



Original Research

Prevalence and Potential Risk Factors of Dermatophytosis in Arabian Horses in Egypt



Ahmed M. Ahdy^a, Mohamed Z. Sayed-Ahmed^a, Emad E. Younis^a,
Hany N. Baraka^b, Sabry A. El-khodery^{a,*}

^a Department of Internal Medicine and Infectious Diseases, Faculty of Veterinary Medicine, Mansoura University, Mansoura, Egypt

^b Department of Pharmacognosy, Faculty of Pharmacy, Mansoura University, Mansoura, Egypt

ARTICLE INFO

Article history:

Received 11 August 2015

Received in revised form 29 November 2015

Accepted 21 December 2015

Available online 28 December 2015

Keywords:

Dermatophytosis

Arabian horse

Risk factor

Prevalence

Egypt

ABSTRACT

The objective of the present study was to verify the prevalence and the risk factors associated with dermatophytosis in Arabian horses. For this purpose, a total of 457 Arabian horses in 15 farms were examined. A questionnaire was constructed to include the hypothesized risk factors. Fungal isolation and identification for each horse were carried out by standard microbiological procedures. Logistic regression analysis was used to evaluate the risk factors on both animal and farm levels. *Trichophyton* spp. was recovered from 50 horses and *Microsporum* spp. from 27 cases. *Trichophyton equinum* was more prevalent than *Trichophyton mentagrophytes* (45 vs. 4) and *Trichophyton tonsurans* (45 vs. 1). However, *Microsporum canis* was more prevalent than *Microsporum gypseum* (21 vs. 5) and *Microsporum audouinii* (21 vs. 1). On horse level, final multivariate logistic regression analysis showed that there was a significant association between dermatophytosis and horse' age ($P < .05$; odds ratio [OR]: 1.07; 95% confidence interval [CI]: 1.0–2.69), poor grooming practice ($P < .05$; OR: 57.11; 95% CI: 2.47–13.44), moist condition ($P < .05$; OR: 42.77; 95% CI: 2.0–25.18), and farm size ($P < .05$; OR: 1.06; 95% CI: 1.00–7.05). However, on the farm level, farm size of >30 horses was the risk factor ($P < .05$; OR: 1.0; 95% CI: 1–3.03). In conclusion, the present results indicate existence of dermatophytosis in Arabian horses. Identification of the potential risk factors associated with the disease may be helpful to construct the ideal preventive measures.

© 2016 Elsevier Inc. All rights reserved.

1. Introduction

Dermatophytosis refers to fungal infections that involve superficial layers of the skin, hairs, and hoof. The contagiousness nature of diseases among animal communities and the public health consequence are obstacles to many activities [1]. The most common equine dermatophyte species isolated from horses are *Trichophyton equinum*, *Microsporum canis*, *Trichophyton mentagrophytes*, and *Trichophyton verrucosum* [2–5]. Recently, equine dermatophytosis due to *Trichophyton bullosum*, a poorly known

zoophilic dermatophyte masquerading as *T. verrucosum*, has been recorded [6].

Dermatophytes invade hair follicles where they feed on keratin and produce vast numbers of potentially infective spores. Generalized dermatophytosis is uncommon and usually seen in immunosuppressed horses or in foals [7]. Transmission occurs rapidly by direct contact with infected animals or by contaminated equipment. However, the establishment of infection depends on host factors, such as age, immunity, fungistatic activity of secretions skin, concomitant diseases, and nutritional and hormonal states [8]. Additional wide range of contributing factor for dermatophytosis in horses was investigated [7,9,10].

Generally, the prevalence of superficial mycoses caused by dermatophytes is high among domestic and pets

* Corresponding author at: Sabry A. El-khodery, Department of Internal Medicine and Infectious Diseases, Faculty of Veterinary Medicine, Mansoura University, Mansoura 35516, Egypt.

E-mail address: khodery@mans.edu.eg (S.A. El-khodery).

animals [11]. Early investigation showed that the prevalence of dermatophytosis is higher in training horses than breeding ones [12]. A prevalence of 9% mainly caused by *T. equinum* was recorded in horses [13]. Recent study showed that 39.8% of domesticated animals are infected with different species of dermatophytes [14].

The first sign of infection is erection of the hairs with slight elevation of the skin beneath them, then crusts and alopecia, usually observed in abrasion areas, especially in the loin, rump, and head [15]. *Trichophyton* hyphae colonize in the stratum corneum, and acantholysis presumably develops because of proteases secreted by the dermatophytes [15].

Horse with dermatophytosis may experience spontaneous remission within 90 days. It is unusual for a healthy horse to get dermatophytosis a second time, unless a different genus or species of dermatophyte is involved [7]. Because this dermatologic disease resulting from different causes mostly present with a similar clinical appearance, it is important to manage skin problems successfully by using a systemic approach to arrive at an accurate diagnosis [14].

To the best of the authors' knowledge, epidemiologic studies on dermatophytosis in Arabian horses have not been conducted neither in Egypt nor worldwide. Therefore, the aim of present study was to investigate the prevalence and risk factors of dermatophytosis in Arabian horses in central Egypt.

2. Materials and Methods

2.1. Study Area

For 1 year, an epidemiologic study was carried out in two governorates of central Egypt (Cairo and Giza). Study area is located in northern Egypt, known as lower Egypt, 165 kilometers (100 mi) south of the Mediterranean Sea and 120 kilometers (75 mi) west of the Gulf of Suez and Suez Canal. The area is along the Nile River, immediately south of the point where the river leaves its desert-bound valley and branches into the low-lying Nile Delta region. Cairo resides only on the east bank of the river and two islands within it on a total area of 453 square kilometers (175 sq mi), whereas Giza is located on the west bank of the Nile River, some 20 km (12.43 mi) southwest of central Cairo. The climate is a desert in nature, but often with high humidity due to the river valley's effects. Wind storms can be frequent, bringing Saharan dust into the city during the months of March and April. The temperatures in winter ranges from 19°C (66°F) to 29°C (84°F), whereas nighttime lows drop to below 11°C (52°F), often to 5°C (41°F). In summer, the is rarely high surpass 40°C (104°F) and lows drop to about 20°C (68°F).

2.2. Study Animals

A total of 457 (62.2%) of 735 Arabian horses in 15 farms were randomly selected. First, farms form the basic geographic and administrative units in the two Governorates (Cairo and Giza) of Egypt were identified and visited. Random selection of horses was carried out using computer software program of Survey toolbox [16]. A questionnaire was constructed to include farm location, farm size, gender, age,

health status, presence of skin lesion, management system, grooming practice, contact with stray dogs, and biosecurity.

2.3. Clinical Examination

Competent clinical history and physical and dermatologic examinations for selected horses were carried out according to standard methods [7].

2.4. Samples and Sample Processing

Skin scrapings, hair plucking, impression smears, and thick crusts were collected from all selected horses. Just before sampling, cleaning of the infected area with alcohol 70% was carried out to remove surface contaminants then allow air drying. Samples were obtained from the edge of lesion which correspond the active zone of lesion. Direct microscopical examination was performed using Chlorazol black stain with dimethyl sulphoxide and potassium hydroxide [17]. The dye allows fungal elements to be identified more readily as they will stain green against a light gray background.

2.5. Identification

According to standard method [18], a part of sample (skin scraping and hair) was cultured onto two types of Sabouraud, cycloheximide-chloramphenicol media. Only small particles of material (single hair and epidermal scales) were transferred into the media, whereas the larger ones were grained aseptically before inoculation. The individual inoculates was separately placed into some sites of the agar, either directly on the surface or slightly submerged. Inoculated plates were incubated in dark at 25°C except the inoculated Sabouraud, cycloheximide-chloramphenicol agar media with thiamine were incubated at 37°C, with 30% humidity "A pan of water in the incubator usually provides enough humidity." Plates were incubated for 30 days and checked daily for fungal growth. Based on the colonial macromorphology, micromorphology, and biochemical tests, the identification of fungi was carried out.

2.6. Statistical Analysis

Analysis of data was carried out using SPSS commercial statistical software program (SPSS for Windows, version 16.0, SPSS Inc, USA). First, descriptive statistics and distribution of risk factors among cases of dermatophytosis were presented. Association between the occurrence of infection and the potential risk factors was studied using logistic regression on both animal and farm levels. At first step, the univariate logistic regression was carried out. In this method, the dependent dichotomous variable was the status of the horses (infected or not infected). However, the independent variables were the hypothesized risk factors. The risk factors with significant association ($P < .1$) were subjected to the multivariate backward stepwise logistic regression analysis. Hosmer and Lemeshow's goodness of fit statistic test greater than 0.05 was used to imply that the model's estimates fit the data at an acceptable level in multivariate analysis. The P value, odds ratio (OR) with a

Download English Version:

<https://daneshyari.com/en/article/2394709>

Download Persian Version:

<https://daneshyari.com/article/2394709>

[Daneshyari.com](https://daneshyari.com)