Abstract

Galactomannan Analysis and Immunodiffusion Technique in the Diagnosis of Aspergillosis in Penguins

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Aspergillosis is one of the most important diseases in captive penguins during rehabilitation and permanent care. Both clinical signs and radiological changes are nonspecific and occur late in the course of infection, therefore limiting the efficacy of antifungal therapy. Thus, the high mortality of captive penguins due to aspergillosis is mostly associated with difficulties in establishing an early diagnosis. Since invasive aspergillosis is particularly problematic for debilitated seabirds such as penguins, this study compares the efficacy of antibody detection by the immunodiffusion test (ID) with the commercial sandwich EIA for galactomannan detection in the diagnosis of this mycosis in penguins from a rehabilitation centre. Serum samples from 35 magellanic penguins (Spheniscus magellanicus) from the Rehabilitation Centre of Marine Animals (CRAM, Rio Grande, Brazil) were evaluated. Just one sample per animal was tested. The study included seabirds with invasive aspergillosis (n=9), malaria (n=3), cachexia (n=2), and healthy controls (n=21). Tests were performed according to the manufacturer's instructions. Sera from most penguins included in this study tested negative for Aspergillus antibodies in the ID analysis (88.6%). Positive ID results occurred for three penguins with aspergillosis (33.3%) and for one healthy bird. Conversely, sera from all animals tested positive in the galactomannan test, including sera from non-Aspergillus as well as healthy birds, showing values between 1.46 and > 12.5 (cutoff 0.5). Galactomannan testing performed disappointingly in the diagnosis of invasive aspergillosis in penguins. An unacceptably high rate of false-positive results occurred. ID testing seems to still hold its place in the diagnosis of this condition, despite showing a very low sensitivity. New diagnostic modalities deserve investigation in the field.