

Concurrent infestation of *Demodex caviae* and *Chirodiscoides caviae* in a guinea pig

A case report

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Introduction

Ectoparasites can be found on and/or in the skin of their hosts, where they live on epithelial cells, blood and/or tissue fluid. They serve as vectors for various infectious agents (3), including mange, mycosis and viral disease (4). Predisposing factors identified for ectoparasite infestation in guinea pigs include chronic diseases as well as inadequate housing and feeding conditions (6). An investigation of over 17,000 domesticated guinea pigs in Peru showed that 96.6% were infested with ectoparasites (3). In that study, 27 different polyinfestations of ectoparasites with up to seven different species were diagnosed. The number of parasites harboured by the animals was much lower in a population of 140 wild guinea pigs. Infestation tended to increase with age (3).

Chirodiscoides caviae, also called the guinea pig fur mite, is usually found clinging to the hair shaft in the gluteal region, flank and trunk area, respectively. It is a relatively harmless species-specific fur mite. The mite is transmitted by direct contact (8, 10). Asymptomatic infestations may persist for long periods. Widespread or mass infestation typically only occurs in sick or immunodeficient animals (1). Scratching, erythema, alopecia, and scaling are occasionally seen with heavy infestations. The grooming behaviour may be intensified and lead to self trauma, possibly with an associated ulcerative dermatitis. The animals' hair coats typically have a rough appearance. Concurrent infestations with lice are common (12). Anorexia is possible and may be due to hair accumulation in the mouth (1).

The strictly species-specific hair follicle mite of the guinea pig, *Demodex caviae*, is found in the hair follicles. Infestations remain usually asymptomatic (7, 9). Immunodeficiency supports proli-

feration of these parasites (9). Immunodeficiency may be due to inadequate housing conditions, stress and/or qualitative or quantitative malnutrition. Infestations with *Demodex caviae* can lead to alopecia, erythema, papules, and crusts. Lesions are most commonly seen on the head, forelegs, and trunk (5). Mild pruritus may be present (11). *Demodex caviae* does not survive off the host for very long (2).

To the authors' knowledge, a concurrent infestation with *Chirodiscoides caviae* and *Demodex caviae* has not been reported.

Case report

Anamnesis

A 7-year-old neutered male guinea pig (*Cavia porcellus*) was presented with pruritus and alopecia of the legs and abdomen. The owner reported that clinical signs started 2 weeks prior to presentation. The patient had been acquired 6 months previously and since then had been in contact with two other guinea pigs, which were clinically normal. Feed, water intake and urination were normal. Faeces occasionally were a little bit soft. All three guinea pigs were kept indoors and housed on sawdust and hay. Daily they received hay and a handful of commercial rodent feed. The owner did not have any skin disease.

Clinical examination

On clinical examination, a symmetrical hypotrichosis with focal complete alopecia on both hind limbs and in the inguinal region was observed. General scaling and mild pruritus were present. All other vital functions were unremarkable.

The differential diagnosis included fur mites, demodicosis, pediculosis, thyroid disorders and inflammation or neoplasia of the caudal organ. Superficial skin scrapings revealed few fur mites *Chirodiscoides caviae* (► Fig. 1). Numerous *Demodex caviae* (► Fig. 2) were identified with deep skin scrapings. Cytologic examination of impression smears from alopecic skin also revealed *Demodex* mites.

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Therapy and clinical course

Initially, selamectin (Stronghold®; Pfizer Animal Health) was administered at a dose of 15 mg/kg body weight (BW) used as a spot on every 2 weeks. Additionally 100 mg/kg BW of vitamin C was injected subcutaneously once. The other two guinea pigs of the household were also treated with selamectin 15 mg/kg BW every 4 weeks. A few days later, the owner reported a decrease of pruritus.

Three weeks after the first presentation hair was observed to be growing back in the hypotrichotic areas. Superficial skin scrapings were negative. However, deep skin scrapings were still positive for *Demodex caviae*. In the presented patient therapy was continued with selamectin (Stronghold®; Pfizer Animal Health) 15 mg/kg BW every 2 weeks and contact guinea pigs were treated with selamectin 15 mg/kg BW (Stronghold®; Pfizer Animal Health) every 4 weeks.

Four weeks later, pruritus had recurred. On examination, the gastrointestinal tract was insufficiently filled and lymphadenopathy was present. Hair was found between the upper incisors. The animal still displayed hypotrichotic, non-inflamed areas on both hind limbs and in the inguinal region. A fine needle aspirate of a pea-sized mass in the region of the left shoulder blade revealed reactive lymphocytes without any signs of malignancy. Cytologic examination of impression smears from the caudal region of the abdomen and the back were negative. Deep skin scrapings, taken on both hind limbs (medial) still revealed *Demodex caviae*. The dental foreign body was considered to be the cause of the partially filled gastrointestinal tract in the absence of systemic clinical signs and selamectin treatment (Stronghold®; Pfizer Animal Health) was continued.

Two weeks later the guinea pig was presented with cachexia, weight loss, decreased water intake and defecation, as well as tooth grinding and vocalization. It was hypothermic (37.2 °C), had an empty gastrointestinal tract, abnormal posture, a slight head tilt to the left. Oral examination showed the beginning of bridge building of the molar teeth in the lower jaw. Alopecia was still present. At that time deep skin scrapings were not repeated, because the owner did not want the pig to be distressed. The patient received fluid therapy (full electrolyte solution, 50 ml/kg BW s. c. SID, Sterofundin® VG, Braun), pain medication (Metamizol, 20 mg/kg BW s. c. BID, Vetalgin® Intervet), vitamin C (100 mg/kg BW s. c. SID, Vitamin C 5 ml Inj.-Lsg., Loges), metoclopramide (1 mg/kg BW p. o. BID, MCP Tropfen, 1 A Pharma) and probiotic therapy (Bene-Bac®, ½ tube/kg BW p. o. SID, A. Albrecht). Haematology, blood chemistry, and urine analysis revealed an increased activity of alanine aminotransferase (ALT), glutamate dehydrogenase (GLDH) and bilirubin concentration as well as decreased values for total protein, albumin and urea (► Table 1). Ultrasonography showed a filled bladder, kidneys with no possible differentiation between cortex and medulla and a congested gallbladder with sludge. A bacterial culture of the gall bladder fluid remained negative. Antibiotic therapy with enrofloxacin and trimethoprim sulfadiazine was dispensed. The owner insisted on the animal's discharge and a very

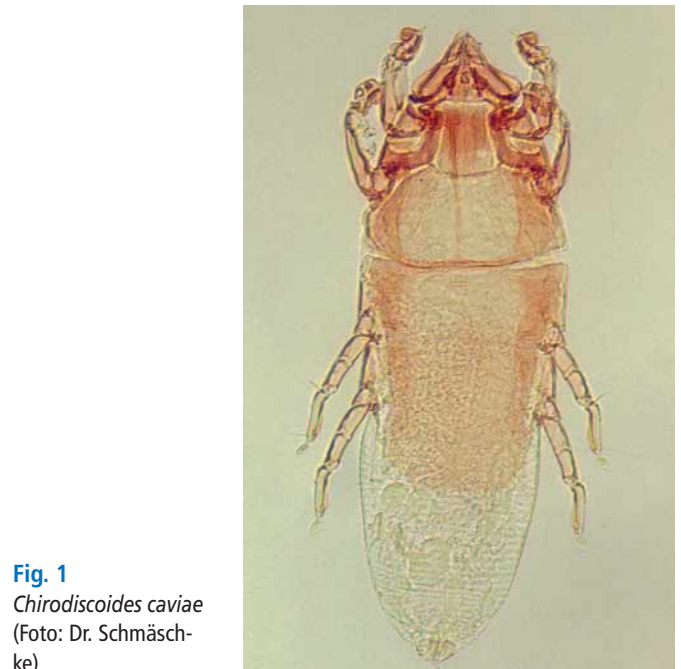


Fig. 1
Chirodiscoides caviae
(Foto: Dr. Schmäschke)



Fig. 2 *Demodex caviae*

cautious prognosis was given. Two days later the patient died and a necropsy was not permitted by the owner.

Discussion

Polyinfestation of ectoparasites with up to seven different species have been reported (3). A high population density associated with domestication, inadequate feeding, chronic illness and old age is regarded to be causally associated with ectoparasite infestation and polyinfestations (3, 6). To the authors' knowledge concurrent in-

Table 1 Results of haematology, blood chemistry and urine analysis

| Parameter | Result | Reference value |
|---------------------|--------|-----------------|
| ALT (U/l) | 65 | 0–61 |
| GLDH (U/l) | 67 | 0–17 |
| bilirubin (µmol/l) | 3.05 | 0–1.59 |
| total protein (g/l) | 40.5 | 44.4–65.8 |
| albumin (g/l) | 21.7 | 25.5–41.1 |
| urea (mmol/l) | 3.3 | 3.3–10,3 |

festation with *Demodex* and *Chirodiscooides caviae* has not been reported previously in guinea pigs. The proliferation of normally harmless ectoparasites found in this patient was interpreted as secondary and a sign of the reduced immunity of the guinea pig. Possible reasons for the secondary ectoparasites are age and the presence of a hepatopathy. The existence of a liver disease is based on clinical signs (reduced appetite, cachexia, apathy) and on increased ALT, GLDH, bilirubin and a decreased albumin and urea.

The treatment of ectoparasitosis with selamectin proved to be effective in cases of *Chirodiscooides caviae*. The recurrent pruritus can be explained with the infestation of *Demodex caviae*, which could be detected by skin scrapings, inspite of treatment, in each consultation in a different intensity. The reason for recurrent demodicosis in each follow-up consultation is unclear. Possible ex-

planation can be an insufficient medication (selamectin) or the primary disease of the guinea pig itself.

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Meldung

Nachlese: TP-Seminare „Anorexie beim Heimtier“ und „Reptilien in der Kleintierpraxis“

Wenn **Heimtiere** die Futteraufnahme verweigern, ist sehr häufig eine Zahnfehlstellung die Ursache, doch gibt es ein großes Spektrum weiterer Ursachen wie Erkrankungen des Gastrointestinal- sowie des Harn- und Genitaltrakts. Anorexie kann für die kleinen Säuger in kurzer Zeit lebensbedrohlich werden. Eine gezielte Diagnostik, die schnell die zugrunde liegende Ursache aufdeckt und eine gezielte Therapie ermöglicht, hat deshalb größte Bedeutung. Wie sich diese Diagnostik unter Praxisbedingungen realisieren lässt und wie die Behandlung der kleinen Intensivpatienten erfolgt, erläuterte Frau Dr. Estella Böhmer (Chirurgische und Gynäkologische Kleintierklinik der LMU München) am 21. November 2009. Ferner erhielten die Teilnehmer wertvolle



praktische Tipps und konnten sich bei der Diskussion von Fallbeispielen einbringen.

Kenntnisse über die anatomischen und physiologischen Besonderheiten der **Reptilien** sind eine Grundvoraussetzung für die Behandlung dieser wechselwarmen Tiere. Die-

se Thematik bildete daher den Auftakt des Seminars von Herrn Prof. Michael Fehr (Klinik für Heimtiere, Reptilien, Zoo- und Wildtiere der Stiftung Tierärztliche Hochschule Hannover) am 22. November 2009. Das vorgestellte Spektrum diagnostischer Verfahren beinhaltete neben der richtigen Probennahme die Untersuchung von Blut, Kot und Tupferproben sowie bildgebende Verfahren mit Schwerpunkt auf der Röntgenuntersuchung. Im Anschluss wurden häufiger auftretende Erkrankungen von Kopf, Hals, Rumpf, Gliedmaßen und Schwanz vorgestellt. Den Abschluss dieses thematisch umfassenden Seminars bildeten Analgesie und Anästhesie sowie praxisrelevante operative Eingriffe.

Aufgrund der Vielzahl eingegangener Anmeldungen zu diesen Seminaren werden diese am 17. bzw. 18. April 2010 wiederholt. Information und Anmeldungen unter www.tieraerztliche-praxis.de – Seminare.

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