CONCURRENT PARASITATION WITH SARCOPTES AND DEMODEX INA GOLDEN JACKAL

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Running title:
Sarcoptes and Demodex in a Golden Jackal

ABSTRACT:
A case of a young adult male golden jackal (*Canis aureus syriacus*) with concurrent Demodectic and Sarcoptic mange is described. This description constitutes the first report of demodex and sarcoptes in a jackal and is unique in that both infestations were present concurrently. The diagnosis was based on histopathology of skin sections from the jackal. The possibility that this jackal may have suffered from some sort of generalized immune deficiency is considered.

Keywords: Golden jackal, *Canis aureus syriacus*, demodex, sarcoptes, concurrent infection, ectoparasites.

CASE PRESENTATION and DISCUSSION

A young adult male golden jackal (*Canis aureus syriacus*) was presented in a rabies control survey after being found dead in the wild. The jackal was severely emaciated, there was a moderate generalized lymphadenopathy, extensive severe alopecia accompanied by lichenification, seborrhea and scaling. The alopecia covered most of the head, neck and large areas of the cranial trunk and forelimbs.

Histological examination of the skin revealed a diffuse severe hyperkeratosis with parakeratosis. Superficially there was extensive crusting containing leukocytes, leukocytoclasia and erythrocytes. The superficial dermis was diffusely acanthotic with mild to moderate multifocal infiltrates of histiocytes and plasma cells. Mild to moderate spongiosis was evident. Within the keratinic layer oval shaped arthropod ectoparasites measuring 300-400 µm were observed together with a lymphocytic and eosinophilic infiltrate (Figure 1). Intrafollicular elongated arthropod parasites measuring 100-200 µm and containing 6-8 legs were noticed (Figure 1). The follicles were markedly distended with mild follicular keratosis.

The presentation of the jackal was consistent with a severe, diffuse, chronic dermatitis and folliculitis with intralesional demodex (*Demodex spp*.) and sarcoptic parasites (*Sarcoptes scabiei)*.

Ectoparasites are a common cause of disease in domestic and wild animals. Susceptibility is particularly increased due to immune compromise and a combination of many components such as age, nutrition, concurrent disease and genetic predisposition. Wild animals (especially carnivores) may suffer from malnutrition and therefore become highly susceptible to infection. Nevertheless, reports of infection with scarcoptic or demodex parasites have not been documented in the jackal. In this case report we describe for the first time a jackal with

concurrent sarcoptic and demodectic mange

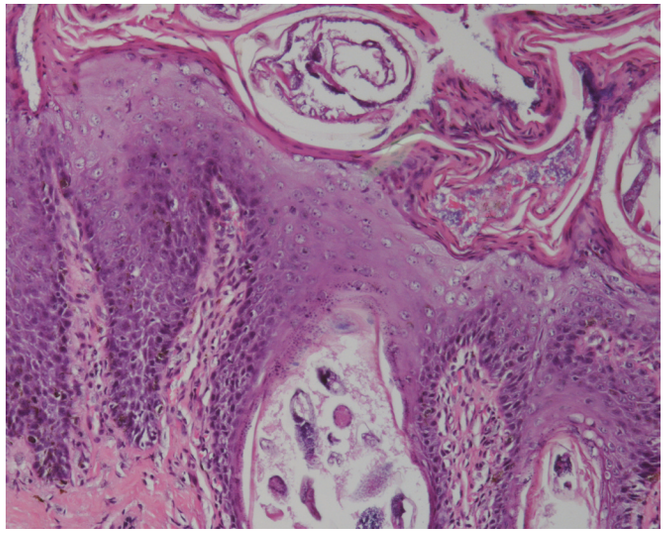
Sarcoptic mange is a highly contagious disease and is transmitted through direct contact between dogs (1). Recent studies suggest that all parasites of the genus sarcoptes are composed of a single heterogeneous species (2). This disease is considered to present itself as a complex hypersensitivity reaction. Most of the clinical feature of the disease, (including extreme pruritus) is apparently associated with hypersensitivity to various antigens, including proteins of the cuticle and feces where various mite species are likely to share cross reactivity (1). Histologically, sarcoptes mites are oval shaped, 200-400 µm in diameter with oval eggs, measuring 100-150 µm. They inhabit the epidermal superficial layer.

Demodex is considered to be a non-contagious parasitic disease caused by an over- population of the host-specific follicular mite of various *Demodex* species (3). Canine infection is suspected to be related to a specific immune defect with several breed predilections (4). Demodecosis in dogs can be divided to juvenile-onset and adult-onset forms. On histological examination, demodex mites measure 150-300 µm, are elongated and are usually located inside hair follicles. Other related species of demodex can vary in size between 90-368 µm and can also be found in the epidermis. Histological manifestations include perifolicular granuloma, mural folliculitis, folliculitis and furunculosis (3). Concurrent infection with 2 or more ectoparasites is very rare. In Korea only 17% of dogs showed concurrent infection with *Sarcoptes scabiei* and other ectoparasites including *Ctenocephalides canis, Otodectes cynotis*, but not with *Demodex canis* (5). Only one case has been described of a dog from Yacatan, Mexico with a dual infection of *Sarcoptes scabiei* and *Demodex canis* (6). Several other species are reported to display concurrent infections, however to best of our knowledge this is first case reported in jackals. Studies carried out in beagle dogs have indicated that immunosuppression may follow rather than precede clinical manifestations of generalized demodectic mange, implying that the phenomenon may be induced by the parasite or the host's reaction to it (4). The possibility that this jackal suffered from some sort of generalized immune deficiency should be considered.

Legend for figure.

Figure 1.

Histological section of skin x 100. Note the presence of both sarcoptes and demodex mites in the same field. The sarcoptes is present in the superficial layers of the epidermis whereas the demodex is located in the hair follicles.



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