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COMPARATIVE ANALYSIS OF CLASSICAL AND NEW TREATMENT METHODS OF FELINE CALCIVIRUS INFECTION**ZAZHARSKIY V.V.**, *associate Professor*,
TKACHENKO M. V., *graduate**Dnipropetrovs'k State Agrarian and Economics
University, Dnipropetrovs'k*
zazharskiy@yandex.ru,
mariiatkachenko@bk.ru

The given research contains the research results of clinical examination, pathological changes in cats suffering from Calicivirus infection. Comparative analysis of therapeutic and cost effectiveness using both classical and new treatment methods of sick animals has been carried out. During the clinical examination one of the major clinical manifestations of feline Calicivirus infections - sores on the tongue and palate - has been identified. Venous congestion and pulmonary edema with lesions of the upper and middle lobes have been revealed. The new treatment regimen has become more effective thanks to the use of immunomodulator Cycloferon and third - generation cephalosporin antibiotic Ceftriaxone. The treatment regimen of one animal is 237.85 USD

Cats suffering from Calicivirus infection, clinical and pathological changes, therapeutic and cost effectiveness

Introduction. Feline calicivirus infection (calicivirosis) is a highly contagious disease of the cat family (Felidae), which clinically causes conjunctivitis, ulcerative stomatitis, rhinitis, trachea-bronchitis, pneumonia. It is accompanied by significant mortality [1, 2, 3].

Virological studies of scientists from different countries show that calicivirus infection is panzootic and it is common among both domestic and wild cats all over the world [1, 6, 7].

The analysis of published data allowed us to compile that information. Only Felidae family animals are prone to illness. However, according to some researchers calicivirus, spread in recent years by other mammals, reveals the phylogenetic origin of the virus, which is a consequence of the lability of its genome [1, 5]. If the calicivirus infection is not complicated by secondary microflora, in 60% of cases the clinical recovery of the animal begins in 1-2 weeks. However, calicivirus as monoinfection is rarely recorded. It is usually complicated by cocci disease, mycoplasma, chlamydia, bordatellamy, herpes- and retro viruses. In these cases death of cats occurs within two weeks and may reach 85% [1, 6, 7].

The purpose of the research. A comparative analysis of classic and new treatment methods of feline calicivirus infection.

Material and methods. The experiment was conducted in a private clinic of veterinary medi-

cine "CatDog", Dnipropetrovs'k. We have studied 20 cats (age 9 months – 4 years) suffering from calicivirus at the same stage of the disease (3-5 day illness), which is characterized as the initial stage and 10 clinically healthy animals (control group) by using analogues.

The diagnosis of calicivirus infection in cats has been set integrated using the epizootic data, clinical signs, pathological changes.

To study the effectiveness of treatment of calicivirus infection in cats, we have selected 20 animals diagnosed with feline calicivirus infection aged 9 month- 4 years at the same stage of the disease (approximately 3-5 day illness), which is characterized as the initial stage and 10 clinically healthy animals (control group).

Having determined the diagnosis of feline calicivirus infection, sick animals have been divided into experimental groups: group I (classical regimen) - 12 animals, group II (new regimen) - 8 animals.

Scheme of the first treatment group:

Treatment is based on the use of serum immunoglobulin "Vitafel", which is used to produce passive immunity. To prevent dehydration of animals we have used intravenous solutionis Ringer - Locke and 5% glucose solution.

In order to suppress the development and propagation of secondary infection we have used broad-spectrum antibiotics - "Flemoxin Solutab

0.25". Along with antibiotic we have used ascorbic acid and vitamins - "Tetravit" to support the body.

In cases of purulent discharge from eyes and nose, we have pipetted antiviral drops "Anandyn". For the lubrication of mouth ulcers a solution "Lugoli" has been used.

To stimulate non-specific resistance of the organism we have used "Fosprenil" and "Cyclopheron" as immunomodulator (Table 1).

Treatment of animals in the second group (new regimen):

We have used immunomodulator "Cyclopheron". Antiviral drops "Anandyn" have been injected during the purulent discharge from eyes and nose. For the lubrication ulcers in the mouth we have used - Ioddicerin solution. To prevent dehydration we have injected intravenous solutionis Ringer-Locke and to increase body resistance - solution "Dufalayt." In order to suppress the development and propagation of secondary infection we have used broad-spectrum antibiotics - "Ceftriaxone". Metabolic processes have been optimized by vitamins "Gamavit."

Animals of the third group have been clinically

healthy (control group). The scheme of the experiment is shown in Table 1.

During the experiments the animals were subjected to daily clinical examination. Assessment of the effectiveness of treatment has been made by absence of clinical signs of disease, appetite, body temperature, gradual reduction of fluid discharge from the nasal cavity and eyes.

Results and discussion. During the clinical examination we have found one of the major clinical manifestations of feline calicivirus infection - sores on the tongue and palate (Fig.1). The pathological-anatomical dissection was performed in the dorsal position using the method of evisceration in a generally accepted sequence (Fig. 2).

The external examination of corpses has shown the following: sunken eyes, conjunctiva was not changed (in two cases), with pale bluish tint (in two cats). Mucous membranes of the nasal cavity in two cases were not changed, and two of them had signs of sero-purulent rhinitis.

Retropharyngeal and submandibular lymph nodes have enlarged in size, reddened or gray-pink, juicy on the cut. All animals had edema and

Table 1. Scheme of the experiment

Group of animals	Number of animals	Name of medical preparations	Place of injection	Treatment regimen
1	2	3	4	5
Group 1	12	Vitafel	subcutaneously	3 days
		Fosprenil	intramuscularly	7 days
		Flemoksin Solutab 0.25	orally	5 days
		Anandyn	On eye conjunctiva	10 days
		Solution "Lugoli"	For the lubrication of mouth ulcers	10 days
		Solutionis Ringer-Locke	intravenously	7 days
		5% Glucose solution	intravenously	7 days
		Tetravit	subcutaneously	28 days
		Vitaminum C	intravenously	5 days
Group 2	8	Cyclopheron 12,5%	intramuscularly	10 days
		Ceftriaxone	intramuscularly	5 days
		0.5% Solutionis Novocaini	Solution for Ceftriaxone	5 days
		Anandyn	On eye conjunctiva	5 days
		Cyclopheron 12,5%	intramuscularly	8 days
		Dufalayt	intravenously	7 days
		Gamavit	subcutaneously	5 days
Control group	10	Solutionis Ringer-Locke	intravenously	7 days
		Ioddicerin solution	For the lubrication of mouth ulcers	7 days
		Clinically healthy		



Fig.1. Clinical examination was found one of the major clinical manifestations of infection calicivirus cats - sores on the tongue and palate

hyperemia of the tonsils. In the mouth cavity on the mucosa of three corpses we have identified ulcers in the roof of the mouth and back areas of the tongue sized 0,5-3,5 cm. Vessels between the rings of the trachea were enlarged and full of blood.

In cats with a distinct vivo clinical manifestation of the disease we have observed evident pathological-anatomical changes in the form of pneumonia or bronchitis, affecting the upper and middle parts of the lungs. In addition to these changes we have found venous congestion and pulmonary edema in all animals (Fig. 3, 4).

Some animals were found with extraneous matron in translucent reddish liquid in the chest cavity. All lymph nodes of the chest cavity have been enlarged and reddened.

In animals with less distinct clinical features we have observed light pink or red lungs.

The top of the heart was blunted, the right ventricle was expanded, the wall was loose, color of the heart muscle was uneven with grayish col-

our parts of different size, shape and location. The balance of the wall thickness of the left ventricle to the right was 4: 1.

During the study of the abdominal cavity organs we have observed the anatomically correct position of organs. Spleen was elastic, dark red, not enlarged.

The liver was dark red, spotted with grayish-yellow or pale yellow colour, sometimes it had a small nutmeg figures. Gallbladder was full of viscous dark green bile.

Pancreas was evenly colored (yellow with patches of pink and red), swollen, enlarged in size, the cut surface was wet.

Buds of brownish color with patches of red have been observed. Two cats had cysts (Fig. 5, 6). The cut was wet, boundary between cortical and medullary layers in animals with distinct clinical features of the disease was not clear. The cortical layer was brownish, the brain was pink or cyanotic, with weakly observed granulosis. In the wall of the bladder some animals have been no-



Fig 2. Pathological-anatomical dissection method evistseratsiyi a conventional sequence



Fig. 3, 4. Pulmonary edema



Fig. 5, 6. Cysts on the kidneys. In the context of the boundary between cortical and medullary layers in animals is well defined

ticed with pinpoint hemorrhage.

All intestinal lymph nodes have been enlarged, swollen, evenly colored (with patches of blue and red), the cut had alternate red and gray-white areas. On the surface lymph nodes often have been found with pinpoint hemorrhages.

Mucous membrane of duodenal, jejunum and ileal gut along the whole length in all animals with distinct clinical features of the disease were hyperemic, covered with thick dull yellowish viscous mucus. In animals with mild clinical signs of disease the mucous membrane was dull, swollen, in the jejunum it was covered with thick, muddy, yellow-gray mucus that was not washed off with water.

At the onset of the disease 4 cats have died in the first group, and in the second group all cats have recovered during the whole treatment period.

Thus the latest regimen has proved to be the most effective, thanks to "Cyclopheron", which is an immunomodulator and has a wide range of antiviral activity. Moreover, it creates a

regenerating effect on the affected tissue and mucous membranes, normalizing metabolism in tissues. Due to its biological properties 'Dyufalayt' restores the function of enzymes, amino acids, which are accessible material for protein synthesis, erythropoiesis and transport of hormones; dextrose needed for body energy and electrolytes to replace lost body salts.

Furthermore, 'Ceftriaxone' played a positive role. It is a third generation cephalosporin antibiotic, which has a broader spectrum of antimicrobial activity than 'Flemoksyn' (amoxicillin group).

'Gamavit' contains a set of biologically active substances, which increase the effect of drugs, serum bactericidal activity and appetite. 'Gamavit' renders immunomodulatory and overall biosynthesis effects and neutralizes the toxins.

To prevent dehydration in animals we have used Ringer-Locke solution that regulates fluid - and—electrolyte and acid-base balances in the

Table 2. Comparative analysis of therapeutic treatment of feline Calicivirus infections

Group of animals	Number of animals	Sick		Surviving		Dead	
		head.	%	head	%	head	%
1	2	3	4	5	6	7	8
I	12	12	100%	8	66,7	4	33,3
II	8	8	100%	8	100%	-	-
III	10	clinically healthy					

organism of animals.

Taken together, these drugs provide a quick positive results in the treatment of feline Calicivirus infections. From the first day of treatment body temperature started to decrease; on the sixth day breathing movements and heart rate were within the physiological norm, while during the classical scheme treatment body temperature, heart rate and breathing movements varied and reached the limits of physiological norm on the eighth day of treatment.

Calculation of cost-effectiveness of veterinary measures:

Payment calculation of veterinary services in treatment of feline Calicivirus infections:

1 per/ min. = Veterinary salary for the year: 21 workdays: 7 h.: 60 min.

1 per / min. = 3000: 21: 7: 60 = 0.26 UAH. - The cost of 1 per / min. of work

To conduct medical research activities in the first group we have spent 30 minutes, while in the second group - 18 min. In addition, 100 UAH is the average cost of commercial manipulation.

Experimental group 1= 30 min. x 0.26 USD. x 12 animals = 93.6 UAH + 1200 UAH = 1293.6 UAH.

Experimental group 2 = 18 min. x 0.26 USD. x 8 animals = 37.44 UAH. + 800 UAH. = 837.44 UAH.

Thus, payment of veterinary services in the treatment of cats in 2 experimental groups is under 1293.6 and 837.44 UAH.

The total amount of the cost for manipulation in the treatment of feline Calicivirus infections, which includes the cost for drugs and labor expenses of Veterinary Services is:

First experimental group: 1293.60 UAH. +

397,05h x 12 heads= 6063.60 UAH.

Second experimental group = 837.44 UAH. +237,85h x 8 heads = 2740.24 UAH.

Therefore, from the above calculation we have determined that a classical method needs most of the costs for veterinary treatment of feline Calicivirus infections - 6063.6 UAH., and the latest experimental group treatment requires significantly lower costs - 2740.24 UAH.

Treatment of one animal using the classical scheme is 397,05 UAH., while using the latest scheme is equal to 237.85 UAH.

Conclusions.

1. During the clinical examination we have found one of the major clinical manifestations of feline Calicivirus infection - sores on the tongue and palate. In animals with a distinct clinical manifestation of the disease we have observed florid pathological-anatomical changes as pneumonia or bronchitis, affecting the upper and middle parts of the lungs. In addition to these changes all animals have been diagnosed with venous congestion and pulmonary edema.

2. The new regimen has proved to be more effective because of the use of immunomodulator Cyclopheron and third generation cephalosporin antibiotic Ceftriaxone.

3. Most of the costs for veterinary treatment of feline Calicivirus infections needs a classic method - 6063.6 UAH., and the latest experimental group treatment requires significantly lower costs - 2740.24 UAH. One animal treatment using the classical scheme is 397,05 UAH., while the new scheme equals 237.85 UAH.

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СРАВНИТЕЛЬНЫЙ АНАЛИЗ ЭФФЕКТИВНОСТИ КЛАССИЧЕСКИХ И НОВЫХ МЕТОДОВ ЛЕЧЕНИЯ КАЛИЦИВИРУСНОЙ ИНФЕКЦИИ КОТОВ

Зажарский В.В., Ткаченко М.В.

Днепропетровский государственный аграрно-экономический университет, Днепропетровск.

В работе приведены результаты исследований клинического осмотра, патологоанатомических изменений у котов, пораженных калицивирусной инфекцией. Проведен сравнительный анализ терапевтического и экономического эффекта при использовании классических и новых методов лечения больных животных. При клиническом осмотре обнаружен один из характерных клинических проявлений калицивирусной инфекции котов – язвы на языке и нёбе. Обнаружен венозный застой и отек легких с поражением верхних и средних долей. Новая схема лечения оказалась более эффективной, благодаря использованию иммуномодулятора Циклоферон и антибиотика третьего поколения группы цефалоспоринов – Цефтриаксон. Курс лечения одного животного составил 237,85 грн.

Коты, пораженные калицивирусной инфекцией, клинические и патологоанатомические изменения, терапевтический и экономический эффект

ПОРІВНЯЛЬНИЙ АНАЛІЗ ЕФЕКТИВНОСТІ КЛАСИЧНИХ ТА НОВІТНІХ МЕТОДІВ ЛІКУВАННЯ КАЛІЦИВІРУСНОЇ ІНФЕКЦІЇ КОТІВ

Зажарський В.В., Ткаченко М.В.

Дніпропетровський державний аграрно-економічний університет, м. Дніпропетровськ

У роботі наведені результати досліджень клінічного огляду, патологоанатомічних змін у котів, хворих каліцивірусною інфекцією. Проведений порівняльний аналіз терапевтичної та економічної ефективності при застосуванні класичних та нових методів лікування хворих тварин. При клінічному огляді виявлено один з найважливіших клінічних проявів каліцивірусної інфекції котів – виразки на язиці та піднебінні. Встановлено венозний застій і набряк легень з ураженням верхніх та середніх часток. Новітня схема лікування виявилась ефективнішою, завдяки використанню імуномодулятора Циклоферон та антибіотика третього покоління групи цефалоспоринів – Цефтриаксон. Курс лікування однієї тварини складає 237,85 грн.

Коти, хворі каліцивірусною інфекцією, клінічні і патологоанатомічні зміни, терапевтичний і економічний ефект