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INFECTIOUS DISEASE

Nasal and Cutaneous Aspergillosis in a Goat

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Summary

Nasal and cutaneous aspergillosis is reported in an adult goat. The clinical signs were severe respiratory distress due to partial nasal obstruction, bilateral mucopurulent nasal discharge, skin nodules on the ears and dorsal nasal region and focal depigmentation of the ventral commissure of the right nostril. At necropsy examination, sagittal sectioning of the head revealed a yellow irregular mass extending from the nasal vestibule to the frontal portion of the nasal cavity. Microscopically, there was pyogranulomatous rhinitis and dermatitis, with numerous intralesional periodic acid–Schiff-positive fungal hyphae morphologically suggestive of *Aspergillus* spp. *Aspergillus niger* was isolated by microbiological examination.

Keywords: *Aspergillus niger*; cutaneous aspergillosis; goat; nasal aspergillosis

Fungi of the genus *Aspergillus* are aerobic and distributed widely in nature, being found in soil, dust and decaying vegetation (Bennett, 2010). There are over 190 species of the genus *Aspergillus*; however, few species are involved in opportunistic infections in man (Latge, 1999) and animals (Jensen *et al*., 1994, 1996; Tell, 2005).

In immunocompromised human patients, *Aspergillus fumigatus* is a cause of invasive fungal rhinosinusitis, disseminated aspergillosis and bronchopulmonary aspergillosis (Latge, 1999). *A. fumigatus* has also been reported as a primary agent of sinusitis in man. In such cases, affected patients are generally immunocompetent (Peric and Gacesa, 2008).

In animals, aspergillosis is a well-known disease of the air sacs and lung of birds (Tell, 2005). In horses, *Aspergillus* spp. has been reported as a cause of mycosis of the guttural pouches (Kipar and Frese, 1993), bronchopneumonia (Pace *et al*., 1994), placentitis (Hong *et al*., 1993) and rhinitis (Cehak *et al*., 2008). In ruminants, *Aspergillus* spp. have been incriminated as a cause of pneumonia (Kamil and Parihar, 1991; Tell, 2005), gastroenteritis (Jensen *et al*., 1994), mastitis (Jensen *et al*., 1996; Pérez *et al*., 1998) and placentitis (Hill *et al*., 1971). In addition, mycotic rhinitis caused by *A. fumigatus* is a common disease of immunocompetent dogs and is considered an emerging disease in cats (Benitah, 2006; Peeters and Clercx, 2007; Barrs *et al*., 2012). However, there are no reports of rhinitis caused by *Aspergillus* spp. in ruminants in the veterinary literature. This article describes a case of nasal and cutaneous aspergillosis in a goat.

A 3-year-old crossbred goat from the municipality of Patos in the semi-arid region of the state of Paraíba, northeastern Brazil, was referred to the Veterinary Hospital of the Federal University of Campina Grande in March 2009. The farmer informed the staff that the goat had been having respiratory difficulties for 3 months. On clinical examination, the animal showed severe inspiratory dyspnoea and stertor due to partial nasal obstruction, inflation of the cheeks during expiration, bilateral mucopurulent nasal discharge and decreased air flow from the nostrils. Two prominent coalescing skin nodules with a diameter of 2–3 cm were observed in the dorsal nasal region (Fig. 1). A focal area of depigmentation was observed in the ventral commissure of the right nostril (Fig. 1). Three nodules, ranging from 0.3 to 1 cm in diameter, were observed in each ear. The largest of these nodules, which was located at the inferior

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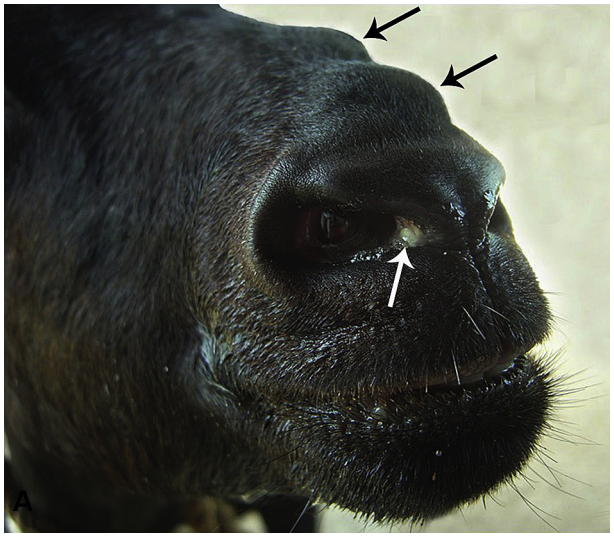

Fig. 1. Two coalescing skin nodules in the dorsal nasal region (black arrows). An area of depigmentation is present in the medial canthus of the right nostril (white arrow).

border of the right pinna, was ulcerated, with raised edges (Fig. 2).

Blood samples were collected for haematological and serum biochemical examinations. Serum total protein, albumin, urea and creatinine concentrations and serum activities of γ-glutamyltransferase, alkaline phosphatase and aspartate aminotransferase were within normal values. The haematological values were also within normal ranges. The goat was humanely destroyed due to the severe respiratory distress.

At necropsy examination, a longitudinal section of the head showed a bilateral yellow irregular mass extending from the nasal vestibule to the frontal portion of the nasal cavity (Fig. 3). This mass reached the dorsal and ventral nasal conchae and ventral and dorsal nasal meatus, including the nasal septum. No gross

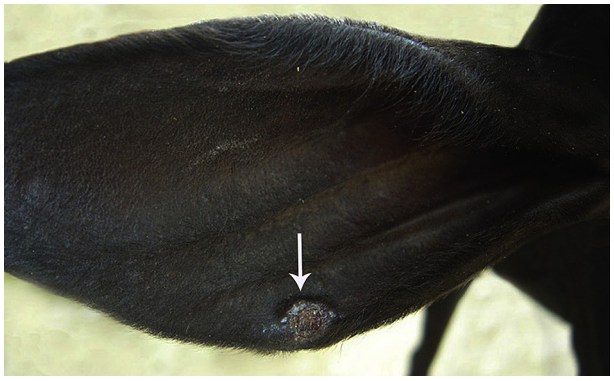

Fig. 2. An ulcerated skin nodule with raised edges at the inferior border of the pinna (arrow).

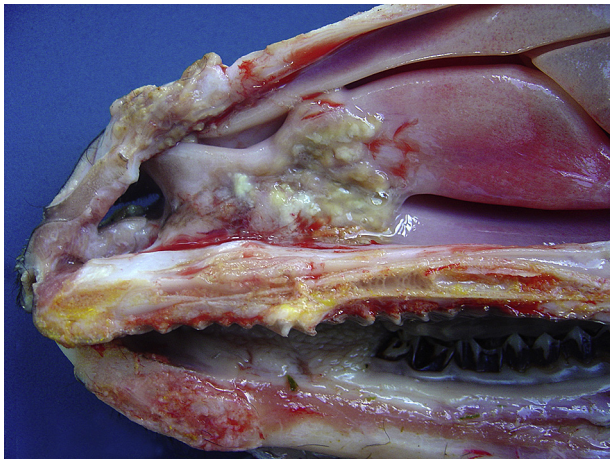

Fig. 3. Sagittal section of the head showing an irregular yellow mass extending from the nasal vestibule to the frontal portion of the nasal cavity.

changes were observed in other organs. Samples of the cutaneous and nasal lesions and other selected organs collected at necropsy were fixed in 10% neutral buffered formalin, embedded in paraffin wax, sectioned (6 μm) and stained by haematoxylin and eosin (HE). Some sections were stained with periodic acid–Schiff (PAS) and Grocott's methenamine silver stain (GMS). Microscopically, the lesions of the nasal cavity and skin consisted of multifocal to coalescing pyogranulomas (Fig. 4) with a central necrotic area

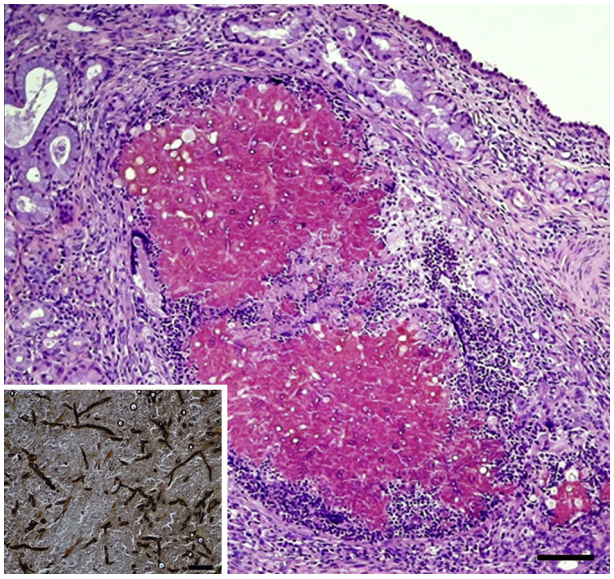

Fig. 4. Nasal mucosa. A focal pyogranuloma with a large necrotic area surrounded by neutrophils, mononuclear cells and fibrous tissue. Negative impressions of hyphae are observed in the necrotic area. HE. Bar, 100 μm. Inset: septate hyphae with thick walls branching at an acute angle and showing occasional apical bulbous dilations. GMS. Bar, 50 μm.