

Unusual manifestation of a concurrent demodectic and sarcoptic mange in a Zebu–Friesian cross-bred heifer

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ABSTRACT

We describe a rare case of a concurrent demodectic and sarcoptic mange in a 2-year-old heifer in Khartoum, Sudan. The lesions were massive lumps of granulomatous tumour-like dermatitis with thick, nodular folds mainly covering the head, neck and shoulders. Histopathological examination of the lesions revealed the presence of both *Demodex bovis* and *Sarcoptes scabiei*. The animal died regardless of the anti-parasitic treatment it received.

Key words: cross-breed cattle, demodectic, mange, sarcoptic, Sudan.

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INTRODUCTION

Mange is a severe dermatitis that affects many species of domesticated and wild animals. The disease is caused by mites and is endemic in many parts of the world, notably in tropical wet and humid areas^{1,3,6,8–10}. It usually is of little concern, but in cattle it may cause significant damage to hides. It is rarely fatal if appropriate treatment is initiated⁷. The present report presents the diagnosis and course of peculiar skin lesions caused by mites in a heifer from a region north of Khartoum.

CASE HISTORY

A 2-year-old heifer was presented to the University of Khartoum Veterinary Teaching Hospital (Khartoum North, Sudan). The owner stated that the lesions started 3 months prior to admittance to hospital. They started as small, circumscribed skin crusts and swellings. The lesions rapidly increased in size and spread around the body. The affected parts were itchy and the animal scratched frequently at times. Appetite and general condition of the animal was not affected initially, but deteriorated with time.

Lesions covered most of the skin, especially around the neck and forelimbs (Fig. 1a). They manifested as massive lumps of granulomatous, tumour-like

dermatitis with a high degree of keratosis and heavy, thick, nodular folds (rock-like), circular to irregular in shape (Fig. 1a). The thickness of the skin folds

reached up to 20 mm. The lesions were hairless and covered with dry grey scabs, indicating heavy keratosis, and surface ulceration was evident in some parts.

Needle aspiration from nodules and skin folds revealed thick, creamy-yellow pus and there was evidence of sinus formation. Histopathological examination of the lesions revealed the presence of both *Demodex bovis* and *Sarcoptes scabiei*. The examined sections showed follicular dermatitis with multiple cysts that contained mites and their eggs (Fig. 2). The skin inflammation was chronic with ponderous connective tissues and infiltrated with a range of chronic inflammatory cells. Giemsa-stained smears made from the purulent materials revealed filamentous, branching organisms, identified as

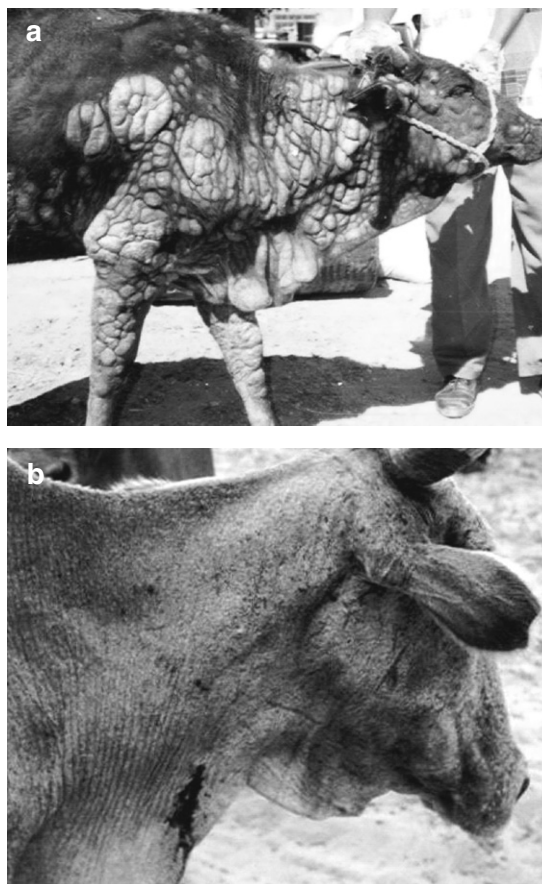


Fig. 1: a: A massive granulomatous tumor-like dermatitis in a 2-year-old heifer caused by *Sarcoptes scabiei* and *Demodex bovis*; b: classic form of demodectic mange in a zebu cattle caused by *Demodex bovis*. Notice the small, circumscribed nodules and skin folds on the neck.

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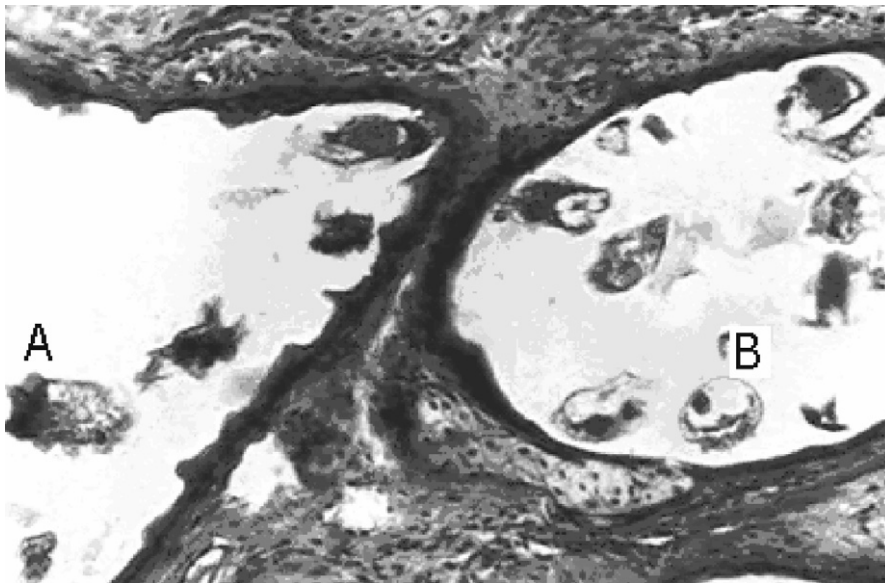


Fig. 2: Follicular dermatitis with multiple cysts which contain *Demodex bovis* (A) and *Sarcoptes scabiei* (B) and its eggs. Notice the chronic inflammation with excessive connective tissues and inflammatory cells (H & E, $\times 100$).

Aspergillus sp. on cultivation, which comprised a secondary infection that seemed to have aggravated the condition. The animal died in spite of the anti-parasitic, antibacterial and antifungal treatment administered from the time it was admitted to the hospital, which was long after the 1st appearance of the lesions.

DISCUSSION

Mange has been studied in the endemic western Sudan^{1,2}, but the infection not known to occur in the region north of Khartoum and no report of this condition has been published from Friesian cattle that are commonly raised around Khartoum. This report is the 1st to describe a concurrent sarcoptic and demodectic mange infection in cattle.

Mbuthia *et al.*⁵ reported a case of demodectic mange in a Friesian heifer in

Kenya, with lesions similar to the present case. These 2 cases may indicate high susceptibility, as evident from the scale of the lesions in the foreign-blood heifers compared with infection among the local Sudanese Zebu breed (Fig. 1b). Marked breed susceptibility and a positive correlation between the antibody titre and the extent of mange have been recorded⁸. The magnitude of the current infection may reflect low immunity in this heifer⁴. No other animal in the vicinity of this case was noticed to have such an infection, which may indicate individual susceptibility rather than unusually high mite virulence.

The fungus seemed to have moved easily into the skin along the tunnels of the burrowing mites. Secondary infections of demodectic mange are commonly associated with staphylococci, but little has been

published. *Staphylococcus aureus* complications were seen in the nodules (Fig. 1b) of the local breed examined in the present report. The nodules were circumscribed and were no more than 10 mm in diameter (Fig. 1b). The role of *Staphylococcus aureus* in causing secondary infection had been recorded previously^{1,3,6}.

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