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CASE REPORT

Fungal pericarditis and endocarditis secondary to porcupine quill migration in a dog

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Abstract A dog evaluated for acute onset of neurologic clinical signs was discovered to have a porcupine quill traversing the left atrium with fungal endocarditis. The dog had been quilled by a porcupine one month prior to presentation and had had several quills removed from the thoracic inlet and left dorsal shoulder areas. A new murmur was identified during the initial examination. Echocardiographic changes consistent with mitral valve endocarditis were identified, in addition to a linear, hyperechoic structure in the left atrium. A thoracic CT identified a possible mediastinal migrating foreign body tract. The foreign body was surgically removed and confirmed as a porcupine quill. Routine aerobic cultures of blood and pericardial samples resulted in growth of presumptive candidal organisms. PCR amplification and sequencing of samples from pericardial cultures identified the presence of a fungal organism, *Lodderomyces elongisporus*. The neurologic signs were attributed to a left-sided central vestibular lesion presumed secondary to an embolic event from infective endocarditis. After 3 months of antimicrobial and antifungal therapy the valvular changes had markedly improved and the clinical signs

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resolved. To the authors' knowledge, this is the first description of fungal endocarditis secondary to an intracardiac foreign body in a dog.
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Abbreviation

IE infective endocarditis

A 3-year-old, 8.1 kg (17.8 lb) castrated male Lhasa Apso was referred to the Washington State University Veterinary Teaching Hospital for evaluation of an acute onset of neurologic signs. The owners reported that the dog had become reluctant to walk and was lame on the left forelimb the morning of presentation. In addition, the dog acutely started vomiting and falling to his right. A porcupine had quilled the dog 1-month prior to this presentation. At that time, most quills had been removed from the thoracic inlet and left dorsal shoulder areas, but the dog subsequently visited the referring veterinarian three times for quill removal and received a 7 day course of carprofen (1.5 mg/kg PO, q 12 h) as needed for pain that was discontinued on the day prior to presentation. Prior to the porcupine incident, the dog had no history of any medical conditions and at the time of presentation was not receiving any medications.

On presentation, the dog was bright, alert, and responsive. Rectal temperature was 99.7 °F (37.6 °C). The heart rate was approximately 140 beats per minute with a sinus arrhythmia. A grade 5/6 left apical systolic murmur that had not been noted previously was now auscultated. Pulses were strong and synchronous. Approximately 30 min after presentation, the dog's mentation acutely changed, becoming dull, ataxic on all four limbs with a tendency to fall toward the right side, and non-weight bearing on the left forelimb. Abnormalities on neurologic examination included vestibular ataxia, left-sided conscious proprioceptive deficits and right-sided head tilt and were interpreted as consistent with a left-sided central vestibular lesion. Systolic blood pressure was 144 mmHg (measured by Doppler, on the right forelimb).

A complete blood count, serum chemistry and urinalysis were performed. Abnormalities included mature neutrophilia (20,331/μL, reference range 2800—13,400/μL), monocytosis (1506/μL, reference range 0—1300/μL), elevated BUN (35 mg/dL, reference range 9—26 mg/dL), hyperglycemia (146 mg/dL, reference range 66—123 mg/dL) and hypokalemia (3.2 mEq/L, reference range 3.7—5.3 mg/dL). A total T4 was normal (2.77 mcg/dL, reference range 1—4 mcg/dL).

An echocardiogram (2-dimensional, M-mode and Doppler) was performed to further evaluate the newly identified heart murmur. A 1.3 cm linear structure was identified traversing the left atrium from the septal mitral leaflet to the atrial wall just below the left auricle (Fig. 1). The mitral valve leaflets were thickened with independent, oscillating, hyperechoic lesions on the atrial surface of the septal leaflet. All other 2-dimensional study findings and all M-mode measurements were within normal limits. Mild mitral valve regurgitation was noted during color Doppler interrogation based upon subjective assessment of jet surface area. Echocardiographic findings were interpreted as mitral valve endocarditis and an intracardiac foreign body. Given the dog's recent history, a diagnosis of intra-atrial quill foreign body and secondary infective endocarditis of the mitral valve was proposed.

Additional diagnostics were performed to further evaluate the dog for other porcupine quills, associated complications and surgical accessibility of the quill. Advanced imaging of the brain to

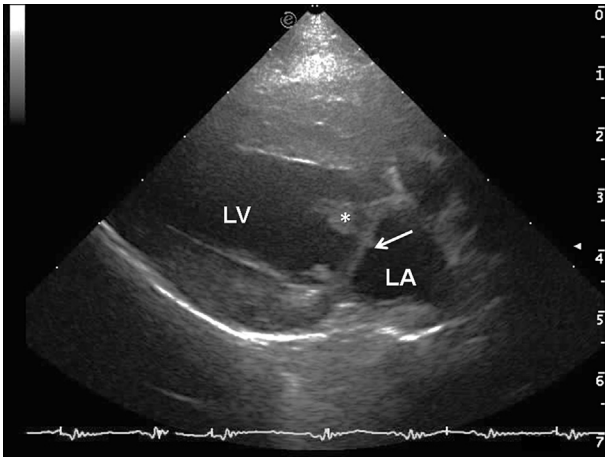

Figure 1 Echocardiographic right parasternal long axis view of the heart. The arrow denotes the presence of the intra-atrial foreign body at the level of the mitral valve annulus. The asterisk (*) represents the thickened septal leaflet of the mitral valve. LA, left auricle; LV, left ventricle.