

# *Strongyloides stercoralis* infection identified on urine microscopy

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## DESCRIPTION

A man in his 70s with type 2 diabetes mellitus, chronic kidney disease from diabetic nephropathy with chronic nephrotic-range proteinuria, and no other known medical history presented to the emergency department with a 2-week history of progressive proximal muscular weakness and chronic watery diarrhoea. The results of serial physical examinations demonstrated intact metal status and 3/5 strength in upper and lower extremities bilaterally with 1+ reflexes on presentation which progressed to 1/5 strength with absent reflexes. Laboratory examinations showed a serum creatinine level of 5.0 mg per decilitre (reference range 0.40–1.30) from 3.2 mg per dL 1 month earlier, progressive elevation

in creatine kinase up to 16358 units/L (reference range 11–204), mixed hepatocellular and cholestatic pattern of elevated liver function test abnormalities, and chronically elevated absolute blood eosinophil count to as high as  $2.6 \times 1000/\mu\text{L}$  (reference range  $0.0\text{--}1.0 \times 1000$ ) over the year prior to presentation. Urine microscopy performed as part of the workup for kidney injury revealed many granular casts and a motile larva (video 1) of *Strongyloides stercoralis*.<sup>1</sup> Based on this incidental urine microscopy finding and on the lack of pulmonary symptoms to suggest disseminated disease,<sup>2–4</sup> the patient was thought to have a chronic *Strongyloides* infection and was treated with ivermectin 200  $\mu\text{g}/\text{kg}$  for 2 days. Anti-*Strongyloides* antibody later resulted positive, and additional serological helminthic workup and serial ova and parasite examinations of the stool prior to and after initiation of treatment with ivermectin were negative, though this is known to be a poorly sensitive test.<sup>5</sup> Additional workup for progressive weakness, myopathy, and liver function abnormalities was planned, however the patient and his family opted to limit medical interventions to prioritise his comfort and he died of cardiac arrest shortly thereafter.



**Video 1** Motile larva of *Strongyloides stercoralis*, covered in poorly defined cellular debris, seen under microscopic evaluation of urinary sediment. Several small granular casts also seen in visualised field.

## Learning points

- ▶ Detection of parasites on urine microscopy is a relatively rare and nearly universally incidental finding, but can be an important first point of discovery of disease in some cases.
- ▶ *Strongyloides stercoralis* infection presents a significant diagnostic challenge, with poor sensitivity of the most widely available testing of ova and parasite examination (5%–50%), inability of serological testing to differentiate between prior and active disease states, and the broad scope of possible clinical presentations, particularly in the setting of disseminated disease.
- ▶ Discovery of *S. stercoralis* in urine sediment may be a result of urinary specimen contamination from gastrointestinal infection or from urinary tract involvement of infection suggestive of disseminated disease, typically in an immunocompromised host with the vast majority of these patients exhibiting evidence of pulmonary involvement.



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Case reports provide a valuable learning resource for the scientific community and can indicate areas of interest for future research. They should not be used in isolation to guide treatment choices or public health policy.

## REFERENCES

- 1 Khurana U, Majumdar K, Kapoor N, *et al*. Spectrum of parasitic infections in centrifuged urine sediments from a newly developed tertiary care centre in central India. *J Parasit Dis* 2018;42:608–15.
- 2 Marcos LA, Terashima A, Canales M, *et al*. Update on strongyloidiasis in the immunocompromised host. *Curr Infect Dis Rep* 2011;13:35–46.
- 3 Pasqualotto AC, Zborowski MF, dos Anjos M, *et al*. Strongyloides stercoralis in the urine. *Trans R Soc Trop Med Hyg* 2009;103:106–7.
- 4 Arsić-Arsenijević V, Dzamić A, Dzamić Z, *et al*. Fatal Strongyloides stercoralis infection in a young woman with lupus glomerulonephritis. *J Nephrol* 2005;18:787–90.
- 5 Vasquez-Rios G, Pineda-Reyes R, Pineda-Reyes J, *et al*. Strongyloides stercoralis hyperinfection syndrome: a deeper understanding of a neglected disease. *J Parasit Dis* 2019;43:167–75.

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