

Periorbital Cyst with Bone Defect in a Dog

Kanako ITO¹⁾, Kazushi ASANO^{1,2)*}, Toshiaki URANO³⁾, Naoki OGIWARA^{1,2)}, Mamiko SEKI^{1,2)}, Yuka KATO²⁾, Yukie SASAKI²⁾, Kenji TESHIMA²⁾, Kenji KUTARA²⁾, Kazuya EDAMURA^{1,2)}, Hisashi SHIBUYA⁴⁾ and Shigeo TANAKA^{1,2)}

¹⁾Animal Medical Center, Department of Veterinary Medicine, College of Bioresource Sciences, Nihon University, 1866 Kameino, Fujisawa 252–8510, ²⁾Laboratory of Veterinary Surgery, Department of Veterinary Medicine, College of Bioresource Sciences, Nihon University, 1866 Kameino, Fujisawa 252–8510, ³⁾Genki Animal Hospital, 5–7–10 Shimouma, Setagaya-ku, Tokyo 154–0002 and ⁴⁾Laboratory of Veterinary Pathology, Department of Veterinary Medicine, College of Bioresource Sciences, Nihon University, 1866 Kameino, Fujisawa 252–8510, Japan

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ABSTRACT. A 4-year-old female Miniature Dachshund was referred with a chief complaint of right periorbital swelling that had not responded to antibiotic therapy. Ultrasonography and fine-needle aspiration revealed that the periorbital lesion had a cystic structure without any inflammatory or neoplastic cells. Computed tomography (CT) showed that the cyst occupied a defect in the periorbital maxillary, lacrimal, and frontal bones and had invaded the nasal cavity. The lesion was histologically suspected by incisional biopsy as an epithelial cyst.

KEY WORDS: canine, computed tomography, periorbital cyst.

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A few reports have described cystic lesions around the eye or in the maxilla [2–5]. Surgery is the treatment of choice for a periorbital cyst. Either marsupialisation or enucleation is performed, depending on various factors- the size of the cyst, its status(unilocular or multilocular), and anatomical structures that are adjacent to the cysts [1, 6].

Computed tomography (CT) is one of the useful modalities for evaluating lesions in the human orofacial area [1]. However, to our knowledge, CT imaging of canine orofacial cysts has not yet been reported. Therefore, in the present case, we utilized CT imaging to identify the morphological characterization of the cyst.

A 4-year-old, female Miniature Dachshund was referred to the Animal Medical Center of Nihon University with a chief complaint of right periorbital swelling. A swelling of the medial lower lid of the right eye had been observed for 2 months. An ophthalmic examination, including a fluorescein dye passage test, no abnormalities. The swelling had recurred despite antibiotic therapy and intermittent fine needle aspiration of the periorbital cyst.

On physical examination, a fluctuant swelling with a diameter of 2 cm was palpated in the medial canthus and medial lower lid of the right eye. Ultrasonography revealed that the swelling had an echolucent cystic structure. Sterile serosanguineous fluid was derived from the cyst by fine-needle aspiration. Cytological examination did not provide any evidence for a significant inflammatory process or neoplastic cell infiltration. CT was designed to clarify the morphological structure of the cyst.

Under general anesthesia, CT was performed by CT-

W450–10A (Hitach Medical Co., Tokyo) with the following scan parameters: 50 mA, 120 kVp, 4.5 s scan, 2-mm continuous slices, and 512 × 512 matrix size. CT imaging revealed a circumscribed and smooth cystic structure (Fig. 1). The cyst had expanded primarily within the right orbital region, invading the nasal cavity and cribriform plate. A periosteal reaction was not observed around the lesion, and the internasal septum, palatine bone, and teeth that were adjacent to the cyst were intact. The subsequent contrast CT

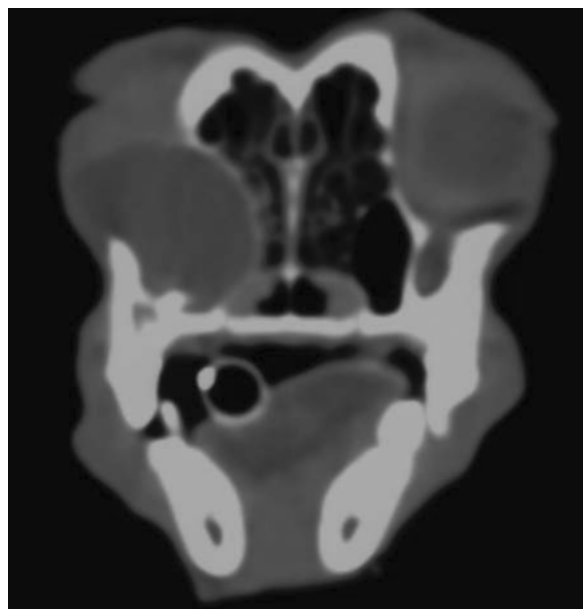


Fig. 1. Transverse CT imaging at the orbit and pterygopalatine fossa level. A circumscribed cystic structure invading the nasal cavity was revealed.

*CORRESPONDENCE TO: ASANO, K., Laboratory of Veterinary Surgery, Department of Veterinary Medicine, College of Bioresource Sciences Nihon University, 1866 Kameino, Fujisawa 252–8510, Japan.

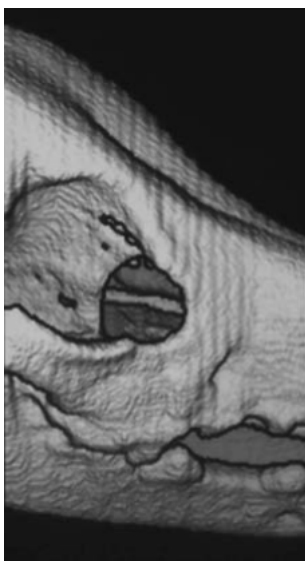


Fig. 2. Right lateral periorbital view of the 3D CT imaging. It demonstrated the defect in the right maxillary, lacrimal, and frontal bones more clearly.

with iohexol (Omnipaque 300 mg iodine/ml, 2 ml/kg, intravenous bolus injection) did not show an enhancement in or around the cyst. Following the aspiration of the intracystic fluid, a CT sinography with iohexol (Omnipaque 300 mg iodine/ml, approximately 1 ml) was performed. It was revealed that 4 chambers were present within the cyst; these chambers were not detected by radiography and ultrasonography. Three-dimensional CT (3D-CT; shaded surface display [SSD]) imaging clearly demonstrated a bone defect of the maxillary, lacrimal, and frontal bones (Fig. 2).

Incisional biopsy of the cyst wall was performed, followed by CT. Histological examination revealed that the cyst wall consisted of squamized epithelia and connective tissue; an epithelial cyst was suspected. Following the CT and biopsy, we recommended a surgical treatment. However, the owner was not in favor of further procedures and treatments.

Plain radiography can be used only for obscure identification of anatomical abnormalities in the canine periorbital region. On the other hand, CT imaging can provide more precise morphological information concerning the lesion. In the present case, CT imaging revealed that the cyst had

expanded into the nasal cavity, and 3D-CT clearly demonstrated that the periorbital bones adjacent to the cyst had a significant defect. CT imaging provided useful information concerning the outline of the lesion and potential complications of surgical treatment such as cosmetic defects. In addition, the lobulated cyst was detected using CT sinography in the present case. An evaluation of the status of the cyst is considered to be important for the prevention of incomplete removal and recurrence [7], and CT imaging may help for the evaluation.

It has been previously described that the cysts occurring in the canine periorbital area include bone epithelial cysts [3], lacrimal duct cysts [4], and epidermoid cysts [2]; however, the reason behind their occurrence has not been yet determined. The present case was similar to a previously reported case [3] with regard to the location of the lesion and clinical aspect. Further, the presence of a bone epithelial cyst was strongly suspected in the previous case as well. The most probable structure that could be involved is the nasolacrimal duct; however, the etiology remains unknown. In addition, the etiology of the bone defect around the cyst has not yet been determined. A previous report states that the progressive pressure exerted as a result of the enlargement of the cystic lesion could probably induce atrophy and destruction of the bony border [3]. Such a mechanism could possibly be associated with the present case. Moreover, the differential diagnosis of an osteolytic malignant tumor could be completely ruled out by our clinical examination including radiography, ultrasonography, CT, and incisional biopsy. Excisional biopsy was considered to be the most essential procedure for the definitive diagnosis in the present case.

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