

Case report:

Hematuria in a pet rat (*Rattus norvegicus domestica*) associated with *Trichosomoides crassicauda*

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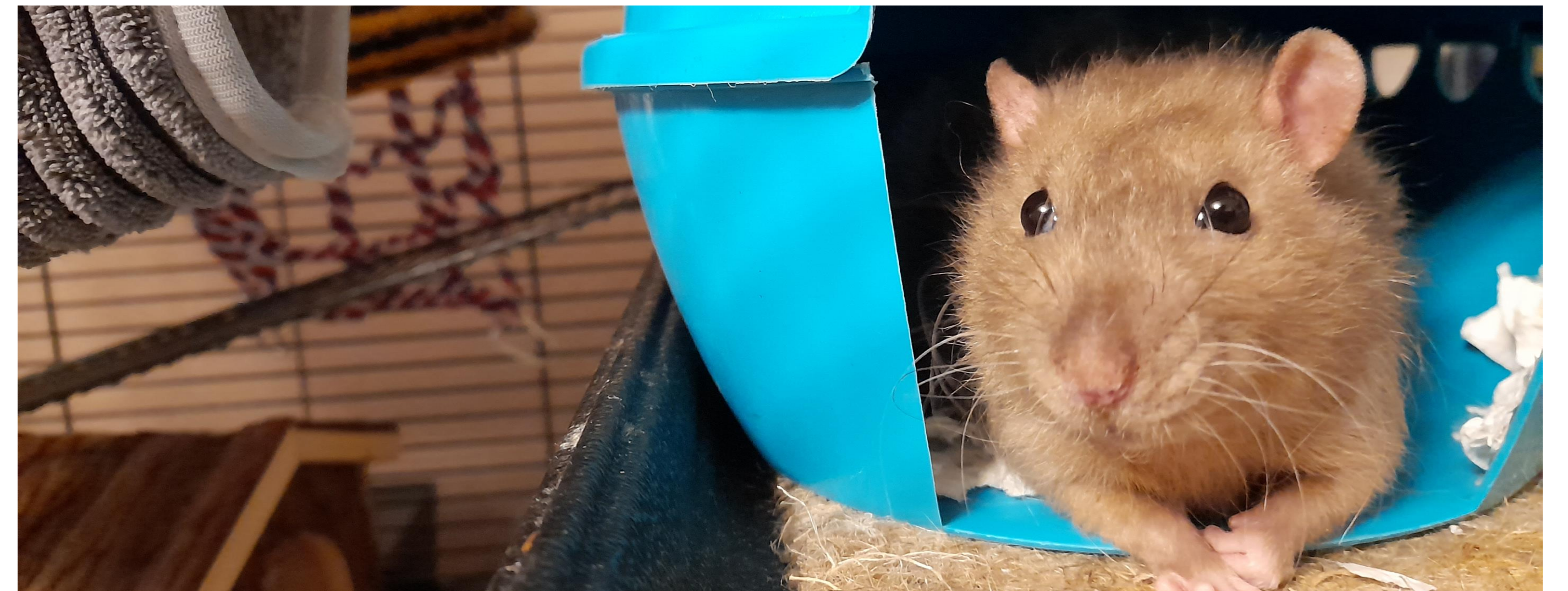
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Introduction

Hematuria in rats can present diagnostic challenges in veterinary practice. Common causes include cystitis due to bacterial urinary tract infection, urolithiasis or neoplasia.



Patient and Methods

- A 7-month-old male pet rat was presented with a history of ongoing hematuria but was otherwise clinically unremarkable.
- It had been adopted at the age of 5 weeks from a German breeder and kept indoors.
- None of the partner rats of the household (n = 4) nor the owner showed any clinical signs.
- The rat was treated with enrofloxacin (10 mg/kg PO SID for 10 days), metamizole (65 mg/kg PO TID) and supplementary feed (main ingredients cranberry, dried birch leaves) but the signs did not resolve.
- Cystocentesis urine was collected and an examination of the urine was performed.
- Urea, creatinine and phosphate were measured from lithium heparin plasma.

Results

- Urine was turbid and red with a pH of 6.5 and a moderate amount of myoglobin/hemoglobin; urine specific gravity was 1.012.
- Chemical evaluation of urine from partner rats revealed no abnormalities, but no examination of the sediment was performed.
- Microscopic evaluation of the urine from the affected rat revealed a high number of erythrocytes, few leukocytes as well as a low bacterial load, identified as *Escherichia coli* in culture.
- Numerous embryonated eggs, free larvae and larvae in the progress of hatching were also present.
- Morphology of eggs and larvae were consistent with *Trichosomoides crassicauda*.
- The parameters measured from lithium heparin plasma were in the low to normal range.



Fig. 1: Embryonated egg and hatching larvae of *Trichosomoides crassicauda* in the urine of a rat (400x magnification)

Discussion

Trichosomoides crassicauda has been described in the urinary bladder of wild¹ as well as of laboratory rats², but reports published about its occurrence in pet rats kept privately are rare³. Infection occurs through oral ingestion of eggs excreted in urine. After a prepatency of eight to ten weeks, the larvae migrate from the digestive tract through the body cavities or via blood into the lungs, and later into the urinary bladder⁴. Histologic changes that have been associated with this parasite include hyperemia, edema and hyperplasia of the urinary bladder wall². The parasite may also promote urinary bladder tumor formation⁶. Infections are mostly clinically inapparent, but cystitis has also been described^{2,4}. The affected animal and the partner rats were all treated with ivermectin (1 mg/kg SC, twice with a 10-day interval). Since the clinical signs of the affected animal resolved thereafter, a primary association of the parasite with the hematuria described seems likely. Unfortunately no follow-up control of the urine sediment was performed. As the rat was purchased directly from the breeder with another sibling at the age of 5 weeks and all rats of the household except this one stayed clinically healthy, the origin of the infection remains unclear. However, since clinically inapparent infections are described and no examination of the urine sediment of the partner rats was performed, they might have served as source of infection.

References

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