

Sinonasal Computed Tomography

A male, 3-1/2-year-old Doberman pinscher was presented with the anamnesis of chronic epistaxis. The owner reported that the dog had been sneezing for five months and that the epistaxis, at first serous fluid, then hemorrhagic and purulent, had been present, particularly in the left nasal cavity, for two months. Radiographs showed a narrowing of that cavity. Because the patient showed no obvious improvement after five weeks of treatment with broad-spectrum antibiotics, the nose and sinuses were examined using computed tomography (CT).

Why use CT for nasal pathology?

A definitive diagnosis can be made in 90% of cases when CT scans are used for detailed evaluation of the nose, frontal sinuses and lamina cribrosa, according to the literature.

Radiographs—especially dorsoventral, laterolateral and open-mouth views—also show many details, but superimposition of several surrounding structures is a disadvantage.

CT is recommended to determine the extension of the pathology, eventual invasion of the lamina cribrosa and if intracranial extension is present. The obtained information is important to determine the prognosis and treatment plan.

CT findings of this Doberman's nose

Ring-shaped, swollen mucosa is seen (Fig. 1) at the level of the left frontal sinus, with endosteal reaction and bony destruction in some areas (Fig. 2). No significant changes are visible at the lamina cribrosa.

Caudally in the nasal cavity, soft-tissue opacity is clearly visible on the left side, with localized destruction of the turbinaliae (Fig. 3). Similar findings are visible rostrally and ventrally (Fig. 4). Thinning of normal bone is seen in the left retro bulbar region. After contrast medium (Visipaque^R 320 mg I/ml) was injected intravenously, diffuse enhancement was present of the soft-tissues (Fig. 5).

These findings are compatible with a unilateral (left) fungal infection extending into the nose and frontal sinuses. Other possible differential diagnoses include chronic rhinitis, because findings can be similar, and neoplasia, which is possible but less likely because it occupies more space.

Conclusion

A 3-1/2-year-old, male Doberman pinscher with chronic unilateral nasal symptoms was presented for CT examination.

A unilateral (left) soft-tissue swelling was seen, with destruction of the local turbinaliae and endosteal reaction. The findings were compatible with a fungal infection that extended into the nose and the left frontal sinus.

CT is a useful tool for diagnosing nasal-cavity diseases. When fungal pathology is present, specific details, such as soft-tissue opacity with localized areas of destruction of the turbinaliae, possible secondary endosteal reaction, and bony destruction, are visible. Similar findings may be seen in chronic rhinitis; procedures such as rhinoscopy and biopsy are then recommended for differential diagnoses.

Figures:

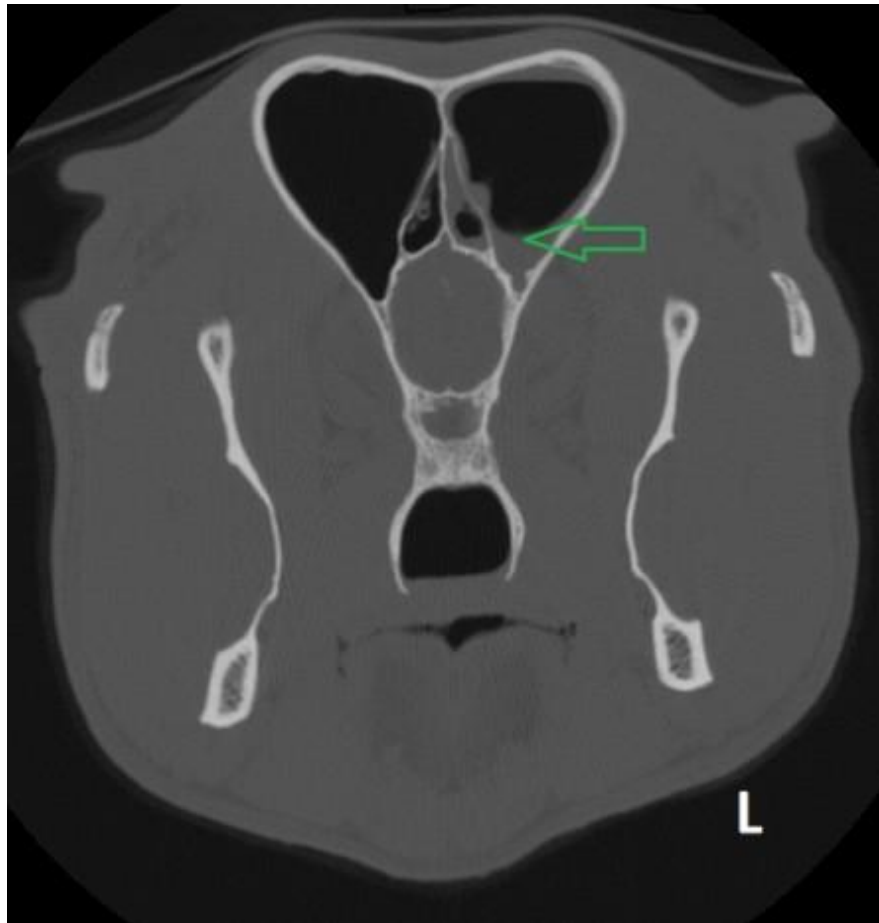


Fig. 1: Transverse CT image in bone algorithm at the level of the frontal sinus. An homogenous soft-tissue rim is visible at the caudal aspect of the left frontal sinus (green arrow).

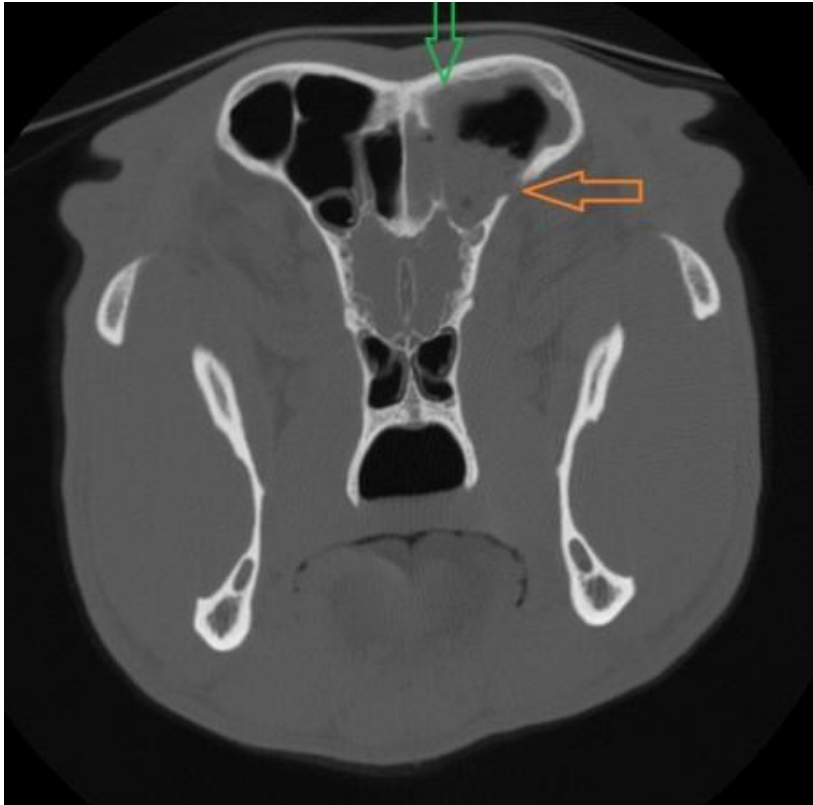


Fig. 2: Transverse CT image in bone algorithm at the level of the frontal sinus. Localized endosteal reaction in the left frontal sinus (green arrow) and bony destruction (orange arrow) are present.

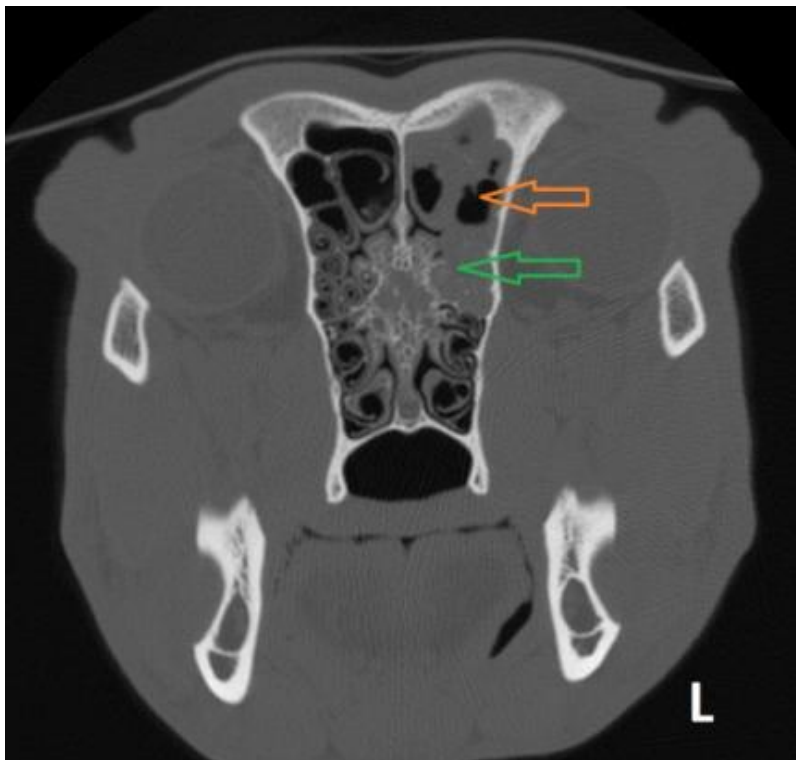


Fig. 3: Transverse CT image in bone algorithm at the level of the caudal nasal cavity. A prominent soft-tissue opaque area (green arrow) with localized decreased opacity and destruction of the turbinaliae (orange arrow) is visible at the caudal aspect of the left nasal cavity.



Fig. 4: Dorsal reformatted image in bone algorithm. Rostral destruction of turbinariae is seen in the left nasal cavity (orange arrow).

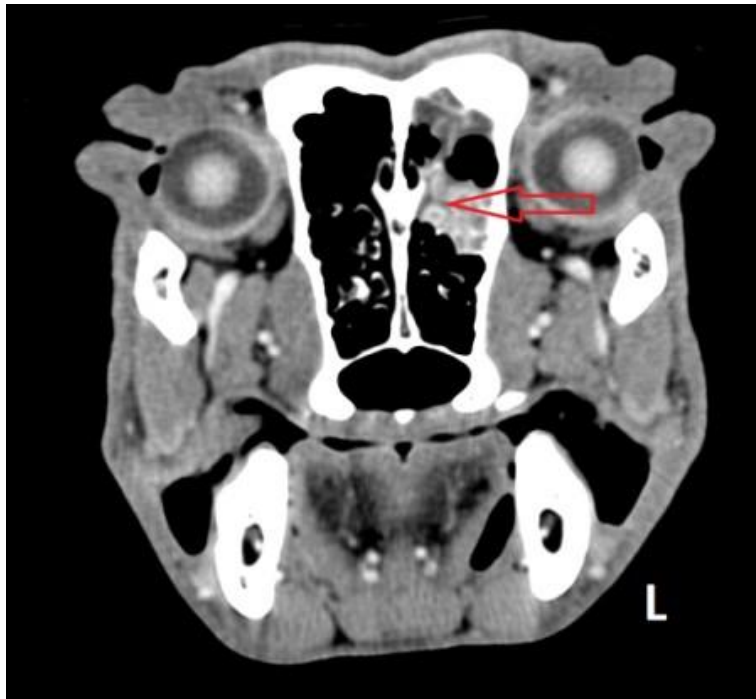


Fig. 5: Transverse CT image in soft-tissue algorithm after intravenous injection of contrast at the caudal aspect of the nose, showing diffuse enhancement of the soft-tissues (red arrow).