Hatching *Strongyloides* in tracheal aspirate: clinician's dilemma; microbiologist's surprise

Vanya Singh,¹ Yogendra Pratap Mathuria,¹ Pratima Gupta,¹ Tushar Aditya Narain²

¹Microbiology, All India Institute of Medical Sciences, Rishikesh, India

²Urology, All India Institute of Medical Sciences, Rishikesh, India

Correspondence to

Dr Yogendra Pratap Mathuria;
ypm.1702@yahoo.com

Accepted 9 September 2020

DESCRIPTION

A 58-year-old man was brought to emergency with the symptoms of shortness of breath, cough with expectoration, diarrhoea (5–6 times/day) and intermittent high-grade fever for the past 2 months with acute exacerbation of breathlessness in past 4 days. The patient was a known follow-up case of chronic obstructive pulmonary disease (COPD) with difficulty in breathing for the last 10 years. He was on metered-dose inhalers (MDI) salbutamol (levolin) two times per day and MDI budesonide (budesonide) 200 mg two times per day for past 3 years. He received oral betamethasone (over the counter basis) during exacerbations from a local practitioner. For past 2–3 months, he also took prednisolone 8 mg daily and intravenous hydrocortisone on several occasions. Pulmonary function test could not be done at our institute as the patient was brought in an unconscious state to emergency and was intubated within a day of admission. Based on history and chest X-ray findings, differential diagnosis of COPD exacerbation with pulmonary tuberculosis was made.

His initial haemoglobin was 12.2 g/dL and white cell count $23 \times 10^9/L$ without eosinophilia. His blood, urine and endotracheal (ET) aspirate cultures were sterile. ET aspirate was sent for acid-fast staining which showed numerous larvae while acid-fast bacilli were not present. Wet mount of tracheal aspirate revealed rhabditiform larvae of *Strongyloides stercoralis* along with embryonated eggs, wherein many were observed to be in hatching phase (video 1 and figure 1). The findings were further confirmed by iodine mount and Giemsa staining (figure 2). Multiple samples of ET aspirates and gastric aspirate were examined while only one stool sample could be obtained, probably due to intestinal obstruction. Rhabditiform larvae and eggs of *S. stercoralis* were not found in gastric aspirate as well as in stool sample. Filariform larva

Figure 1 Unstained wet mount of endotracheal aspirate showing egg containing well developed larva. Notice the prominent genital primordium, rhabditoid oesophagus and short buccal canal.

wasn't observed in any of the samples examined. The patient was nebulised with levosalbutamol and ipratropium bromide combination along with budesonide; and was started on ivermectin 200 µg/kg/day via a nasogastric tube which could be given only for 5 days. The patient also received a short course of hydrocortisone therapy (100 mg intravenous stat followed by 50 mg 6 hourly for 3 days). The patient clinically deteriorated and expired.

Unusual finding in our case was hatching of larvae in ET sample without eosinophilia while the usual site of hatching is the small intestine.¹ Quite often, after the initial infection of *Strongyloides* spp, immunocompetent patients may remain asymptomatic or minimally symptomatic but immunosuppression leads to an increased number of auto infective larvae. Regardless of route or dose of steroids, even short course may lead to hyperinfection syndrome.^{2,3}

Figure 2 Larvae of *Strongyloides* spp on iodine mount and Giemsa stain.

Video 1 Microscopic findings showing eggs with hatching of *Strongyloides* larvae in tracheal aspirate.

© BMJ Publishing Group Limited 2020. No commercial re-use. See rights and permissions. Published by BMJ.

To cite: Singh V, Pratap Mathuria Y, Gupta P, et al. *BMJ Case Rep* 2020;**13**:e238862. doi:10.1136/bcr-2020-238862

Images in...

Clinicians, especially in endemic areas, must also be aware of atypical manifestations of hyperinfection syndrome and disseminated *Strongyloides* which may mimic other diseases leading to misdiagnosis.³ Hyperinfection syndrome must be kept in mind in patients with chronic lung diseases with or without eosinophilia for timely diagnosis and treatment.

Learning points

- ▶ *Strongyloides* must be kept as a differential in patients with respiratory symptoms in an endemic area.
- ▶ *Strongyloides* may cause long standing and recurrent infection, so timely diagnosis with adequate management is warranted to prevent fatal hyperinfection syndrome.
- ▶ Use immunosuppressants with caution in patients at risk of chronic strongyloidiasis.

Acknowledgements The authors thank Dr K Anusha Raj, MD for her contribution in laboratory work.

Contributors VS: concept, design, wrote manuscript and video editing; YM and PG: confirmed the diagnosis by microscopy and reviewed the manuscript. TAN: video compilation and editing.

Funding The authors have not declared a specific grant for this research from any funding agency in the public, commercial or not-for-profit sectors.

Competing interests None declared.

Patient consent for publication Next of kin consent obtained.

Provenance and peer review Not commissioned; externally peer reviewed.

REFERENCES

- 1 Parasites CD. *Strongyloides: resources for health professionals*. Atlanta, GA: US Department of Health and Human Services, CDC, 2015.
- 2 Page W, Judd JA, Bradbury RS. The unique life cycle of *Strongyloides stercoralis* and implications for public health action. *Trop Med Infect Dis* 2018;3:53.
- 3 Greaves D, Coggle S, Pollard C, *et al*. *Strongyloides stercoralis* infection. *BMJ* 2013;347:f4610.

Copyright 2020 BMJ Publishing Group. All rights reserved. For permission to reuse any of this content visit <https://www.bmj.com/company/products-services/rights-and-licensing/permissions/>
BMJ Case Report Fellows may re-use this article for personal use and teaching without any further permission.

Become a Fellow of BMJ Case Reports today and you can:

- ▶ Submit as many cases as you like
- ▶ Enjoy fast sympathetic peer review and rapid publication of accepted articles
- ▶ Access all the published articles
- ▶ Re-use any of the published material for personal use and teaching without further permission

Customer Service

If you have any further queries about your subscription, please contact our customer services team on +44 (0) 207111 1105 or via email at support@bmj.com.

Visit casereports.bmj.com for more articles like this and to become a Fellow