Systemic phaeohyphomycosis in a young dog in the semiarid region of Paraíba

Carvalho F.K.L.1,2,3, Silva R.B.C. 1, Estrela Y.C.A.1, Dantas A.F.M.2,3

Abstract
This is a case report of systemic phaeohyphomycosis diagnosed in a dog in the semi-arid region of the State of Paraíba. The disease occurred in a one-year-old female canine, of the pit bull breed, which presented progressive weight loss, reduction of appetite and a history of trauma to the right thoracic limb. During the clinical routine the animal presented seizures and died. In the necropsy were observed nodular lesions in the liver, right kidney and encephalon. Fragments from the lesions were collected for histological and microbiological examination. In the histopathological examination the lesions were similar, characterized by hepatitis, nephritis and granulomatous and necrotizing meningoencephalitis, multifocal to coalescent, associated to intralesional dematiaceous fungi. In the microbiological examination Cladophialophora bantiana was isolated. The diagnosis of phaeohyphomycosis was based on the microscopic lesions characteristic of dematiaceous fungi and the etiology was confirmed by the isolation of the agent. Phaeohyphomycosis is an uncommon disease diagnosed in dogs in the LPA/HV/UFCG, characterized by the systemic form, affecting mainly the liver and the encephalon, and must be included in the differential diagnosis of the hepatopathies and encephalopathies in dogs.

Introduction
Phaeohyphomycosis are caused by opportunistic dematiaceous fungi which develop in the cutaneous, subcutaneous and systemic forms, and may occur mainly in cats, although it sporadically occurs in equines, dogs, bovines and in humans. Found in soil with a broad distribution throughout the world, it is an uncommon cause of disease in humans and may cause infections in immunosuppressed and immune incompetent individuals. Almost all the cases reported are associated to immunosuppressed patients, submitted to organ transplants or to malignity.

The diagnosis of the disease is made through histopathological examination, verifying the presence of granulomas containing pigmented fungal hyphae amongst the lesions, however it is necessary to perform the cultivation and isolation for the confirmation of the etiological agent. The treatment of the cutaneous and subcutaneous form is basically surgical, being complemented with the administration of antifungal drugs. However, the antifungal therapy is prolonged and relapses may occur.

This way, the objective of this work was to report a case of phaeohyphomycosis diagnosed in a dog in the semiarid region of the State of Paraíba, caused by Cladophialophora bantiana, which occurred in the Laboratory of Animal Pathology (LPA) of the Veterinary Hospital (HV) of the Federal University of Campina Grande (UFCG).

Material and Methods
The study was carried out in a 1-year-old Pit Bull bitch which was attend to at the HV/UFCG, with a report of weight loss with reduced appetite and a history of trauma to the right thoracic limb. The dog had recently given birth and killed all the puppies. Clinical examination and laboratorial tests were carried out. During the clinical routine, the animal presented seizures and died, the clinical evolution of the animals was not informed.

The animals was sent to the LPA/UFCG in order to perform the necropsy and posteriorly histological and microbiological examinations for the isolation and identification of the agent. The tissues were fixed in 10% formaldehyde and processed for histopathology. Histological sections were stained with hematoxylin-eosin (HE). The Gromett’s Methenamine Silver (GMS) and Periodic acid-Schiff (PAS) techniques were also applied for the visualization of the hyphae. In the microbiology laboratory, the samples were streaked in blood-agar, MacConkey agar and Sabouraud dextrose agar plus chloramphenicol for the identification of the fungus.

Results
During the necropsy, was observed that the liver presented yellowish nodular areas with proximate-ly 0.2 to 0.8 cm of multifocal to coalescent diameters, discreetly elevated in the capsular surface, as also distributed throughout all the parenchyma,
forming small cavitations (Figure 1A). In the encephalon was observed a small reddish area of approximately 0.5 cm of diameter in the surface of the leptomeninges of the right occipital cortex with asymmetry of the left brain hemisphere. After the fixation of the encephalon serial cuts were performed where there were grayish multifocal and friable areas in the gray matter of the left parietal and right occipital lobes (Figure 1B).

The liver presented multifocal to coalescent areas of necrosis containing myriads of tubuliform or balloon-like, septed, brown-yellowish, fungal structures, characteristic of dematiaceous fungi. Surrounding these areas of necrosis there was an accentuated inflammatory infiltrate constituted mainly by macrophages, epithelioid cells and giant mononucleated cells, limited by a discreet capsule of fibrous connective tissue, characterizing the formation of granulomas (Figure 1C). In the encephalon were observed multiple similar granulomas in the leptomeninges (Figure 1D) which extended to the grey matter, besides vasculitis and intraleisional fungi. The microorganism was identified by the microcultivation technique of fungi such as Cladophialophora bantiana (Figura 1E).

**Discussion and Conclusion**

Although the cutaneous and subcutaneous form of the phaeohyphomycosis are more frequently reported in dogs and cats, the systemic and cerebral form have increasingly been diagnosed. The disease is normally associated to a condition of immunosuppression, in this case probably the gestation may have influenced the animal’s low immunity.

The variety of clinical manifestations and little occurrence of the disease to the detriment of other more frequent diseases, makes the clinical diagnosis hard, hindering the establishment of an efficient therapy. This is why the diagnosis is usually achieved by histopathology.

Phaeohyphomycosis is an uncommon disease diagnosed in dogs in the routine of the LPA/HV/UFCG, characterized by affecting mainly the parenchymatous organs of the abdominal cavity and encephalon, and must be included in the differential diagnosis of the hepatopathies and of the encephalopathies of dogs.

**References**