

## Equine Sporotrichosis in Saudi Arabia: The first report on two mares and treatment with natamycin

Al-Dughaym, A.M. and Fadlelmula, A.

Department of microbiology and parasitology, College of veterinary Medicine, King Faisal university, P.O. Box 1757, Al-Ahsa 31982, Kingdom of Saudi Arabia.

### ملخص البحث

يعتبر هذا التقرير الأول لحدوث إصابة بداء الشعريه المبوغه (Sporotrichosis). الذي يسببه فطر الشعريه المبوغه الشنكيه (*Sporothrix schenckii*) في فرسين بالمملكة العربية السعودية. أظهر الفحص الإكلينيكي عقد تحت الجلد مختلفة بالقشور في منطقة العنق و الأرجل الأمامية كما تبين عدم وجود الطور الليمفاوي في هذه الحالات المرضية. تم عزل ميكروب الفطر المسبب من الآفات المرضية. وتمت معالجة الحالات المرضية بالمسح الخارجي للآفات باستعمال صبغة اليود ومرهم الناتاميسين (Natamycin) بجرعة 300 مجم ناتاميسين للحيوان قسمت إلى أربع جرعات صغيرة أعطيت كل واحدة منها بعد خمسة أيام من سابقتها. تم تقييم العلاج المستعمل بواسطة الكشف الإكلينيكي و استزراع عينات من الآفات حيث أثبت العلاج فعاليته الجيدة. تطرقت الورقة أيضاً للأضرار الصحية التي قد تصيب الإنسان نتيجة انتقال المرض.

### Summary

**This is the first report of sporotrichosis in Saudi Arabia. Clinical signs were exudative subcutaneous nodules, scales and crust formation in the neck region and forelimbs. The classical lymphangitic form was not seen in these cases. *S. schenckii* was isolated from the lesions and identified. The two mares were treated by topical application of tincture of iodine and natamycin ointment (300mg natamycin per animal divided into four doses, each five days apart from the next one and contained 75 mg natamycin). The treatment regimen was assessed clinically and mycologically and proved to be effective. Some veterinary and public health aspects of the disease are discussed.**

### Introduction

Sporotrichosis is a mycotic disease caused by the dimorphic fungus, *Sporothrix schenckii*. It has been described in many animal species and man in many parts of the World. The disease was first reported from man in the USA in 1898, rats in Brazil in 1907 and mules and horses in Madagascar in 1909 (Ainsworth and Austwick, 1973). Thereafter, sporotrichosis has frequently been reported in the horse (Jones and Maurer, 1944; Davis and Worthington, 1964; Thorold, 1951). The zoonotic nature of the disease has also been documented (Read and Sperling, 1982). The causative agent has a saprophytic phase associated with soil, plants and vegetation (Mackinnon *et al.*, 1969). Man and animals may be naturally infected

as a result of accidental inoculation of the fungus into the skin. The disease is a chronic nodular dermal and subdermal infection with alopecia, ulceration and crust formation. In equidae, it affects mostly the skin and cutaneous tissues; sometimes with involvement of the lymphatic vessels.

Different local and parenteral preparations have been tried by many workers with various degrees of success (Ainsworth and Austwick, 1973; Evans, 1994; Nadalian *et al.*, 1997, Burke *et al.*, 1983). The fungicidal antibiotic natamycin has been used to treat ringworm in horses in Holland and the United Kingdom with encouraging results (Oldenkamp, 1979). It has been tried in the present cases to test its efficacy in treatment of sporotrichosis as suggested by Radostits *et al.* (1997).

Search of the literature revealed no reports on human or animal sporotrichosis in the Kingdom of Saudi Arabia. The purpose of this report is to document the first recorded cases of equine sporotrichosis in Saudi Arabia.

### **Materials and methods**

#### **Case History:**

Two Arabian mares (2 and 3½ -years-old) with skin infection were encountered in AlAhsa Province, Eastern Region of the Kingdom. Clinical examination revealed lesions on the neck region, along both sides of the forelimbs and chest. In the affected areas there were small subcutaneous nodules with alopecia, exudate, scales and some crust formation (Fig.1). The infection was limited to the skin and had no visible involvement of the lymphatic vessels. Both mares had good general body condition, normal body temperature and normal respiration and heart rates.

#### **Laboratory investigation:**

Skin and hair scrapings, exudate aspirate and crusts were collected aseptically from the affected parts. Wet mounts in 20% KOH and Gram-stained smears were prepared and examined. Representative parts of the specimens were inoculated in duplicates onto Sabouraud dextrose agar and Sabouraud CAF agar + actidione (Liofilchem, Roseto, D.A., Italy). Slopes and plates were incubated at 26°C-28°C.

The cultures were examined daily and observations recorded. Further confirmatory tests and studies were done on brain heart infusion agar (BHI, Oxoid).

Affected parts of the skin of both mares were cleaned and tincture of iodine was topically applied on for three days. Then treatment with a commercial preparation of natamycin (Pimafucort, Yamanouchi, The Netherlands) that also contained hydrocortisone and neomycin, **Treatment:**

was started. The ointment was applied on the skin in such a way that skin and hair were brought in contact with the drug. This was done without hair shaving. The treatment consists of four applications, each 5 days apart from the next one. Each animal was treated with a dose of 75mg natamycin at each time and thus received a total dose of 300 mg per animal.

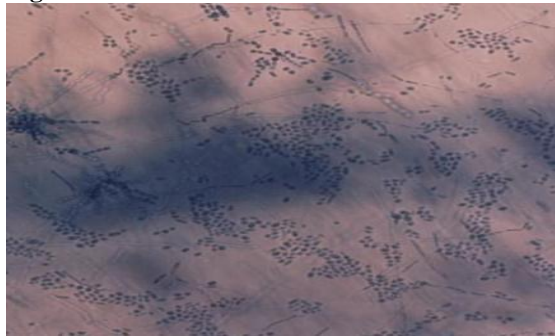
### **Results**

No fungal elements or spores were seen on direct examination of KOH mounts. A tentative diagnosis of sporotrichosis was made after examination of Gram-stained smears. Very few elongated cylindrical gram-positive bodies were observed. The growth of the isolate at room temp. was rather quick. After 4-5 days, grey convoluted leathery colonies with very short fine aerial mycelia were detected. On further incubation, shades of brown colour and small black areas were observed. There was a central knob and radiating furrows. Needle mounts of parts of the growth in lactophenol cotton blue revealed hyaline, branched septate delicate hyphae with numerous conidiophore-borne oval conidia (Fig. 2). Reversion from the mycelial form to the tissue form was accomplished in a series of subcultures onto BHI slopes incubated at 37°C. Colonies were creamy and grey in colour. Microscopic examination showed rounded, oval or elongated yeast cells (Fig. 3). Complete conversion to the yeast form was achieved after the seventh subculture. On the basis of clinical data, morphological and cultural characteristics and descriptions in textbooks (Ainworth and Austwick, 1973; Quinn *et al.*, 1994; Rippon, 1974), the isolate was identified as *Sporothrix schenckii*.

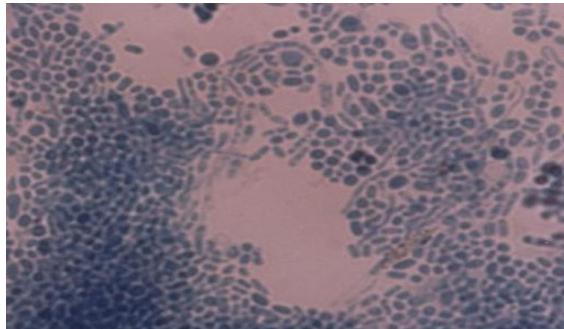
The treatment regimen was well tolerated with no apparent local reactions or side effects. The lesions started to improve after few days and were inapparent after three weeks. Clinically and mycologically, no recrudescence was observed at the end of the observation period (About three months).



**Fig. (1):** Skin sporotrichosis in a horse showing nodules with exudate and crusts in the neck region.



**Fig. (2):** Mycelial phase of *S. Schenckii* showing delicate hyphae with oval conidia arising from lateral branches. Lactophenol – Cottonblue x 200.



**Fig. (3):** Yeast phase of *S. schenckii* with different shapes of round, oval or elongated yeast cells. Lactophenol – cottonblue x 400.

### Discussion

This is the first report of equine sporotrichosis in the Kingdom of Saudi Arabia. It appeared that the affected mares had a general good health and intact immune system as deep invasion of the fungus was inhibited. It may be of interest to note that there was no involvement of lymphatics or regional lymph nodes, although lesions were localized. Other investigators (Andrews *et al.*, 1983) have described multifocal skin lesions and generalized haemorrhagic infections of the internal organs, probably caused by *S. schenckii* in dairy cows. In our cases, despite the fact that systemic infection was not diagnosed, the body failed to get rid of the infective agent before administration of medicinal treatment. To the best of our knowledge, there was no record of spontaneous recovery from this disease in the literature.

The affected mares, in the present study, were kept together in a date-palm garden with shrubs and short grass. During summer, the hot and humid weather made conditions favourable for the fungus to multiply saprophytically in vegetation. *S. schenckii* has been isolated from soil (Emmons, 1953) and plant debris (Mackinnon *et al.*, 1969). Further investigations into the isolation of the fungus from soil and vegetation in this region are needed. A reasonable chance had existed for the pathogen to be contracted from the vegetation and introduced inside the animal's skin. The fact that the infected mares were young might have indicated their susceptibility. Moreover, the possibility that one of the mares might have transmitted the infection to the other could provide an additional evidence to the contagion of the disease (Read and Sperling, 1982). Nevertheless, the disease has not been observed in other adult horses kept in the same garden. This may be explained by assuming that old animals had experienced contacts with the fungal elements sometime in their life which afforded them a degree of immunity. Prolonged exposure of humans to *S. schenckii* resulted in 13.67% positive reactors to skin tests with sporotrichin without evident clinical sporotrichosis (Rodrigues and DeResende, 1996). Such epidemiological surveys are needed in domestic animals.

Combined application of tincture of iodine and natamycin ointment was effective and safe. This treatment regimen was chosen as the infection was confined to the skin and cutaneous tissues. Involvement of the lymph vessels and deep tissues would necessitate the use of systemic drugs but this is not without hazards. Oral

administration of potassium or sodium iodide to the point of iodism, has been reported to be effective in animals and man. (Ainsworth and Austwick, 1973; Evans, 1994). However, in a case of sporotrichosis in a horse treated with oral potassium iodide at a dose of 10g. daily for two months, complete recovery was not achieved probably because of the chronic state of the case (Nadalian *et al.*, 1997). Cutaneolymphatic sporotrichosis in a cat was successfully treated with ketoconazole and sodium iodide (Burke *et al.*, 1983). It was reported that ketoconazole was partially effective and a dose of 40mg/kg sodium iodide caused cardiomyopathy in a cat with sporotrichosis (Burke *et al.*, 1983).

The disadvantages that may curtail the use of topical application are the need to handle cases separately and personnel exposure to infection.

#### **Acknowledgement**

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