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Guttural pouch mycosis, sympathy for *Aspergillus nidulans*☆

Micosis de las bolsas guturales: simpatía por *Aspergillus nidulans*

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Horses have air-filled anatomical structures on the dorsal side of the pharyngeal cavity called guttural pouches. The walls of these compartments are in contact with nerves and important blood vessels that irrigate the brain. For this reason, the development of certain fungal species in the mucous membranes of these pouches can be the cause of particularly severe fungal infection (Fig. 1). The growth of the fungus erodes the carotid arteries, producing important haemorrhages that cause the fulminant death of the animal.

One of the most frequent initial signs in these cases is the presence of nasal bleeding. Dysphagia is also usually detected, due to the involvement of various nerves that control the swallowing, and certain neurological conditions. The treatment of choice is usually surgery, while antifungal therapy has questionable efficacy.[3] It appears that this fungal infection is more common than thought, although the involved fungal species is rarely identified. Among these species, *Aspergillus nidulans* stands out extraordinarily for its high frequency of isolation, compared to the low occurrence of this species in other mycoses. In culture, its colonies produce reddish, lenticular, smooth-walled ascospores with two equatorial ridges, formed into reddish-brown cleistothecia surrounded by numerous Hülle cells, which easily differentiate it from most species of this genus.[1] Colonies usually have different colours depending on which culture medium is used, growing well at 45 °C (Fig. 2).

Also extraordinary is the percentage of invasive aspergillosis caused by *A. nidulans* in human patients with chronic granulomatous disease, a rare primary immunodeficiency that mainly affects phagocyte function, which can be as high as 33%. Generally, invasive aspergillosis occurs in patients with significant hematologic malignancies and immunodeficiencies and is commonly caused by *Aspergillus fumigatus*, with *A. nidulans* responsible for only 1% of the cases. A recent research[2] shows that conidia of this species are phagocyted and processed by macrophages at a slower rate compared to *A. fumigatus*, thereby reducing the fungal mortality rate and increasing the germination of conidia. This slow rate of elimination of *A. nidulans* could allow excessive growth of this species in certain immune settings. We do not know if this difference in the innate immune response occurs in guttural pouches. However, the different phagocyte activity demonstrated against these two fungal species could facilitate the colonization of *A. nidulans* in this environment and therefore could also be responsible for the high percentage of cases of mycosis produced in guttural pouches by this species.

Fig. 2. Colonies on Czapek yeast extract agar at 37 °C of a strain of *Aspergillus nidulans* isolated from a case of guttural pouch mycosis. Note the exudate present in minute droplets on the surface of the colonies and the soluble pigment around the colonies, both reddish in colour, characteristically produced by this species in this medium.

☆ These Mycology Forum articles can be consulted in Spanish on the Animal Mycology section on the website of the Spanish Mycology Association (https://aemicol.com/micologia-animal/).

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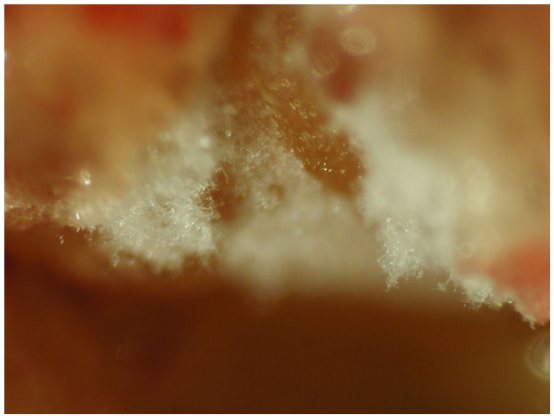

Fig. 1. Whitish-coloured mycelium from a fungal plaque detected in a guttural pouch of a horse.

Conflict of interest

Author has no conflict of interest.

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