

What Is Your Diagnosis?

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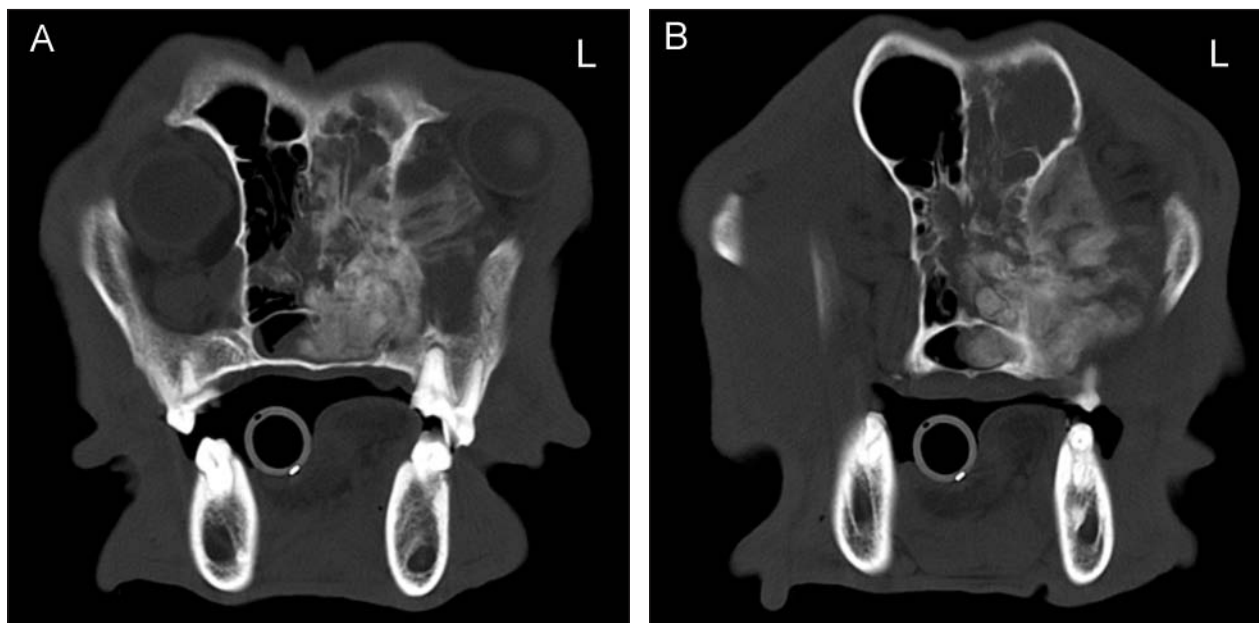


Figure 1—Transverse precontrast computed tomographic image (slice thickness, 5 mm) obtained at the level of the maxillary first molar (A) and cribriform plate (B) in a 9-year-old sexually intact male Rottweiler with a 1-month history of unilateral, left epistaxis. Images were acquired by use of a sharp algorithm and are displayed in a bone window. L = Left.

History

A 9-year-old sexually intact male Rottweiler was evaluated for a 1-month history of unilateral, left epistaxis. Epistaxis decreased initially in response to a 10-day course of antimicrobials but recurred at the end of treatment, becoming progressively more severe. Physical examination at the time of admission revealed facial asymmetry, unwillingness to open the mouth, lateral displacement of the left eye, severe periorbital swelling, and protrusion of the third eyelid. Results of a CBC and clotting profile were within the respective reference ranges. No abnormalities were detected on thoracic radiography. Computed tomography (CT) of the nasal passages was performed; precontrast and postcontrast images were obtained (Figure 1).

Determine whether additional imaging studies are required, or make your diagnosis from Figure 1—then turn the page →

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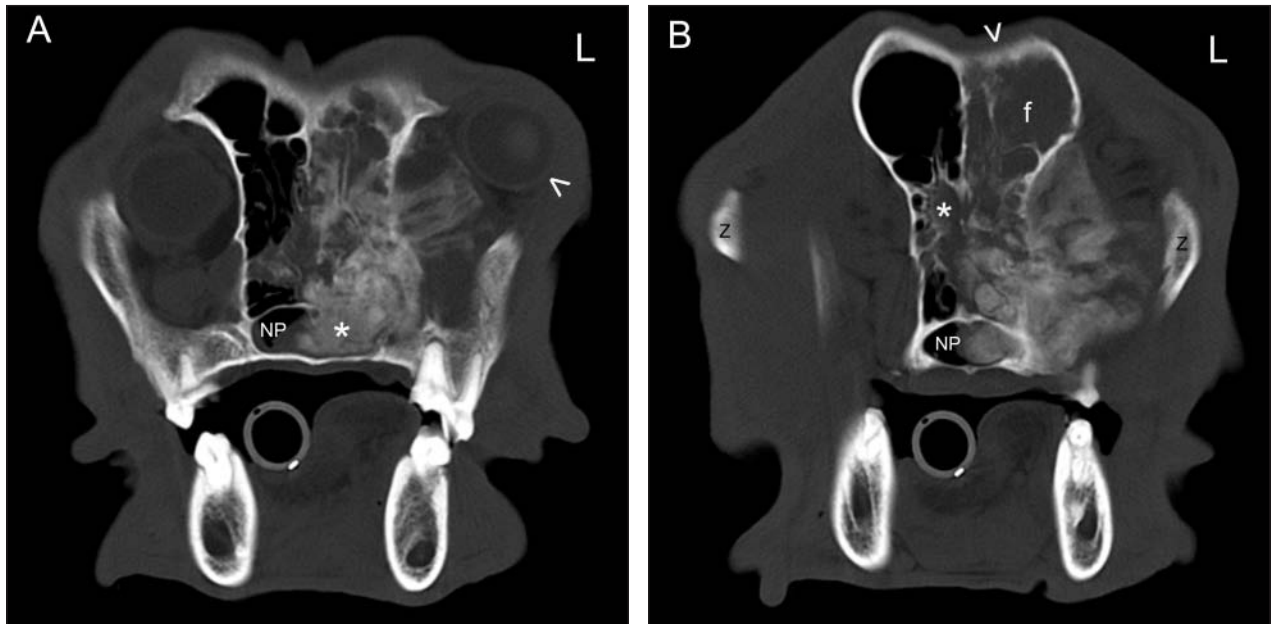


Figure 2—Same computed tomographic images as Figure 1. A—Notice the large bony mass occupying the left nasal passage and extending into the left and right sides of the nasopharynx (asterisk). There is lysis of the nasal septum and bony turbinates; the mass occupies the retro-orbital area and causes left exophthalmos (white arrowhead points at the globe). B—Notice lysis of the cribriform plate and compression of the olfactory lobe of the brain (asterisk). Also notice the lysis of the frontal bone (white arrowhead) and soft tissue density within the left frontal sinus (f). L = Left. NP = Nasopharynx. Z = Zygomatic arch.

Diagnostic Imaging Findings and Interpretation

A large mass with predominant mineral density is evident in the left nasal cavity resulting in lysis of the nasal septum, hard palate, and nasal turbinates with associated mixed, smooth, spiculated new bone production (Figure 2). Erosion of the cribriform plate and compression of the olfactory lobe of the brain are evident. The mass extends in the left retro-orbital area through the zygomatic bone, causing severe exophthalmos, and into the nasopharynx. There is lysis of the left frontal bone and maxilla with a soft tissue density containing mineralizations extending into the left frontal sinus. Contrast enhancement was minimal with no enhancement of the soft tissue dense material in the left frontal sinus, indicating that the material represents mucus accumulation secondary to obstruction. The most likely differential diagnosis is primary neoplasia of osseous origin (eg, osteosarcoma, chondrosarcoma, or fibrosarcoma).

Comments

Chronic nasal discharge is a common clinical sign in dogs with chronic nasal disease. Differential diagnoses for dogs with chronic unilateral or bilateral epistaxis, facial asymmetry, and exophthalmos include nasal neoplasia, chronic inflammatory rhinitis, and aspergillosis.¹ Although clinical signs in the dog of this report were most consistent with neoplasia, they alone cannot be used for a definitive diagnosis. Definitive diagnosis requires histologic evaluation of a biopsy specimen.²

If available, CT is the preferred screening modality for nasal disease.² In the dog of this report, CT was first used to determine the location and extent of the mass, followed by rhinoscopy to obtain biopsy specimens. Computed tomography is superior to radiography in evaluating nasal disease because CT eliminates superimposition of surrounding bony structures complicating an image.^{1,3} The use of contrast during CT permits differentiation between a soft tissue mass and exudates or blood accumulation secondary to obstruction; this makes CT a better option to localize and visualize the

extent of a nasal mass to collect representative biopsy specimens¹ and plan for radiation therapy.

Computed tomographic features of nasal neoplastic disease in dogs include presence of a homogenous or heterogeneous soft tissue density associated with osseous lysis, mass effect, and often a unilateral orientation.¹⁻³ Predominant density of the mass and evaluation of mass origin can be used to distinguish between a tumor originating from soft tissue (such as nasal adenocarcinoma) versus a tumor originating from bone.¹⁻³ In the dog of this report, a tumor of osseous origin was the primary differential diagnosis on the basis of the substantial mineral component of the mass and the fact that the mass was centered over the retro-orbital bone. A multilobular tumor of bone was not considered as a differential diagnosis for the dog of this report because it occurs typically at the level of the zygomatic arch and cranial vault and has the appearance of well-defined, stippled, granular, or popcorn-like mineralized masses,⁴ whereas the lesion in the dog of this report had spiculated, aggressive new bone production.

In the dog of this report, rhinoscopy revealed a large mass occupying the left nasal passage and extending into the right nasal passage, with a large amount of accompanying hemorrhage. Multiple biopsy specimens and impression smears were obtained; although findings on cytologic examination were not conclusive, histologic evaluation of biopsy specimens confirmed osteosarcoma. Because of a poor prognosis, the owner elected to have the dog euthanized. No necropsy was performed.

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3. Saunders JH, van Bree H, Gielen I, et al. Diagnostic value of computed tomography in dogs with chronic nasal disease. *Vet Radiol Ultrasound* 2003;44:409-413.
4. Hathcock JT, Newton JC. Computed tomographic characteristics of multilobular tumor of bone involving the cranium in 7 dogs and zygomatic arch in 2 dogs. *Vet Radiol Ultrasound* 2000;41:214-217.