Letter to the Editor

Editor:

The Laryngeal Lesion in Young Dogs with Neuronal Vacuolation and Spinocerebellar Degeneration

In 1997, a newly recognized neurodegenerative disorder of young Rottweiler dogs was reported in this journal. The paper described four affected pups that were studied in the USA or Switzerland. The neuropathologic findings were summarized as neuronal vacuolation and spinocerebellar degeneration. Clinically, the affected dogs had progressive tetraparesis and ataxia and were stated to have possible laryngeal/pharyngeal dysfunction (dog Nos. 1–3) or apparent laryngeal dysfunction (dog No. 4). At necropsy, no gross lesions were observed.

In 1993, we studied a 13-month-old male Rottweiler–German Shepherd crossbreed dog with this syndrome. The dog had a history of slowly progressive gait abnormality, regurgitation, and respiratory stridor from 4 months of age. Ancillary studies at Cornell revealed bilateral paresis of the larynx and megaesophagus on thoracic radiography. At necropsy, the esophagus was dilated for its entire length. There was severe bilateral atrophy of intrinsic laryngeal muscles, specifically, the *cricothyroideus dorsalis* and *arytenoideus transversus* (Fig. 1) and the *cricoarytenoideus lateralis* and *thyroarytenoideus* (Fig. 2). In contrast, the constrictors of the pharynx and the *sternothyroideus* and *thyrohyoideus* muscles were intact (Figs. 1, 2), as were the *cricothyroideus* muscles (not shown). The intrinsic muscles of the larynx that showed degeneration atrophy are all innervated by the recurrent laryngeal nerve. In contrast, the only intrinsic muscle (*cricothyroideus*) with a separate innervation (cranial laryngeal nerve) was normal. Brain and spinal cord neuronal vacuolation (most prominent in the cerebellar nuclei), diffuse myelopathy involving all funiculi, and mild neuropathy were found.

This selective degeneration of muscles innervated by the recurrent laryngeal nerve suggests the presence of a dying-back neuropathy targeting long axons in this disorder. It is possible that this may account for the diffuse myelopathy of these dogs. In 1997, we studied tissues from an affected 14-week-old female Rottweiler that was presented to a practitioner and had surgery for laryngeal paralysis, which was the only clinical sign at that time. We have recently examined sections from an affected Australian Rottweiler (courtesy of Dr. C. Huxtable, Murdoch University) that also had laryngeal degeneration. This dog did not have megaesophagus.

The recognition of clinical laryngeal dysfunction and its pathologic basis are of nosologic importance and should help in the identification of further cases of this Rottweiler or Rottweiler-cross disorder. Whether megaesophagus is a consistent part of the syndrome will be clarified as further cases are reported.

Alexander de Lahunta
Department of Anatomy
College of Veterinary Medicine
Cornell University
Ithaca, NY

Brian A. Summers
Department of Pathology
College of Veterinary Medicine
Cornell University
Ithaca, NY

Fig. 1. Dorsal view of larynx showing pallor and atrophy of the *cricoarytenoideus dorsalis* (a) and *arytenoideus transversus* (b) muscles. Normal preservation of constrictors of pharynx (c), which are *cricopharyngeus*, *thyropharyngeus*, and *hyopharyngeus* muscles. Arrows indicate the recurrent laryngeal nerves.
Fig. 2. Lateral view of the larynx showing wasting of the *cricothyroideus dorsalis* (a) and *lateralis* (b), and *thyroarytenoideus* (c) muscles. Compare with the *sternothyroideus* (d) and *thyrohyoideus* (e) muscles.

Reference