

CHRONIC SINUSITIS IN DOGS

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Abstract: *This paper reveals the results of clinical, laboratory and therapeutic investigations in a case of frontal chronic sinusitis in a dog. The patient was brought in for consultation with two well defined collections in the left supraorbital region, which led to exophthalmia and bilateral muco-bloody rhinorrhea. The superior nasal cavity wall was soft at palpation, and the inferior one was bulging into the oral cavity.*

The laboratory results excluded the parasitological (Linguatula serrata) or fungal etiology (Aspergillus spp.), the clinical signs (lack of fever, presence of appetite and absence of dental disease) excluded the possibility of a septic inflammation.

X-rays of the head and gross anatomy findings after maceration of the skull revealed serious lesions of the frontal, lacrimal, zygomatic, maxillary, ethmoid bones, offering a large communication with the cranial cavity, though the animal did not present any signs of postural and dynamic distress.

All these advocate in favor of a neoplastic process involving the frontal sinus and the nasal cavity.

Key words: *dog, sinusitis, nasal discharge, parasitological/ fungal examination, osteolysis*

Unlike in other domestic mammals, the paranasal sinuses in dogs are ventilated spaces connected to the [nasal cavity](#). They are a series of cavities, arranged one after another, and all dogs have frontal and maxillary sinuses, which differ with age, breed and head appearance. They are well formed, completely separated and situated bilaterally (1).

In dogs, the sinus system is generally poorly developed. The frontal sinus extends from the medial margin of the orbit to the temporal line. The frontal sinus has 3 chambers which drain (just over the ethmoidal volutes) separately into the nasal cavity (1, 4). The maxillary sinus is a cavity which freely communicates with the nasal cavity, and is known as the maxillary recess. It is situated dorsally to the roots of the 3rd and 4th premolars, medially to the infraorbital canal. It is communicating with the nasal cavity through a narrow orifice (4).

Because of their topography and communication with the nasal cavity, the paranasal sinuses can be subject to trauma, infections, parasitological and fungal infestations, or tumor development (2, 3, 4). This paper reveals the results of investigations in a case of chronic sinusitis in a dog, with both sinuses and the nasal cavity involved.

MATERIAL AND METHOD

An 11-years-old common breed bitch is brought in for consultations at DUO-VET private clinic, with bloody nasal discharge, sneezing and noisy breathing, for over 4 months. Gradually, the left frontal region was deformed by two low consistency swellings, of continuously growing volume. Because of the pressure to the eye, the dog was exophthalmic, but with no signs of low visual acuity.

Because the nasal discharge and the sneezing meant serious efforts from the owner, he accepted exploratory surgery, for biopsy and, hopefully, for establishing the diagnosis. Pre-op, the teeth were examined, to overrule any infection, and samples were taken for

parasitological (*Linguatulla* spp.) and fungal (*Aspergillus* spp.) examinations.

The surgery was done under deep anesthesia, and the two swellings, which were soft at palpation (fig. 1), were opened in a classical manner, after incising the skin and epicrania fascia (fig. 2). They both appeared as bloody collections under pressure (fig. 3). The nasal bones were macerated, and the same content was coming out the tip of the nose. The soft palate was deformed to the inside of the mouth.



Fig. 1 - Pre-operative aspect of the collection

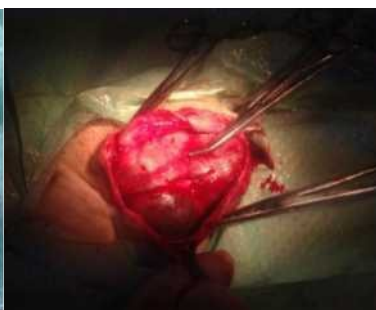


Fig. 2 - Intra-operative aspect



Fig. 3 - Bloody aspect of the collection

The exophthalmic eye was put back into the orbit. The nasal cavities were flushed with Saline solution, and the skin was closed with 2/0 non-absorbable suture, in a simple interrupted pattern (fig. 4).



Fig. 4 - Simple interrupted skin suture pattern

Antibiotics and iv fluids were given in post-op.

RESULTS AND DISCUSSIONS

The preoperative examination revealed at inspection the two swellings, extending from the frontal supra-orbital region to the nasal region. A discrete caudal deviation of the axis skull was noticed, but it was masked by the swellings. When opening the mouth, the animal showed no signs of discomfort; the soft palate was protruding towards the tongue, explaining why the animal avoided eating bones.

When examining the teeth from the left side, any problem with the premolars and molars was overruled, the dog showing no signs of dental disease.

Also, during this clinical examination, the abundant rhinorrhea was noticed and the

nasal discharge, of a bloody aspect, made the animal scratch its nose frequently. At palpation, the two deformed areas appeared as liquid collections under pressure. At this point, there was no additional nasal discharge, as seen when compressing the dorsal nasal cavity wall.

The direct examination, under magnification, of the samples taken from the nasal discharge or by aspiration from one of the collections, was negative for *Linguatulla* spp. For this parasite, the fecal exam was also negative. Fungal examination on Sabouraud agar plate, for identifying *Aspergillus* spp or other species, was negative. These laboratory investigations excluded the possibility of a fungal or parasitical nature of the disease.

Because the surgery allowed both collections to be drained, animal breathing was improved, normal feeding was resumed, and the vital prognostic was reserved, because the extent of the lesions could not be assessed. The overall clinical status of the patient was better, making the owner hopeful. Approximately three months after surgery, the nasal discharge reappeared and the two swellings began growing again. Respiratory distress was noticed, together with rhinorrhea. Although Hedlund, in 1994, shows that *Aspergillus* sinusitis can affect the 7-years-old dog, the laboratory findings showed no signs of fungal presence. The lack of dental disease and fever, and the aspect of the secretions do not indicate an inflammatory pathology. Frontal and nasal osteolysis do not overrule a neoplastic process, even if Hedlund (1994) says that sinus tumors are a mere 1% of the cancer pathology in dogs. The same author reveals that old dogs are affected (as in this case), and over 80% are of malignant nature.

The X-rays of the head, done after relapse, show frontal, nasal and maxillary osteolysis (fig. 5). The inferior contour of the frontal sinus is gone, and high radio lucent oval-rounded shaped areas are thought to be secondary to deep osteolysis.



Fig. 5 - Osteolysis of the frontal, nasal and maxillary bones



This relapse, with a poor general status of the animal, led to euthanasia. After maceration of the skull (fig. 6), the osteolytical cavities (as seen on the radiographs) are confirmed.

Fig. 6 - Maceration of the skull left the bones clean and confirmed the severe osteolysis

The frontal bones are separated and deformed, the left sinus has thin and perforated walls. The orbital wall of the left frontal sinus is destroyed, probably after malignant development. The ethmoid bone is gone and a large communication with the cranial cavity is seen. Nevertheless, the animal showed no signs of static or dynamic postural impairment. The nasal bone and nasal conchae are also completely macerated. The osteolytical process on the left side started affecting the lacrimal, zygomatic and maxillary bones. The palatine processes are 80% destroyed, and the palatine, pterygoid bones and the vomer are missing.

All of these clinical, imaging and laboratory findings lead us to suspect a neoplastic process in evolution, with osteolysis and well defined cystic formations in the frontal and retrobulbar regions.

The osteolysis of the nasal cavity was complete, leading to serious impairment of breathing. Because the animal was presented in the last stages of the disease, there was no concluding if the process began in the frontal sinus or in the nasal cavity. The rhinorrhea is seen in both cases.

CONCLUSIONS

1. The development of collections in the frontal sinuses poses diagnostic issues, regarding the nature of the process.
2. The negative laboratory results for *Aspergillus* spp. or *Linguatulla* spp. are not in favor of a parasitical or fungal infestation.
3. The lack of fever, the presence of appetite and no dental disease exclude the inflammatory nature of the process.
4. The intra-operative findings revealed two well defined cystic collections, with a bloody content and bone lysis of the anterior margin of the orbital and the nasal cavity.
5. The osteolytical lesions of the left frontal sinus and the surrounding bones (lacrimal, zygomatic and maxillary) were further distinguished through X-rays of the head or by maceration of the skull after death.
6. The evolution of the disease and all the clinical and laboratory findings advocate in favor of a neoplastic process.

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