Pulmonary aspergillosis in 3 farmed elk: incidental lesions resembling tuberculosis

Alexandre Lorette, Gary Halbert, Rob Foster, Gary Thomson, Jeff Casswell, Ann Hewson, Rob Swackhammer

During late Nov-Dec 2004, 3 farmed elk calves (1-2 years) from 2 farms in Ontario were submitted to the Department of Pathobiology, OVC/AHL for necropsy. On 1 of the premises, 12 of 45 calves had died since Aug 2004. Clinical signs included listlessness and depression or acute bovine respiratory disease. The clinical course of this fatal disease varied from 1-4 days. Clostridial enterotoxemia, coccidiosis and intestinal parasitism were suspected clinically.

At necropsy, carcases were emaciated, and fat deposits and muscle mass decreased. A few to numerous, well-demarcated, firm, white or gray nodules 0.2-0.7 cm in diameter were scattered throughout the pulmonary parenchyma or on the pleural surface. On cut surface, homogenous, yellow, thick, caseous material was surrounded by a thin, white, fibrous capsule. Other findings included limb fractures and heavy ascites (Trichuris sp.). No gross lesions were found in lymph nodes, tonsils, or other tissues. The pulmonary lesions were interpreted as abscesses or granulomas. Lung nodules were submitted for microbiological culture in order to rule out tuberculosis and determine the etiology.

Microscopically, large numbers of hyphal morphologically consistent with Aspergillus spp. were observed in wet mounts and in histological sections within the caseous necrosis. Aspergillus fumigatus was cultured in one of the cases. No acid-fast bacilli were seen in smears or histological slides. From 1 case, a non-tuberculous, rapid-growing, Mycobacterium was cultured by the Central Public Health Laboratory, Toronto, ON, and was considered to be an incidental, non-significant finding. No BVDV or other viruses were cultures, and ELISA for Clostridium perfringens enterotoxin was negative. The cause of death could not be determined, and the pulmonary lesions were considered to be incidental.

Pulmonary mycoses in domestic and wild ruminants can be caused by ubiquitous saprophytic molds of the genus Aspergillus. Infection can be initiated by inhalation of fungal spores from moldy litter and feed, or by hematogenous spread from a GI lesion. It appears to be a complication of other debilitating diseases; the cause of emaciation in the elk calves was not identified. There are a few published cases of pulmonary aspergillosis in deer, with some submitted by veterinary practitioners to diagnostic labs because of macroscopic lesions suggestive of tuberculosis. The disease has not been described in elk.

Gross lesions of Aspergillus spp. in the lungs of farmed cervids should be differentiated from those induced by other pathogens that can cause similar multifocal, nodular, firm lesions with central caseation, including Mycobacterium avium, Arcanobacterium pyogenes, Yersinia pseudotuberculosis, and lungworms (Dictyocaulus viviparum). AHL

AHL Newsletter, Volume 9, Number 1

March, 2005

Contributors to this issue:
From the Animal Health Laboratory:
Brian Binnington, DVM, Dip Path, Diplomate ACVP
Susy Carman, DVM, Dip SA Med, PhD
Jim Fairlies, DVM, MBA
Murray Hazlett, DVM, DVS, Diploma ACVP
Ann Hewson, MLT
Brent Hoff, DVM, DVS
Guylan Josephson, DVM, Dip Path
Peter Lusis, DVM, MSc
Emily Martin, DVM, MSc, Diploma ACVP
Beverly McEwen, DVM, MSc, PhD, Diploma ACVP
Davor Ojic, DVM, MSc, PhD
Janet Shapiro, DVM, Dip Path, Dip Eq Surg
Durda Slavic, DVM, MSc, PhD
Gary Thomson, DVM, MSc
Tony van Dreumel, DVM, MSc, Diploma ACVP
Sureh Yousef, DVM, MSc, PhD, Diploma ACVP

Other contributors:
Jeff Casswell, DVM DVS PhD Diplomate ACVP; Rob Foster, DVS PhD MACVS Diploma ACVP; Gary Halbert, DVM PhD; Alexandre Lorette, DVM MSc, Pathobiology, OVC
Graham Dingwell, DVM, Tavistock, ON
Ann Godkin, DVM, Robert Wright, DVM, OMAF, Fergus, ON
Rob Swackhammer, DVM, Population Medicine, OVC
Rod Wierenga, DVM, Markdale, ON