What Is Your Diagnosis?

History

A 5-year-old spayed female Dutch rabbit was referred for evaluation of exophthalmia of the left eye of 1.5 months’ duration. On physical examination, the rabbit weighed 2.64 kg (5.8 lb) and body temperature, respiratory rate, and heart rate were all within reference limits. The left eye was notably exophthalmic and could not be retropulsed with gentle pressure. Ophthalmic examination revealed a miotic left pupil with a positive dazzle reflex; the right eye appeared normal on ophthalmic examination. Palpation of the head and neck and oral examination revealed no clinically relevant abnormalities. Results of hematologic evaluation (from the referring veterinarian) revealed a high percentage of heterophils (62%; reference range, 35% to 55%), although the absolute heterophil count (0.523 × 10^3 cells/μL; reference range, 0.228 × 10^3 cells/μL to 0.975 × 10^3 cells/μL) and WBC count (7.8 × 10^3 WBCs/μL; reference range, 4 × 10^3 WBCs/μL to 10 × 10^3 WBCs/μL) were not high. Serum biochemical analysis did not reveal any clinically important abnormalities. Skull radiographs obtained from the referring veterinarian were evaluated (Figure 1).

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

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A large soft tissue opacity extending dorsally to the frontal bones and causing an increased opacity of the rostral calvarium and ethmoidal region is evident. There is also increased radiolucency surrounding the superimposed third mandibular molar. The left zygomatic arch is decreased in thickness, compared with the right, with an irregular cortical margination (Figure 2). A poorly defined linear osseous structure seen superimposed on the medial aspect of the left orbit is evident.

Computed tomography of the skull was performed by use of a helical scanner (Figure 3). A large multilobular peripherally contrast-enhancing soft tissue density mass, measuring approximately $2.2 \times 2.1 \times 3.3$ cm, is seen medial to the left zygomatic arch. The soft tissue density mass is causing dorsolateral displacement of the left retrobulbar fat and globe and extends ventral to the level of the left mandibular cheek teeth. The left zygomatic arch is decreased in thickness, compared with that of the right, and there is widening of the mandible in the region of the left mandibular second and third molars. The left third mandibular molar is overgrown, curving laterally into the buccal soft tissues.

Cytologic evaluation of a fine-needle aspirate of the mass revealed necrotic debris with granulomatous and heterophilic inflammation, consistent with an abscess. Surgical exploration of the site revealed a large encapsulated abscess that extended dorsally from the level of the left mandibular molars, under the left zygomatic arch, and into the left retrobulbar space. A communication between the abscess and the oral cavity, surrounding the overgrown left third mandibular molar, was identified. En bloc resection of the abscess was performed without enucleation of the left eye.

The most common cause of unilateral exophthalmia in rabbits is retrobulbar abscess formation secondary to endodontic disease.1 Although disease of the maxillary cheek is a more likely cause of exophthalmia, the rabbit of this report was unique in that the abscess originated from the left mandibular molars with extension to involve the zygomatic arch and the floor of the left orbital cavity. Diagnostic imaging of dental disease in rabbits has traditionally involved multiple radiographic views of the skull to visualize the tooth roots. Computed tomography can overcome the superimposition of structures seen in conventional radiographic images; it also can identify areas of osteomyelitis, abscess formation, or bone loss.2