Title: Cytopathology versus mycological culture performances for feline sporotrichosis diagnosis in different populations from Rio de Janeiro state, Brazil

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Abstract:

Sporotrichosis is a zoonotic disease that has taken epidemic proportions in Rio de Janeiro, unique state in Brazil for which notification is compulsory. Domestic feline holds an outstanding role in this scenario, as it may present severe clinical presentation and promote traumatic implantation of the fungus to humans and other cats. The objective of the present work was to compare the performance of cytopathology with the isolation of *Sporothrix schenckii* Complex by culture for sporotrichosis laboratory diagnosis in domestic feline populations from different regions of Rio de Janeiro state. One hundred and twenty-three domestic feline were included after clinically evaluated by veterinarians as suspicious of sporotrichosis: Rio de Janeiro city, n=32 and Niterói, n=74 – Metropolitan Region and Rio das Ostras, n=17 – Littoral Lowlands Region. For cytopathology, impression smears of the skin lesion were prepared on slides and stained by the Quick Panoptic method. Culture on Mycosel® agar followed by the dimorphic conversion to the yeast phase were performed the pathogen diagnosis. Cytopathologycal examination allowed the observation of *Sporothrix schenckii* complex suggestive yeast-like structures in 62 patients (50.4%) with 77.42% sensitivity and 68.85% especificity. The percentage of false-negative results was 22.58% while positive and negative predictive values were 71.64% and 75%, respectively. The results of both methods were concordant ($p>0.05$; $\chi^2=0.485$; McNemar test) with no difference related to the studied regions. The influence of itraconazole treatment during sample collection on cytopathologycal performance and mycological culture results was also investigated with no difference on efficacy ($p>0.05$). Previous work of our group conducted with feline populations from different areas, in the same state, showed discordant results between these methods and also cytopathological lower sensitivity in a group of patients treated with doses of 100 mg/day and above. The percentage of false-negative results, here observed, can be of major concern in endemic areas where sporotrichosis accurate diagnosis is an important prerequisite for successful treatment and, consequently, further controlling the current endemic. Culture isolation remains the gold standard technique for this zoonosis diagnosis whereas cytopathological examination, a simple, sensitive and low cost method can be routinely applied as a screening method in veterinary practice.

Keywords: *Sporothrix schenckii* Complex, subcutaneous mycosis, *Felis catus*, dimorphic fungi**,** laboratory diagnosis

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