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Alternative Therapies

Chameleons

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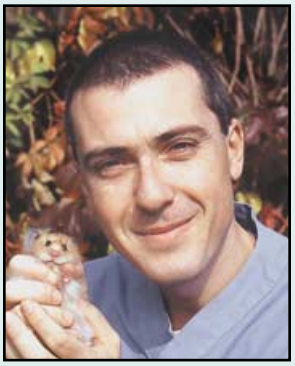

Pet Hamster Medicine and Surgery Part III: Infectious, Parasitic and Metabolic Diseases*

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* Adapted from the "Testo atlante di medicina e chirurgia del criceto domestico" (Atlas of Medicine and Surgery of the Pet Hamster) CD-ROM. The 388 pages of text (in Italian) contain more than 400 full-color images and 110 clinical cases. For further information, contact the author at capellov@tin.it.

This third installment of a comprehensive series on pet hamster medicine and surgery addresses the most common infectious, parasitic and metabolic diseases (see Tables 1-3). Parts I and II were published in Exotic DVM vol 3.2 and 3.4, respectively.

Infectious Diseases

Proliferative Ileitis

"Wet tail" is the common name of hamster proliferative ileitis. Clinical signs include liquid diarrhea, weakness, anorexia, dehydration, hunched posture, coma and death. A peracute clinical form resulting in sudden death may sometimes be seen, especially in young animals. The subacute clinical form is less common and can be associated with bowel intussusception and rectal prolapse.

The etiology is complex and multifactorial, and many genera of bacteria are involved (*Proteus, Escherichia, Clostridium perfringens, Campylobacter fetus jejuni*). Other factors, such as overcrowding, improper feeding, stress, and concurrent diseases, are very important in the pathogenesis. The main feature on pathologic examination is ileal hemorrhagic enteritis. Prognosis is guarded to poor.

Fluid therapy and treatment with antibiotics (tetracycline and metronidazole, among others) are mandatory. Force feeding is extremely important to prevent hypoglycemia and dehydration in anorexic hamsters. Even though hamsters are not true herbivores, Oxbow Critical Care® can be used, as well as homogenized baby food or other foods delivered via syringe.

The typical clinical sign of "wet tail" is the liquid, yellowish diarrhea spread on and around the perineal area under the tail.

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Table 1. Infectious Diseases of Hamsters

Name	Agent
BACTERIAL DISEASES	
	Enteritis
Proliferative ileitis ("wet tail")	*P. mirabilis, E. coli, C. perfingens, Campylobacter fetus jejuni*
Typhlitis	*Clostridium difficile*
Tyzzer's disease	*Bacillus piliformis*
	Pneumonia
Pasteurellosis	*Pasteurella multocida, P. pneumotropica*
Streptococcosis	*Streptococcus pneumoniae*
Salmonellosis	*Salmonella enteritidis, S. typhimurium*
Other etiologies	*Pasteurella bronchiseptica, Bordetella bronchiseptica, Klebsiella pneumoniae, Diplococccus pneumoniae*
Mycoplasmosis	*Mycoplasma pulmonis**
VIRAL DISEASES**	
Lymphocytic choriomeningitis (LCM)	RNA virus (Arenaviridae)***
Sendai virus	RNA virus
Mouse pneumonitis	RNA virus (Paramyxoviridae)
Adenovirosis	DNA virus (Adenoviridae)
Transmissible lymphoma virus	DNA virus (Papovavirus)

*Hamster is asymptomatic carrier
**Laboratory hamsters
***Potential zoonosis

Gas distension of the intestinal tract is a common sequela in cases of proliferative ileitis. Death follows enterotoxemia due to the development of toxin-producing bacteria.

The typical clinical sign of enteritis is the so-called "hunched posture," which is due to the severe abdominal pain; bowel intussusception may be suspected.

Pasteurellosis

Pasteurellosis is very common in hamsters and other rodents and may cause various clinical signs. The most common presenting signs are acute pneumonia with dyspnea, sneezing, ocular discharge, anorexia, weakness, and hyperthermia. Pneumonia is also caused by *Streptococcus pneumoniae*.

Pasteurella multocida and *P. pneumotropica* (as well as *Streptococcus aureus* and *Staphylococcus aureus*) usually cause abscessation. Abscesses are encapsulated, and pus is very dense and thick. For these reasons, antibiotic therapy alone is usually not sufficient. Sometimes abscesses can be lanced, flushed and drained, but excision and extensive debridement are usually mandatory.

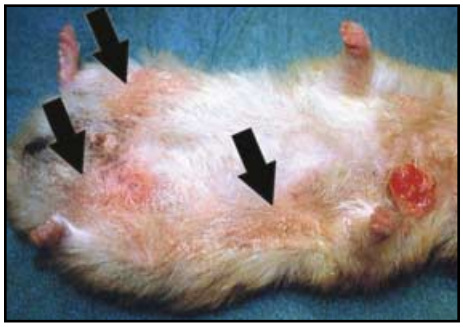
This hamster has a large cheek pouch abscess.

PARASITIC DISEASES

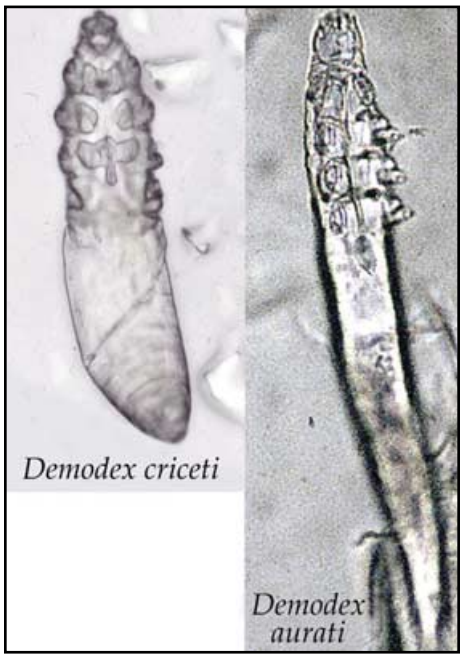
Demodectic Mange

Demodectic mange is very common in hamsters. Usually, the expression of the disease is mild and nonpruritic, but it can be more severe if complicated by bacterial dermatitis. Typically, demodectic mange becomes clinically relevant with stress, age, or concurrent diseases. The identification of *Demodex* spp. is indicative but not pathognomonic, because up to 50% of hamsters may be asymptomatic carriers. Clinical signs are alopecia, hyperkeratinization, and reddened skin, particularly on the abdominal surface. Complete recovery is difficult due to the low pathogenicity of *Demodex*.

Successful therapy with amitraz is reported but may present some risk due to self-licking of the skin and fur. Ivermectin allows improvement but usually not complete recovery; multiple injections are necessary.



Erythema and hyperkeratinization is noted (arrows) on the abdominal skin of a golden hamster due to demodiosis. (This hamster was anesthetized to remove a skin tumor close to the left forelimb.)



Demodex criceti is specific to hamsters. It is easy to identify, because of its typical morphology (the abdomen is much shorter when compared to *D. aurati* and other species of *Demodex*.)

Table 2. Parasitic Diseases of Hamsters

Disease	Agent
Demodectic mange	*Demodex criceti*, *D. aurati*
Sarcoptic mange	*Sarcoptes scabiei*
Notoedric mange	*Notoedres cati*, *N. muris*, *N. notoedres*
Ectoparasite infestation	Fleas and lice
Miasis	*Cuterebra*, *Sarcophaga*, *Musca domestica*
Dermatomycosis	*Microsporum* spp., *Trichophyton mentagrophites*
Cestodiasis	*Hymenolepis nana*, *H. diminuita*
Nematodiasis	*Syphacia obvelata*, *Aspiculuris tetraptera*
Protozoal infection	*Cryptosporidium*, *Trichomonas*, *Giardia*, *Hexamita*

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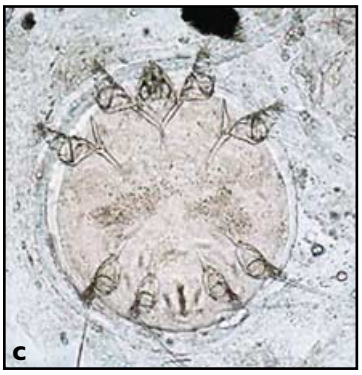


a,b) A hamster is affected with notoedric mange. Shown are microscopic views of c) *Notoedres muris* and d) *Notoedres cati*.

These Russian hamsters show signs of dermatomycosis: one on its back and the other with severe and extensive lesions on the abdomen, complicated by bacterial infection and skin ulcerations.

Other Mange

Sarcoptic and notoedric mange show typical clinical signs. Pruritus is very intense, and thick crusts are present on the skin, particularly around the nose and upper lips, ears and genitalia. It is caused by *Sarcoptes scabiei*, *Notoedres cati*, *N. muris*, *N. notoedres*, or *Ornithonyssus* spp. Prognosis is good. Hamsters recover quickly and completely after therapy with ivermectin (200-500 µg/kg subcutaneously). I recommend the higher dosage and have seen no adverse side effects. Improvement is seen a few days following the first injection, but it is usually necessary to repeat the treatment once or twice at one-week intervals in order to prevent recurrence.

Dermatomycosis

Dermatomycosis (ringworm) is fairly common in pet hamsters. Regular cleaning of the cage and use of proper bedding (avoid wood shavings) helps prevent this skin disease. Ringworm is caused by *Microsporum* spp. and *Trichophyton mentagrophytes* and is a potential zoonosis. Diagnosis and therapy are similar to those with other pets. Griseofulvin is administered at 20-50 mg/kg orally q24h. Topical antifungals alone (e.g., enilconazole) usually result in complete hair regrowth. In these cases, it is important to prevent the hamster from licking itself for at least 20 minutes after the solution is applied to the skin.

In the author's experience, Russian hamsters appear to be most predisposed to dermatomycosis. Usually, the thoracic and abdominal surfaces are affected, and clinical disease is complicated by infectious dermatitis. In this case, local and systemic antibiotics are mandatory.

METABOLIC DISEASES

Polycystic Disease

Polycystic disease may occur in many different organs, the liver being the most frequently affected. The etiology is unknown. Hepatic cysts contain a transparent or reddish-colored liquid. Cytology is not particularly useful, because no characteristic cells are present except epithelial cells and erythrocytes. The size of the cysts can range from a few millimeters up to more than 2.5 cm in diameter. Clinical signs are related to increased abdominal pressure, but the hamster is usually presented for an enlarged abdomen. Diagnosis is suspected after clinical examination, abdominal palpation, and radiology and is eventually confirmed by ultrasonography.

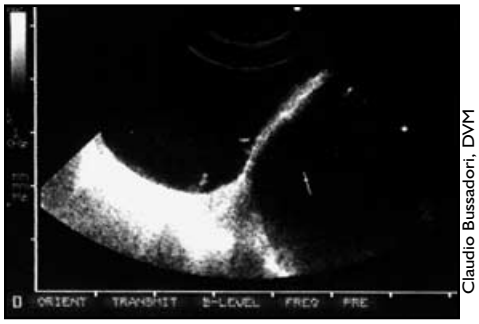
Therapy is palliative and consists of drainage of the cysts, best performed with the hamster under anesthesia. The cysts in docile hamsters can be drained without sedation (similar to, and often easier than, administering an intra-peritoneal injection). Recurrence is expected in 2-4 weeks. In the author's experience, hepatic cysts have not been diagnosed in Russian hamsters.

Hepatic Lipidosis

The author has seen a single case of hepatic lipidosis in a 2-year-old male golden hamster. Clinical signs were not specific or pathognomonic; diagnosis was made following necropsy.

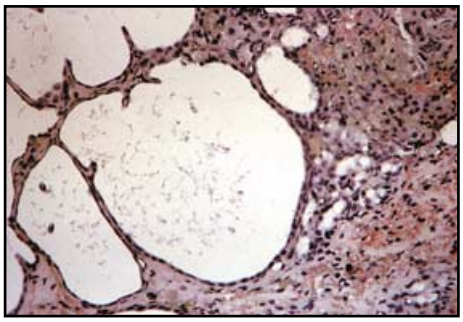
An enlarged abdomen is seen in a teddy bear hamster. The fur has been partially shaved on the abdomen.

Necropsy shows that the liver was affected by very large, multiple cysts.



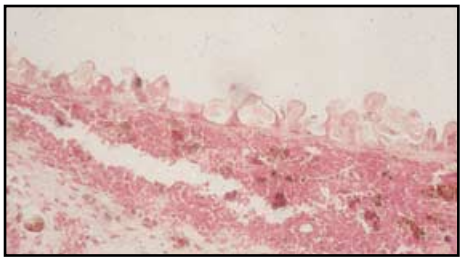
Claudio Bussadori, DVM

Because hepatic cysts are rounded and fluid-filled, ultrasonography is useful for diagnosis of this pathology.



Luca Mechelli, DVM

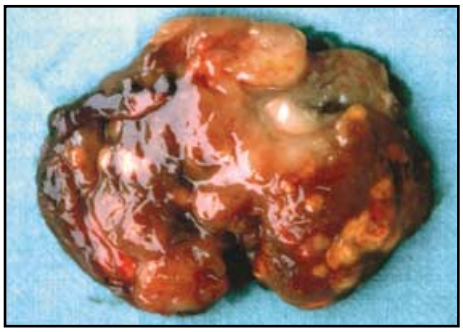
Cysts are surrounded by epithelium composed of cubic cells, which can be flattened by pressure into appearing like endothelial cells.



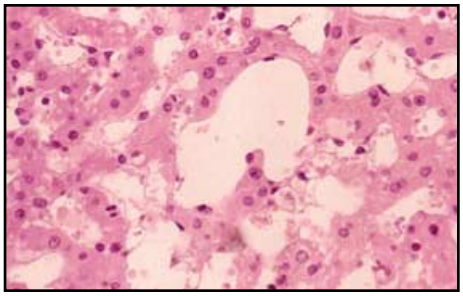
Mario Finazzi, DVM

Sometimes papillae are present in cubic cells of cysts.

Hepatic Lipidosis



Gabriele Ghisleni, DVM



Gabriele Ghisleni, DVM

Shown is a liver affected by hepatic lipidosis. Histopathology demonstrates the typical fatty degeneration.

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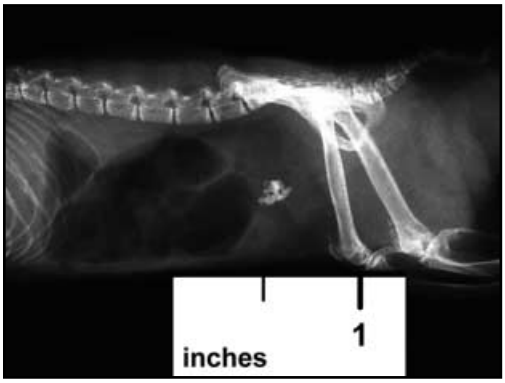
Urolithiasis

Three cases of urolithiasis have been reported in golden hamsters. The etiology is unknown, but feeding a diet based solely on dry food could be a predisposing factor. Urine composition in hamsters (basic pH and the presence of many crystals) is similar to that in rabbits in which urolithiasis is frequently diagnosed. Calculi reported in the literature were composed of calcium, magnesium and phosphate. The author diagnosed and surgically treated a case in a 23-month-old male golden hamster. Sex could be a predisposing factor in urolithiasis, because all four affected hamsters were males.



This radiograph shows calculi in the urinary bladder. The hamster was anorexic for 2 days; thus, the cecum appears gas-distended.

Table 3. Metabolic Diseases of Hamsters

Disease	Notes
Polycystic disease	Very common in the liver; less common in other organs
Hepatic cirrhosis	Diagnosed at necropsy
Hepatic lipidosis	Diagnosed at necropsy
Amyloidosis and nephrotic syndrome	Related to age; higher incidence over 18 months of age
Pregnancy toxemia	Sudden death from 2 days before parturition through 2-3 days after
Atrial thrombosis	Pathology reported at necropsy in geriatric hamsters
Urolithiasis	Etiology is unknown; dry food is suspected
Hyperadrenocorticism	Three cases reported
Diabetes mellitus	Reported in Chinese hamster (*Cricetulus griseus*)

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