

# Strongyloides Stercoralis Hyperinfection in an Immunocompetent Patient

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## Introduction

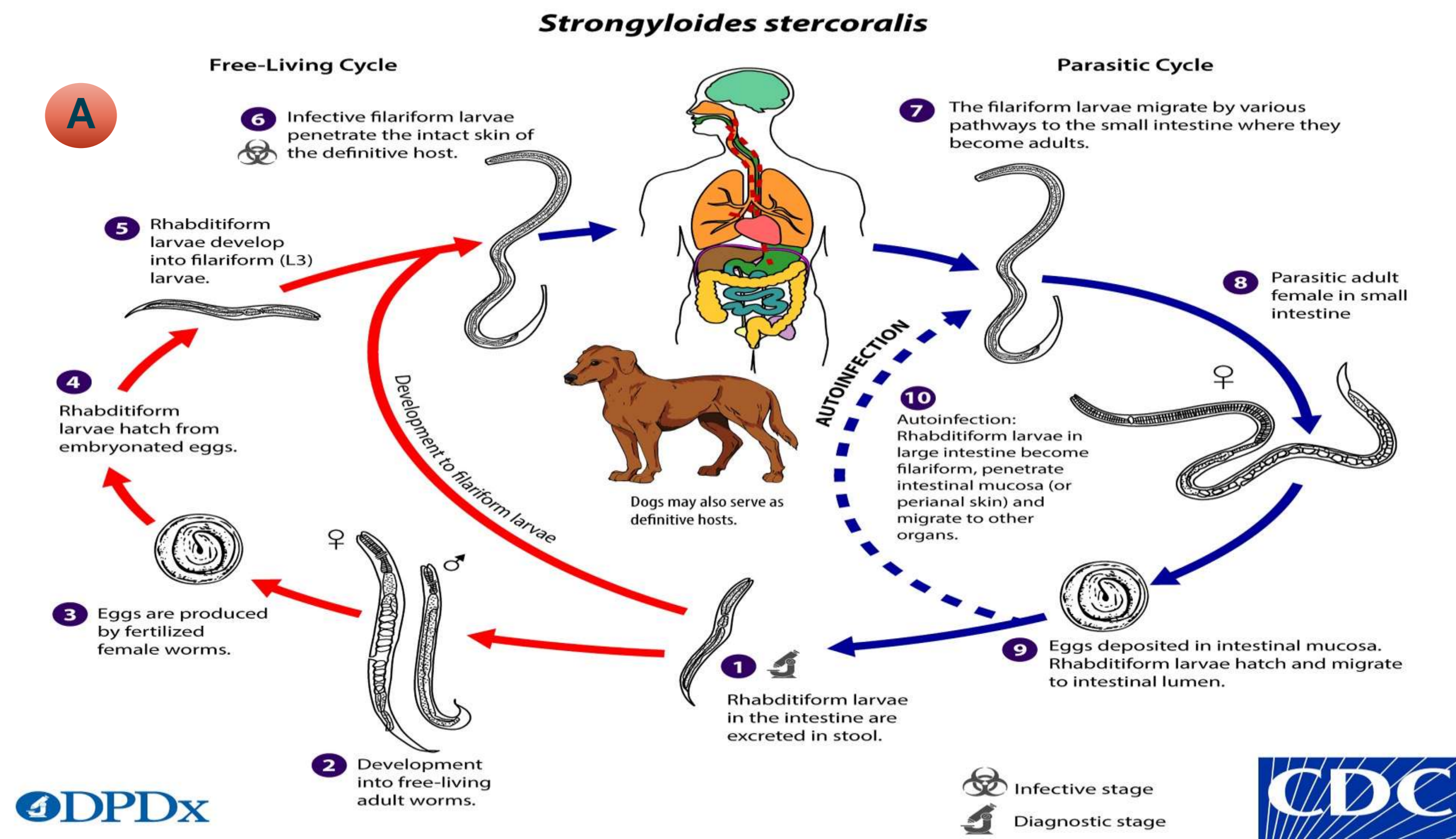
Strongyloidiasis is an umbrella term attributed to the various pathologies caused by the nematode helminth *Strongyloides stercoralis*. The condition is prevalent in around 70 countries with endemicity in tropical and subtropical climates, including the Southern United States.<sup>1</sup> In chronically infected and immunocompetent individuals, the disease is generally asymptomatic with eosinophilia and stool larvae being the only indication of infection.<sup>2</sup> More disseminated disease can lead to a debilitating condition known as *Strongyloides* hyperinfection syndrome (SHS). SHS is caused by a high intestinal parasitic load leading to multi-organ damage, particularly in the pulmonary circulation where parasitic perforation of alveolar membranes leads to severe respiratory distress.<sup>3</sup> The hallmark of this condition is severe multi-organ failure prompting admission to the ICU with mortality >60%. This condition typically occurs in the immunocompromised with underlying conditions such as hematologic neoplasias, advanced HIV infection, and organ transplantation.<sup>4</sup> However, there have been a rare handful of cases where immunocompetent patients have been affected.

## Case Presentation

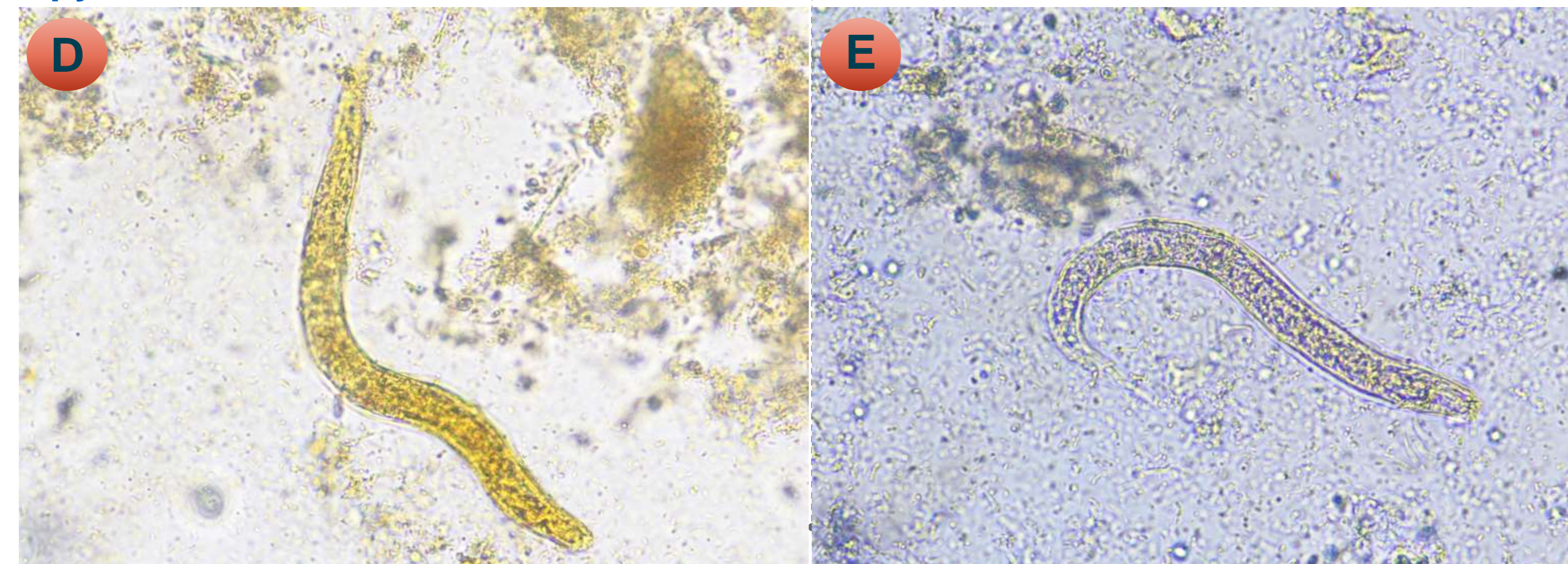
A 73-year-old South Asian male with well-controlled asthma and diabetes presented with worsening shortness of breath, cramping abdominal pain, and distension for the past month accompanied by a productive cough and constipation with no bowel movement for the last 4 days. Twenty years earlier, he had emigrated from Bangladesh to his current home in Western New York.

He had wheezing and diffuse, mild abdominal tenderness. Workup showed a leukocytosis with eosinophilia (26%, w/ 33% on manual diff). CT found minimal atelectasis in the lung bases with scarring in the lingula and scattered sub-centimeter calcified granulomas as well as a short segment of mural thickening in the sigmoid colon/rectum, concerning for infectious or inflammatory etiology [Figures B and C]. Initial treatment with nebulizers/steroids and bowel regimens failed to relieve his symptoms.

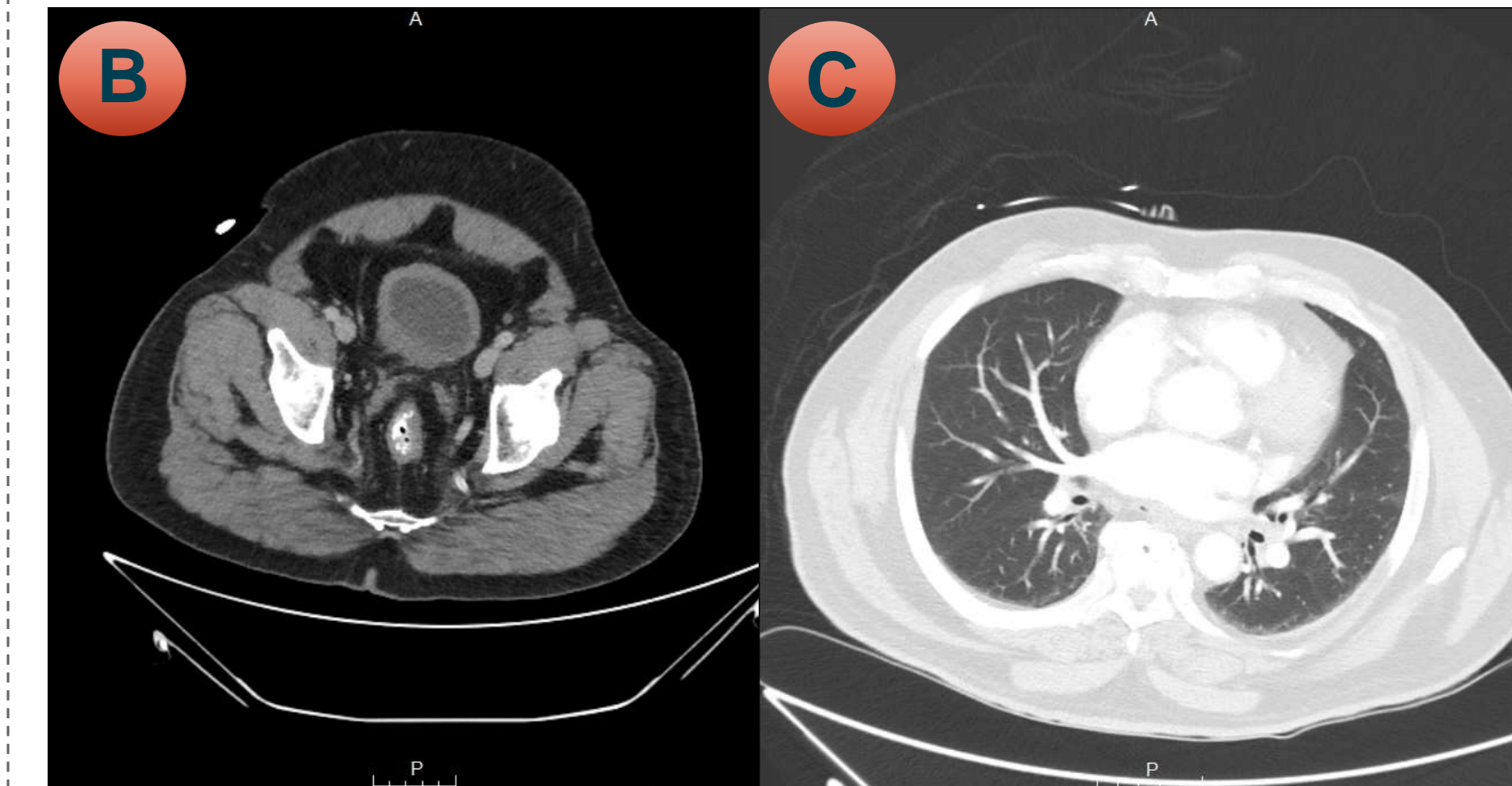
The following day, the patient developed abdominal and perianal itching. Stool analysis showed *Strongyloides stercoralis* larvae [Figures D and E]. Steroids were discontinued and a course of oral ivermectin was begun. The pain and itching resolved thenceforth, with a transient worsening of the cough. The patient was discharged on day 6 after having had multiple bowel movements with improvement in his breathing and abdominal pain. Absolute eosinophil count had decreased to 4.5%.



## Microscopy



## Imaging



## Discussion

- Through “autoinfection”, *Strongyloides* is unique among intestinal nematodes in its ability to persist in humans for many years [Figure A]
- Patient likely housed *Strongyloides* as an asymptomatic carrier from Bangladesh which reactivated possibly due to an asthma exacerbation, hyperglycemia, or malnutrition due to lower socioeconomic status
- Testing for SHS is often unreliable as only 25-35% of cases in immunocompetent patients have eosinophilia, and 70% of cases may be missed on stool microscopy.
- *Strongyloides* serology is more sensitive (83-93%) and specific (95-97.7%) than stool microscopy, however, but runs of the risk of cross-reacting with other helminth infections.

## References

1. Genta RM. Global prevalence of strongyloidiasis: Critical review with epidemiologic insights into the prevention of disseminated disease. *Rev Infect Dis* 1989;11:755-67
2. Mora CS, Segami MI, Hidalgo JA. *Strongyloides stercoralis* hyperinfection in Systemic Lupus Erythematosus and the Antiphospholipid Syndrome. *Seminars in Arthritis and Rheumatism* 2006;36:135-143
3. Concha R, Harrington W Jr, Rogers AI. Intestinal strongyloidiasis: recognition, management, and determinants of outcome. *J Clin Gastroenterol* 2005;39:203-11
4. Milder JE, Walzer PD, Kilgore G, et al. Clinical features of *Strongyloides stercoralis* infection in an endemic area of the United States. *Gastroenterology* 1981;80:1481-1488
5. <https://www.cdc.gov/parasites/strongyloides/biology.html>

