

ABSTRACT

The Ph. D. Thesis entitled “*Contributions to the study and treatment of otitis at carnivores*” is structured in compliance with the present legal provisions in two main parts: part I “*The current stage of knowledge regarding otitis otitis at carnivores*” comprising 55 pages, representing 26%, and part II “*Personal contribution*” extends on 157 pages and represents 74%.

The first part, that is structured in 5 sections, briefly presents information from literature referring to the subject matter of the thesis, syntheses that later were used to interpret and compare the data obtained in the second part. This part is illustrated by 2 tables and 21 figures selected as significant in order to detail the synthesized information.

Part II is structured in 4 sections and covers the aim and goal of the research, the study matter and the methods used, the results obtained and their interpretation. The general conclusions conclude this part.

Although it is the most frequent disorder of the statoacoustic apparatus in carnivorous animals, the otitis sometimes could become highly frustrating due to its chronicizing or recurrence following an inadequate treatment application.

Starting from these reasons, the main objectives of the thesis were the following:

- ✓ Setting the otitis occurrence in carnivorous animals and its correlation with various intrinsic factors such as species, race, age, gender and extrinsic factors, respectively the breeding conditions as well the monthly dynamics of casuistry;
- ✓ Completing the cytological research in order to clear up some etiopathogenetic aspects;
- ✓ Description of clinical aspects and their correlation with the results of etiopathogenetic investigation;
- ✓ Setting a protocol diagnosis;
- ✓ The comparative assessment of some invasive and non-invasive therapeutic methods in order to set an adequate therapeutic conduct suitable to the evolutionary form taking into account the etiological polymorphism.

The work was carried out in 4 years, from January 1, 2005 till December 2008 respectively, on domestic carnivorous animals presented at Surgery Clinic of Faculty of Veterinary Medicine of Iasi, for ambulatory treatment, or hospitalization, to which it is added the casuistry presented at private veterinary medical offices of Iasi Municipality. The obtained results were illustrated in 151 figures, 19 tables and 12 graphs.

For a more complex survey regarding the epidemiology and etiopathogeny of the otitis in carnivores, there were used also the evidences of the Medical Clinic and of the Microbiology Laboratory of the Faculty of Veterinary Medicine of Iasi. Regarding the fact that only the animals presented at consulting can be subjected to epidemiologic investigation, our survey does not operate with adequate terms of morbidity, occurrence and prevalence due to the lack of some large reference populations, respectively all carnivores of a certain areal, but with the relative frequency term.

The epidemiologic survey allowed the setting of relative frequency of external otitis and its correlation with various intrinsic factors such as species, race, age, gender of the animal and extrinsic, respectively climatic variations, in order to set the monthly dynamics of casuistry, breeding conditions as well as hypersensitizing states and treatment errors.

The results of the epidemiologic survey showed the fact that the species influences the relative frequency of external otitis, this frequency being higher at canines (12.27%) compared to felines (2.89%). Within the species, at dogs, relative frequency differences appear in relation to race, higher values of prevalence of the species being recorded in races with dangling ears, representing 76.3% of casuistry recorded on species. In cats, we can estimate that the recorded percentages for each race can be explained by the number of cats of the respective race living in the surveyed areal.

Regarding the correlation between age and relative frequency of external otitis, we observe the recording of various percents of age groups, depending on the species. The relative frequency increase of external otitis was recorded in dogs of two age groups of 2-5 years (30.6%) and 5-8 years (33.8%) and in cats to those under 1 year of age (35%) and those with an age span between 2-5 years (28%). No clear correlation could be established between the animal gender and relative frequency of external otitis, the percentages of the two genders were slightly similar or slightly increased in favor of males in canines (52%) or of females in felines (56%).

The epidemiologic survey carried out by us demonstrated that the external otitis in carnivores has a seasonal evolution with a casuistry concentration in summer months (June 14.3% in dogs, respectively 13.2% in cats, July 15.2% in dogs and 15.7% in cats, August 13.8% in dogs and 14.4% in cats).

The etiologic polymorphism of external otitis in carnivores explained the surveys of correlating the relative frequency with breeding conditions, some hypersensitizing states and with treatment errors. In order to carry out a more complex epidemiologic survey, the *Dermatological Observation Chart* was conceived, including data regarding the animal identification, breeding conditions, observed symptoms and previously used medication. The obtained data of anamnesis and filling in the *Dermatological Observation Chart* facilitated the correlation of relative frequency with these factors. Thus, it was found out that the relative frequency of otitis is influenced also by breeding conditions: 71.4% of the recorded cases in dogs emerged in dogs living indoors in flats, and in cats, high percentages (63.5) were recorded to those living outdoors in courtyards.

According to the *Dermatological Observation Chart*, the external otitis should not be excluded of the systemic diseases in dogs with hypersensitizing states. The correlation of these disorders with the anal sac collection and with atopic dermatitis illustrates the fact that 30.2% of dogs with external otitis showed also atopic dermatitis with various placements, and in 24.6% of the cases, the external otitis developed in parallel with the anal sac collection.

The frequency of otitis in carnivores shows as well the role of treatment errors in disease emergence, these being represented by the irrational use of ceruminolytic substances in dogs (26.9%) and in cats (17.6%) or by administration of inadequate medication (9% in dogs and 12% in cats).

Regarding the clinical aspects of otitis in carnivores, their description was carried out using surgical semiology methods, correlated with methods specific to stato-acoustic apparatus examination. The observations regarding manifestation of external otitis allowed us to work out a classification depending on the evolution stage and prevailing clinical aspect. In this way, clinically, the external otitis in carnivores was classified in: erytematous otitis, ceruminous otitis, exsudative otitis, supurative otitis, ulcerative otitis and proliferative otitis.

The external otitis starts by erythema of internal tegument of auricular concha and of auditive tube, characteristic clinical signs for etytematous phase. The erytematous otitis can have

an enduring clinical evolution, but in most cases it precedes the ceruminous otitis, characterized by an increase of cerumen secretion. The ceruminous otitis develops to exsudative otitis, clinical stage in which the auricular secretion becomes abundant, with increased consistency or fluid and aspect controlled by the prevailing microflora. In supurative otitis, appearing subsequent to the pyogenic flora transplantation, the auricular secretion becomes fluid with ichorous smell and aspect. The persistence of the purulent exsudate at the level of auricular concha and of auditive tube, determines the emergence of ulcerative otitis characterized by the presence of some erosion areas of the tegument that slightly bleeds when toileting.

The persistence of the inflammatory process determines the emergence of proliferative otitis, the observed clinical manifestations being the stenosis of auditive tube due to proliferations with cauliflower like aspect and decreasing of auditive acuity.

Irrespective of the clinical form of otitis, the animal shakes its head, rubs its ears against the surrounding objects, scratches its ear base determining the emergence of complications in 14.2% of cases in dogs and 29.5% in cats.

In otitis of carnivores, the clinical diagnosis has an informative value, the adequate selection of a therapeutic method is conditioned by the results of the paraclinical diagnosis tests, imposed by the etiological polymorphism. Sampling and estimation of otitic of exsudate samples allowed clearing up some etiopathogenic aspects of otitis. The direct microscopic examination was carried out mainly of the samples collected from cats in order to identify the parasites (*Otodectes cynotis*) and the microbiological examinations have facilitated the setting of the isolation frequency of microorganisms (bacteria and leaven) and their involvement in emergence of various clinical forms of otitis.

Centralization of obtained results out of 73 otic samples collected from dogs without auricular disorders and out of 658 samples collected from dogs with various clinical forms of otitis, showed the fact that, in the auditive tube, at most dogs, there are comensall and pathogenic conditioned bacteria, so that, the isolated and identified bacteria of otic samples collected from dogs with various forms of otitis did not confirm the determinative role in external otitis emergence, but only its favoring role.

The clinical observations, attested by diagnosis microscopic methods, were used also to make a correlation between the macroscopic aspect of the exsudate and the favoring or determinative factor of its emergence.

Within the paraclinical diagnosis, the estimation of extension degree of the inflammatory process at the level of the tympanic bulla for confirming the clinical diagnosis of otitis media was carried out by imagistic examinations. In order to view the auditive tube and of tympanic bullas, three radiographic projections were used; the most conclusive results were obtained following the open mouth radiography. Clarification of some radiographic aspects was carried out by computed tomography examination. The CT examination by bone window (characterized by poor contrast allowing the viewing of mostly the bone formations) allowed the comparative estimation of the contour of the two tympanic bullas, and their content was estimated by native CT. In order to confirm the diffusion of the inflammatory process in neighboring areas of tympanic bulla, also CT sections were recorded after the administration of a contrast substance.

In case of patients with otitis media, the CT serial images showed the irregular contour of tympanic bulla with radio attenuation that varied between 20-1000HU and the non-homogeneous content with variable radio attenuation between 26-90HU, specific for a liquid.

Regarding the prevention of otitis emergence in carnivores, an essential condition for carrying out this requirement is represented by the periodic cleaning of auricular concha and of auditive tube.

The epidemiological surveys carried out within the thesis showed the increased frequency of otitis in certain races, as well as an increase of external otitis frequency in summer months and at the beginning of fall, due to the increase of humidity and environment temperature. In this respect, for setting the periodical hygienic cleaning as a prevention method, we carried out a survey, during May 2008 – October 2008, on a number of 73 dogs of various races susceptible to otitis (Caniche, Cocker, Labrador, Setter). During the surveyed period of time, clinical signs of otitis emerged only on 25 out of 73 dogs, representing 34.2%, demonstrating that a periodic and correctly executed cleaning period of the auditive tube and of the internal side of ear tagus can assure the prevention of otitis emergence in 65.8% cases.

Taking into account the frustrating character of this disorder, as a consequence of chronicizing and recurrence following inadequate treatment, one of the main objectives of the thesis was to comparatively estimate some invasive and non-invasive therapeutic methods for setting a therapeutic course adequate to the developing form.

Within the conservative treatment, the adequate selection of the products used was conditioned by the results of clinical and paraclinical diagnosis tests. The clinical observations

allowed framing into the developing form, by recording local and general signs, framing that formed the basis of the selection of pharmaceutical design of the topic product. In this way, in the cases of erythematous and ceruminous otitis, we preferred the use of products in the form solutions and ointments, and in the cases clinically manifested by an increase of the exsudate quantity, by changing its aspect, as well as the presence of ulcers, we used powders, after a previous cleaning of the tube. The adequate selection of the product composition was carried out by correlating the results of clinical diagnosis with those of the paraclinical diagnosis methods, especially microbiological ones.

The external otitis in carnivores is a disorder that could give up on medication therapy, in relation to clinical stage but slowing forms without promising response also appear, so that imposing a radical intervention. Although the surgical intervention is more laborious, more traumatizing and requesting a more careful post-operative supervision, the action is imposed in cases of proliferative lesions as well as of suppurative-ulcerative ones, stubborn to treatment, the adequate selection of surgical technique is carried out depending of the diagnosed otitis type and the incurred results.