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A CLINICAL CASE OF DERMATOPHYTOSIS IN A 6-YEAR-OLD NIGERIAN INDIGENOUS BITCH, JOS, PLATEAU STATE

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ABSTRACT

A 6-year old Nigerian indigenous bitch weighing 10kg was presented to the small animal unit of the Veterinary Teaching Hospital University of Jos with the chief complaint of generalized hair loss which was noticed to have started 2-months before presentation. The lesions were circular areas of alopecia and erythema which were generalized throughout the body. The bitch was examined and samples were collected. Direct examination of skin scrapings revealed large ectothrixs spores. Microscopic examination of the isolate stained with lactophenol cotton blue revealed numerous microconidia that were clustered together with a smooth, thin walled multi septate macroconidia that was club shaped. The dermatophyte responsible was identified based on clinical signs, culture and isolation as Trichophyton mentagrophyte which is significant as it has the potential of occurring in high economic proportion and can be zoonotic. The use of personal protective equipments while examining animals was emphasized.

Keywords: Bitch, Dermatophytosis, Direct examination, *Trichophyton mentagrophyte*

INTRODUCTION

Dermatophytosis is the invasion of the superficial layer of the skin by dermatophytes. They invade the keratinized tissue (hair, nails, claws, or horns) of a susceptible host (Dalis *et al*., 2014). Animals can be infected by a great variety of dermatophytes, which can be classified based on ecology as zoophilic (associated with animals), anthropophilic (associated with humans) and geophilic (found in the soil) (Dalis et al 2018). In the last couple of years, the infections caused by dermatophytes have increased exponentially (Nweze, 2001; Ates *et al*., 2008). The interest in having animals as pets among other reasons in our homes have increased markedly. This have increased the close proximity between pet owners and their pets particularly, children with cats and dogs, and can serve as an important source of dermatophytosis among humans and animals. Therefore, the understanding of the epidemiology, diagnosis, treatment and control in pets is very important for reducing the spread of fungal infection in animals and humans (Ates *et al.,* 2008; Chermette *et al.,* 2008). Dermatophytes are among the most frequent cause of dermatological problems in domestic animals (Cabanes, 2000). Dermatophytes grows best in warm and humid environment and therefore, more common in tropical and subtropical regions of the world (Pal and Dave, 2013). In Nigeria, and probably West Africa, there are not many studies on the incidence of dermatophytosis in domestic animals (Nweze, 2011). Dogs and cats are likely to have the closest contact with humans than any other domestic animal species (Descamps *et al*., 2003). Wild animals also harbor and transmits dermatophytes indirectly among animals and humans as the infected hairs can be shed from these animals and contaminate dwelling places and working areas (Khosravi *et al.*, 1994). Mites can also transmit the disease among animals and sometimes contamination from rodent carriers can lead to an outbreak in human population (Khosravi *et al*., 1994)

CASE PRESENTATION MANAGEMENT

A 6-year-old Nigerian indigenous bitch weighing 10kg was presented to the Small Animal Unit of the Veterinary Teaching hospital, University of Jos, Plateau State with the chief complain of generalized hair loss that started about 2-months before presentation. History revealed that the bitch was fed on homemade meals, and had an up to date vaccination record. The bitch had no cage and was allowed to roam freely and scavenge for food. Physical examination revealed some areas of circumscribed alopecia which was generalized throughout the body with areas of erythema (plate 1). The rectal temperature (38.8˚C), pulse rate (80 beats per minute) and respiratory rate (20 breaths per minute) were all within the normal range. Other clinical findings were also apparently normal.

Blood and fecal samples were collected and sent to clinical pathology and helminthology laboratory of the VTH for haemogram and parasite screening respectively. Deep skin scrapings and hair pull outs were made after disinfecting the area with 70% alcohol to remove surface contaminants and sent to the microbiology laboratory for bacterial and /or fungal identification and entomology laboratory for ectoparasite infestation.

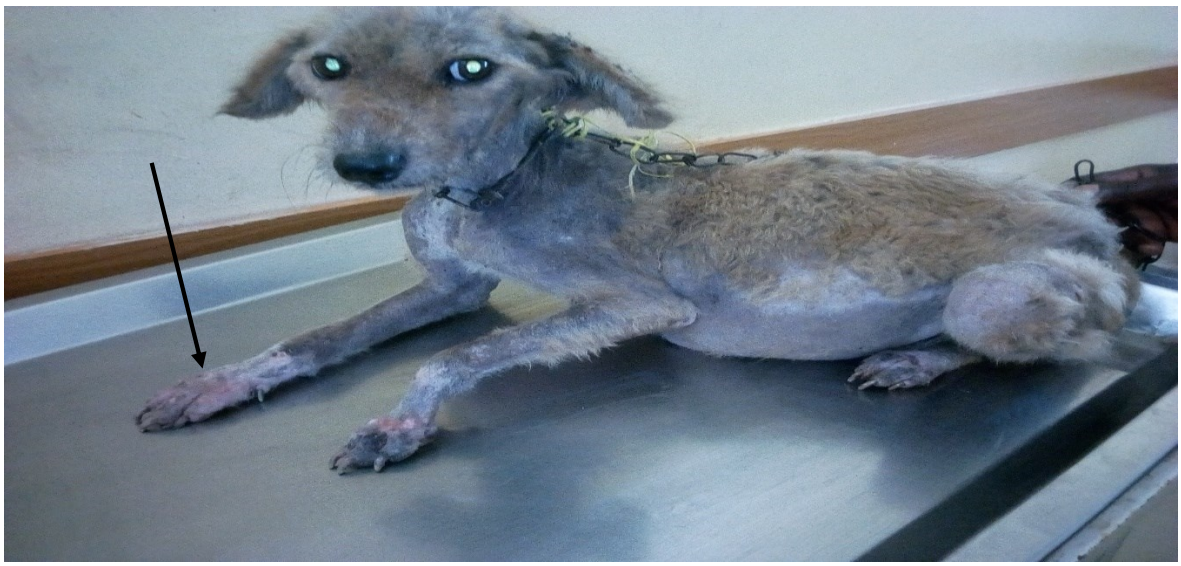

Plate 1: A 6-year-old Nigerian indigenous bitch showing skin lesions note the generalized hair loss and areas with erythema (black arrow).

MATERIALS AND METHODS

Sample collection

Deep skin scrapings were taking around the periphery of the lesions alongside some hair pull outs after cleaning with cotton wool soaked in 70% alcohol and sent to the Microbiology laboratory of the University of Jos, Plateau state,

Specimen Preparation and Direct Microscopic Examination

The sample for mycological examination was divided into two portions. A portion was used for direct examination and the second portion for fungal culture and identification. The hair sample was placed on a clean glass slide containing a few drops of 10% potassium hydroxide solution and covered with a cover slip. It was gently heated under the flame of a Bunsen burner without boiling and examined under a light microscope at x40 for the presence of spores and fungal hyphae.

Fungal Culture, Isolation and Identification

The second portion of the hair sample was inoculated on Sabouraud Dextrose Agar (SDA) containing 0.05% /L chloramphenicol and incubated at room temperature for 3-4 weeks and examined for fungal growth. Examination of fungal growth was carried out by both macroscopic and microscopic examinations. On macroscopic examination, the growth rate, the surface topography and other macroscopic characteristics were noted. For microscopy, a scotch sellotape preparation was made by placing the sticky side of a sellotape on the mycelial fungal growth and on a clean glass slide with a few drops of Lactophenol Cotton Blue (LPCB) stain and viewed under low and high power magnification on a light microscope to examine the microscopic fungal structures.

RESULT AND DISCUSSION

The clinical signs observed were generalized areas of alopecia and erythema which may be due to the invasion of the dermatophytes on the hair follicles which weaken the hair strands and eventually break and fall off. This is in agreement with the work of (Genally *et al.* 2016). Chains of large ectothrix were observed on the infected hair on direct examination. Colonial growth pattern on SDA showed white, cottony, flat appearance that appeared after 21 days of inoculation (plate 2). The colonial morphology was in line with the reports of Nweze

(2011), Haniff *et al*. (2012) and El-Ashmawy *et al.* (2015). Microscopic examination of the isolates stained with LPCB revealed septate hyphae with numerous microconidia that appeared grape-like and in clusters. The macroconidia was multi septate with thin, and smooth walled (plate 3). The diagnosis was based on clinical signs, direct examination and isolation and microscopic identification of the etiologic agent. Entomology result revealed that no parasite was found. Also, helminthology result was negative. However, microbiology result showed that *Trichophyton mentagrophyte* and *Penicillium* species were isolated. The isolation of non-dermatophyte *Penicillium* species (plate 4) concurs with the works of (Pal and Kerosa 2020), who isolated non-dermatophytes from domestic animals and man. It is generally believed that apart from agents of endemic mycoses, the environmental non dermatophyte filamentous fungi are unable to cause skin disease in immunocompetent individuals. Nevertheless, the role of this non dermatophytes in causing dermatitis in animals need be investigated.

Plate 2: 21 day-old colonial morphology of *Trichophyton mentagrophyte* with the white, flat, and cottony appearance (black arrow) and large white colony of *Penicillium* species (circle).

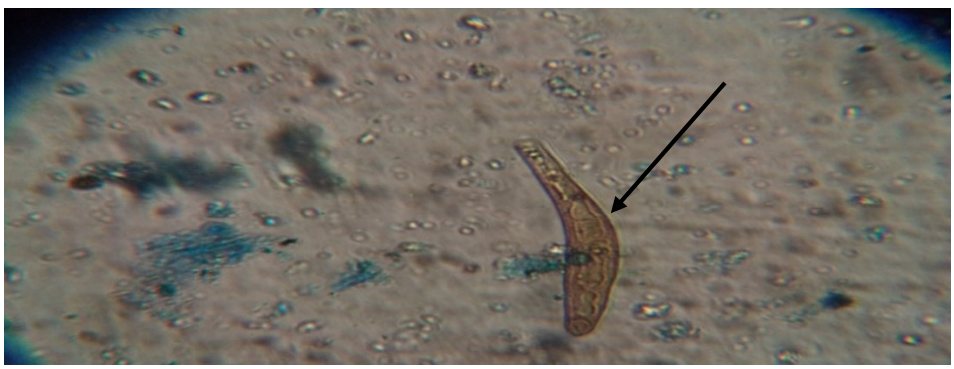

Plate 3: *Trichophyton mentagrophyte* macroconidia showing 9-septation (multi septate) that is smooth, thin walled and club shaped (black arrow). Microconidia are many and clustered.

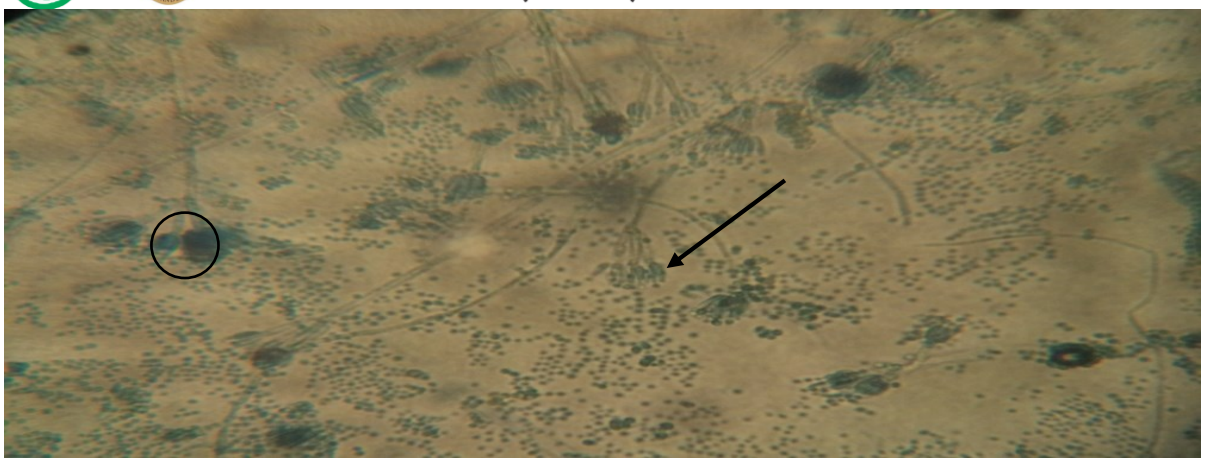

Plate 4: Microscopic appearance of *Penicillium* spp. Note the phialides (circle) and conidia (black arrow).

CONCLUSION AND RECOMMENDATIONS

Trichophyton mentagrophyte was the principal dermatophyte identified to be responsible for the disease. Animal owners are advised to be reporting cases promptly to the hospital and the clinicians are also reminded to always wear their personal protective equipment before examining animals suspected of having dermatophytosis as the condition is highly zoonotic.

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