

## Mycotic skin lesions in an adult reindeer caused by *Debaryomyces hansenii*. A case report

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Skin lesions characterized by loss of hair, general thickening, yellowish discoloration, papillomatous focal thickening and scaling (Figs. 1 and 2) had, since late September 1993, been observed in an approximately 4 year old reindeer bull which was corralled together with several other reindeer and fed through the winter period and thus observed during the autumn and winter periods. The lesions were irregular 1.5 x 1 cm to 10 x 15 cm in size, and occurred mainly on ventral parts of the abdomen, along the lateral parts of the neck and on the head.

They were considered to be caused by ectoparasites and the animal was treated with *ivermectin* several times but did not recover. None of the other animals in the same corral showed similar lesions. The animal was slaughtered in early March. After slaughter, at meat inspection, besides moderately enlarged prescapular lymph nodes, only skin lesions were found.

Large pieces of the untreated skin were submitted to the National Veterinary Institute for bacteriological, fungal and histopathological investigation.



Fig. 1. Skin of reindeer. Note loss of hair and thick scaled surface.



Fig. 2. Skin of reindeer. Note the thick and rugged surface with almost papilloma like elevations.



Fig. 3. Skin of reindeer. Note the oedema of the propria and the rich amount of hyphae in the hyperkeratotic squamous epithelium of the surface and hair follicle. Grocotte x 190.

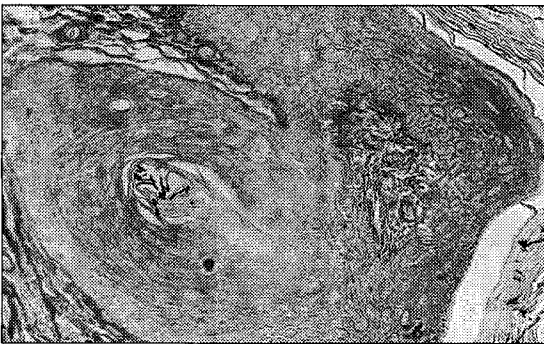


Fig. 4. Skin of reindeer. Note inter- and intracellular oedema of the epithelium, marked oedema of the propria, the hyper and parakeratotic squamous epithelium and the hyphae in the squamous epithelium. Grocotte x 480.

ons. The histopathological investigation on sections stained with haematoxylin-eosin and according to Grocotte, revealed a rich growth of fungal hyphae. In the epithelium (Figs. 3 and 4) the epidermis showed inter- and intracellular oedema, varying areas of acanthosis, hyperkeratosis and parakeratosis, local deposits on the surface of fibrinous material and desquamated cells infiltrated by numerous neutrophils. The submucosa was moderately oedematous with moderate scattered infiltrations by neutrophils, eosinophils, lymphocytes and macrophages.

The bacteriological investigation revealed only an unspecific growth of a mixed flora. The fungal investigation consisted of growth on Sabouraud

agar with 2 % glucose incubated in 27°C for 7 days. The agar plates were checked daily and revealed growth of a yeast strain in pure culture. The strain was recultivated for identification and sent to the Centraalbureau voor Schimmelcultures, Delft, Holland for determination. It was found to be *Debaryomyces hansenii* var. *fabryi*, the teleomorph stage of *Candida famata*. This species is common in the environment but a very rare isolate from clinical disease in man and other mammals (Rippon, 1982).

*Debaryomyces* has been isolated from cases of mastitis in cattle (Sakurai *et al.*, 1986), from skin and hair of porcines, canines (Chengappa *et al.*, 1984), horses (Semmelroth, 1992) and from fish (Bruce & Norris, 1973). The organism seems to be connected with humid conditions. This report apparently is the first to describe *candidosis* in reindeer. It is imperative that reindeer kept in corrals during winter and spring for supplementary feeding, are provided clean, dry conditions and that strict hygienic measures are followed. If reindeer on the other hand are kept in dirty, wet and muddy corrals, among other things, skin lesions due to fungal infections may possibly appear rather frequently.

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