be expensive and lengthy, without guaranteeing advantages. In the shelters with healthy cats, the immunoprophylaxis was applied, according to the schedule recommended by the manufacturer.

Key words: ulcers, conjunctivitis, management of FCV infections, Virbagen Omega

Introduction

Respiratory pathology remains one of the most important areas of feline medicine. The upper respiratory tract diseases represents an important and recurring problem for veterinarians and cat owners, while the feline herpesvirus and calicivirus have been described to be the primary causes of infection (Daraban, 2014).

Feline calicivirosis is widely spread in the feline population (most commonly in cats) and reported in many countries (Perianu, 2005), but without implications for human respiratory pathology. The disease is characterized by inflammation of the upper respiratory tract mucosa and caused by a virus of the family Caliciviridae, genus Calicivirus (Addie D. et al., 2008).

The feline calicivirus presents a moderate resistance in the external environment. The virus may persist for more than a month on dry surfaces, at room temperature, and even more at lower temperatures (Bennett D. et al., 1989). It is resistant to a pH between 3 and 9, as well to the usual disinfectants action (Perianu, 2012).

The feline calicivirus importance is provided by the high incidence, by the ease which the virus is transmitted and that the disease is often associated with feline herpesvirosis or bacterial infections of the respiratory system (Daraban et al., 2012).

The fact that more and more people choose the cat as companion motivates the choice of this study and namely to highlight the impact of upper respiratory tract infections on the cat health, of both those from houses and those living in settlements or in shelters (Daraban et al., 2012; Coyne et al., 2007).

Given the disease severity and contagiousness, another goal was to underline the necessity of the general and specific prophylactic measures, therefore the vaccination with live attenuated is the most important measure of the disease control (Foley et., 2004). Not least, another objective was to highlight the necessity for an appropriate treatment, sustained and uninterrupted in cats who have contacted the disease in order to not aggravate the lesions and to the worsening of the animal health (Tanase et al., 2015). Passing through the disease does not confer to cats a satisfactory immunity especially in cases when infections are produced by antigenically different strains (Patel et al., 2009).

Material and methods

This study was conducted during September 2013 - December 2015 and took place in the Clinic of Infectious Diseases, Faculty of Veterinary Medicine in Iasi. The research involved a total of 94 cats which were presented to the clinic with suspicion of an infectious disease, of which 76 had respiratory infections and 18 cats were suspected with other infectious diseases.

Following the physical examination and establishing the diagnosis, the cats were subjected to a local and general therapy, and according to the severity of symptoms several schemes of therapy were applied. One of the protocols included Virbagen Omega product, a recombinant omega interferon for cats (Veir et al., 2006).

Results and discussions

Following the study conducted during 2013- December 2015 in the Clinic of Infectious Diseases and Preventive Medicine, Faculty of Veterinary Medicine of Iasi, it was observed that during September 2013- December 2013 period out of 18 cats presented for a physical examination, 11 cats manifested respiratory symptoms, which represents 61.11%, whereas 7 cats had other conditions. During 2014, the total number of cats examined was 30, of which 21 cats, representing 70% of cats had respiratory infections, and 9 cats, 30%, had other conditions (table 1 and figure 1).

Table 1.

The frequency of upper respiratory tract infections in cats during September 2013-December 2015

Period	Total cases	Cats with upper respiratory tract infections		Cats with other conditions	
		No.	%	No.	%
Sept. 2013 – Dec. 2013	18	11	61,11	7	38.89
Ian. 2014 – Dec. 2014	30	21	70	9	30
Ian. 2015 – Dec. 2015	46	44	95,65	2	4.35
Total	94	76	80.85	18	19.15

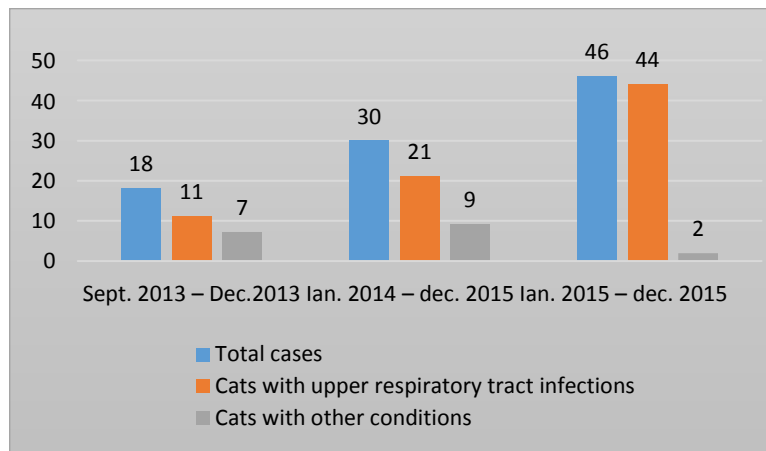


Fig. 1. Distribution of respiratory infections in cats over the study period

From Table 1 and Figure 1 it is noted that the largest number of examined cats was in 2015 with a total of 46, of which 44 were with respiratory infections, representing 95.65% and only 2 cats presented other conditions.

Table 2.
The frequency of upper respiratory tract infections in cats depending on age during September 2013-December 2015

Period	Cases with respiratory infections	Age < 1 year		Age between 1-8 years		Age > 8 years	
		No.	%	No.	%	No.	%
Sept. 2013– Dec. 2013	18	10	55.55	2	11.11	6	33.34
Ian. 2014 – Dec. 2014	30	17	56.66	4	13.34	9	30
Ian. 2015 – Dec. 2015	46	25	54.36	6	13.04	15	32.60
Total	94	52	55.31	12	12.76	30	31.93

From analysis of Table 2 and Figure 2 it appears that the prevalence of upper respiratory tract infections is higher among cats in the first year of life, representing 55.31% out of the total cases diagnosed with the feline respiratory complex, then follows the cats over 8 years, with a prevalence of 31.93%. This data is in accordance with the values reported by Dinnage et al., (2009).

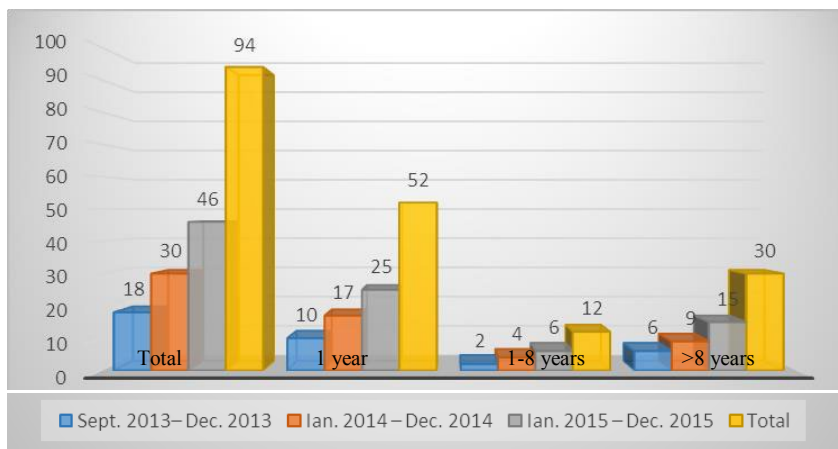


Fig. 2. Distribution of respiratory infections by cat's age

After performing the physical examination of the animals presented at consultation, there were identified the following clinical signs: the degradation of general condition, weakening syndrome, conjunctivitis, nasal and conjunctivitis, abundant discharge, similar to those described by the literature (figure 3) (Gourkow et al., 2013). The cats showed hyperthermia, the body temperature ranged between 39.6 °C - 42,4°C, respiratory rate of 20-25 beats per minute and a heart rate of 126-130 beats per minute.



Fig. 3. Clinical aspects of infectious rhinitis
A - Conjunctivitis, with modified conjunctival discharge
B – Nasal discharge and crusts

The cats with age between 1 to 8 years showed proliferative and ulcerated lesions on the hard palate, tongue (figure 4) and gums (figure 5), clinically express by dysphagia, lack of appetite and weight loss.

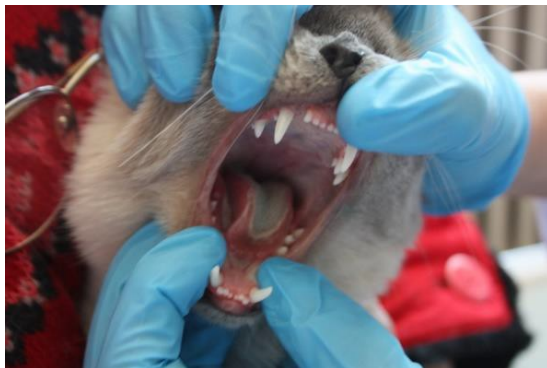


Fig. 4. Lingual ulcerative lesions



Fig. 5. Stomatitis lesions

The suspected diagnosis based on the clinical signs was feline calicivirus (Daraban et al., 2013).

According to the severity of symptoms, the cats received an appropriate treatment, deciding to apply 3 different treatment plans (table 3).

Table 3.

The structure of the treatment plans

Product	Plan 1	Plan 2	Plan 3
Antibiotic	Clamoxyl	Linco-spectin	Amoxy Kel
Expectorant	Pneumoguard	Pneumoseptol	Pneumoguard
Vitamins	Vitamin C, B1, B6	Vitamin C	Vitamins C, B1, B6
Topic	-	Glicerină boraxată, albastru de metilen	Virbagen Omega
Ointment / eyewash	Cavasan	Tobrex	Sensivit
Rehydration	5% dextrose, sodium chloride solution	Duphalyte, sodium chloride solution	5% dextrose, sodium chloride solution

Plan 1. It was performed a grooming of the ocular and nasal regions with a sodium chloride solution. It was applied the antibiotherapy, using as antibiotic the amoxycilin (Clamoxyl L.A. 200mg) 12.5 mg/kg bw daily, sc. To encourage the respiration and the fluidization of bronchial secretions, there was administrated Pneumoguard in dosis of 0.5/ml per animal, s.c. The rehydration was achieved with sodium chloride solution and 5% dextrose solution given intravenously in a dose of 10 ml / kg / day.

The treatment was supplemented with vitamin C 1ml+ vitamin B1 1ml + B6 1ml, given intravenously. For the ocular lesions, a solution Cavasan was used (Chloramphenicol 20 mg + Vitamin A).

After 5 days of treatment, the cats treated according to the Plan 1 were cured. In their treatment it was not necessary a therapy for the oral cavity since the cats didn't present oral lesions.

Plan 2. The antibiotic used to the Plan 2 was Lincospectin in doses of 1 ml/5 kg / day IM. For home, it was recommended the feeding with dietary supplement Viyo. The cats treated according to the Plan 2 received vitamin C and Pneumoseptol for the fluidization of bronchial secretions. For the ocular lesions, an ointment was used (Tobradex). The rehydration was achieved with Duphalyte 50 ml/5 kg and sodium chloride solution.

The cats included in group 2 showed oral lesions such as ulcers on the tongue and on the hard palate. In their case, the treatment was supplemented with local application of methylene blue and Glycerine borax, twice per day.

The disease evolution was favorable and after 7 days from the treatment beginning the cats were cured.

Plan 3. The animals treated according to the Plan 3 showed lesions of ulcerative and proliferative chronic gingivitis and stomatitis; the diagnosis was a chronic evolution of feline calicivirosis.

The treatment of choice for these lesions was consisting in *Virbagen Omega*, recombinated interferon-omega for cats.

The plan treatment was conducted according to the following protocol: 1billion UI/kg/ day sc.

Day 0 (D0 – the first day of treatment) – 1 billion UI is locally administered by infiltration at the limit between the normal and affected tissue (figure 6).

During days D1, D3, D5, D7, D9, D32, D34, D36 and D38 the interferon was administrated sc. During D15 and D30 the interferon was locally applied.

Simultaneously to the interferon therapy, a therapy with antibiotics was applied. Additionally, there may be uses steroid anti-inflammatory substances with caution. Rehydration should not be missing from the treatment plan.



Fig. 6. Day 0: Locally administration of *Virbagen Omega*

The treatment with *Virbagen Omega* leads to symptoms improvement (figure 7), although is lengthy and expensive.



Fig. 7. Symptoms improvement after administration of *Virbagen Omega*

Conclusions

Following the study carried out during 2013 – December 2015 in the Clinic of Infectious Diseases and preventive medicine of the Faculty of Veterinary Medicine, several observations were made:

1. During September 2013- December 2013 period, out of 18 cats presented for a physical examination, 11 cats manifested respiratory symptoms, which represents 61.11%, whereas 7 cats had other conditions.
2. During 2014, the total number of cats examined was 30, of which 21 cats, representing 70% of cats had respiratory infections, and 9 cats, 30%, had other conditions.
3. The largest number of examined cats was in 2015 with a total of 46, of which 44 were with respiratory infections, representing 95.65% and only 2 cats presented other conditions.

4. The prevalence of upper respiratory tract infections is higher among cats in the first year of life, representing 55.31% out of the total cases diagnosed with the feline respiratory complex, then follows the cats over 8 years, with a prevalence of 31.93%.
5. The treatment schemes applied were established according to cat's symptoms, therefore in the case of Plan 1 the healing occurred after 5 days, while in the case of Plan 2 after 7 days.
6. The animals with ulcerative stomatitis showed ameliorated conditions after the treatment with Virbagen Omega, although the treatment is lengthy and expensive.

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