

A 15-Year Old Burmese Girl With Hemoptysis: A Case Report

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We report the case of a 15-year-old Burmese girl who presented with hemoptysis 3 years after immigrating to Australia with a background of previously treated pulmonary tuberculosis at 6 years of age. Cavitation in the right upper lobe had originally been identified on her baseline chest radiograph following arrival to Australia; extensive investigations were conducted thereafter to exclude causes of cavitary lung disease; these were negative. *Paragonimus westermani* was finally diagnosed on serological grounds 3 years after this child's original presentation, with subsequent identification of *P. westermani* ova in sputum and in stool. Clinicians should be alert to the possibility of Paragonimiasis in children who have traveled to or originate from endemic countries who present with a clinically compatible illness. Treatment is simple and effective. Failure to consider this pathogen early may result in unnecessary investigative workup and delayed diagnosis.

Keywords. hemoptysis; neglected tropical disease; Paragonimiasis; *Paragonimus westermani*; pediatrics.

A 15-YEAR OLD BURMESE GIRL WITH HEMOPTYSIS

A 15-year-old girl, born in Hakha, Myanmar, presented with 2 months of intermittent hemoptysis 3 years after immigrating to Australia via Malaysia, where she spent 3 years in Maluri. She denied a history of fevers or night sweats, appetite suppression, or weight loss. There were no unusual food or animal exposures. She received treatment for presumed (nonculture confirmed) pulmonary tuberculosis at 6 years of age; the specifics of this regimen could not be recalled. Upon arrival to Australia, she was extensively investigated for pulmonary

tuberculosis reactivation with chest radiograph (CXR), chest computed tomography (CT) (Figure 1), multiple induced sputa, gastric aspirates, and a bronchoalveolar lavage and lung biopsy for mycobacterial microscopy and culture; all were negative. A quantiferon was also negative. Serology for *Burkholderia pseudomallei*, *Brucella* spp., *Bartonella henselae*, *Echinococcus* spp., *Toxoplasma gondii*, *Cryptococcus* spp., HIV, *Entamoeba histolytica*, *Schistosoma* spp., and *Strongyloides stercoralis* was negative.

Serology, using the immunoblot assay available through the US Centers for Disease Control and Prevention (CDC) reference laboratory in Atlanta, Georgia, was positive for *Paragonimus westermani*, and microscopy of induced sputum and stool samples revealed the presence of operculate ova of dimensions consistent with this parasite (Figure 2).

Lung flukes (flatworms) of the genus *Paragonimus* are acquired by ingestion of raw, pickled, or salted crayfish or crabmeat [1], or possibly sashimi [2]. More than 10 species are known to infect humans; of these, *P. westermani* ("oriental lung fluke") is most commonly implicated in disease and is found in eastern, southwest, and southeast Asia [3].

Infection occurs when larval metacercariae are released from ingested crab or crayfish meat; these migrate to the lungs and less commonly to the abdomen, striated muscle, and the central nervous system. During the acute phase (invasion/migration), following an incubation period of 2–15 days, patients may experience fever, diarrhea, chest pain, and malaise and may display eosinophilia [1, 3]. Larvae mature into adult flukes within 6–10 weeks, and infections may persist for 20 years [1]; symptoms include chronic dry cough, followed by the production of rusty-colored sputum or frank hemoptysis. These symptoms may cause diagnostic confusion with bacterial pneumonia, malignancy, bronchiectasis, chronic pulmonary histoplasmosis, or—as in this case—tuberculosis [3–5].

Diagnosis can be made by identification of *Paragonimus* ova in sputum or stool (ingested after expectoration), which are present 2–3 months following infection [3]. While Ziehl-Neelsen staining was previously thought to destroy paragonimus eggs, this has been found to be superior to wet mount microscopy, but inferior to formalin ether concentration techniques [6]. Serological diagnosis by immunoblot has excellent sensitivity and specificity (96 and 99%, respectively) and is performed at CDC reference laboratories [3]. Imaging findings are variable but include chest nodules, ground glass opacities, or worm cysts that can appear as conglomerate cavities resembling "bunches of grapes" [7].

This girl received 2 days of praziquantel, with rapid resolution of symptomatology and sustained cure observed out to 6 months of follow-up. This case points to the importance of

Received 26 July 2017; editorial decision 28 September 2017; accepted 22 October 2017.

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Open Forum Infectious Diseases®

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 DOI: 10.1093/ofid/ofx224

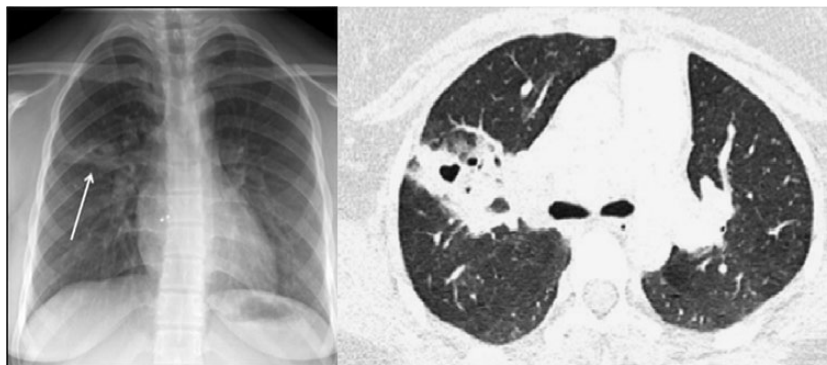


Figure 1. Chest radiograph (left) and axial computerized tomography (right) images demonstrating contiguous cavities with characteristic “bunch of grapes” appearance (arrow).

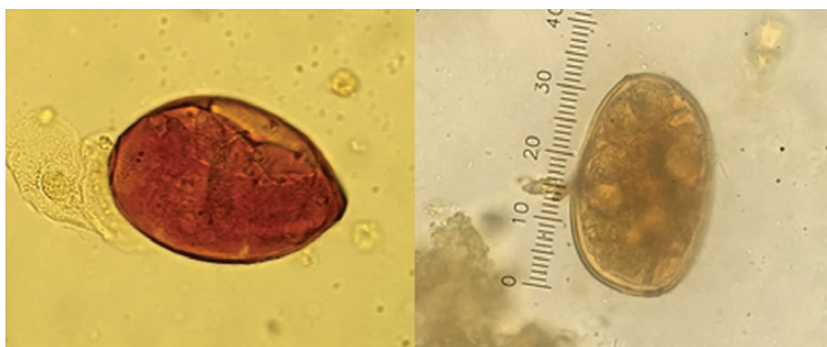


Figure 2. *Paragonimus westermanii* ova in sputum (left) and stool (right), measuring 85 × 50 µm.

early consideration of this pathogen in children residing in or originating from endemic countries who present with a clinically compatible illness.

Acknowledgements

The authors would like to thank David New and associated colleagues in the Pathwest Microbiology Laboratory at Queen Elizabeth II Medical Centre, Nedlands WA, for performing the diagnostic tests included here. Written informed consent was obtained to permit publication of this report.

Potential conflicts of interest. All authors: no reported conflicts of interest.

All authors have submitted the ICMJE Form for Disclosure of Potential Conflicts of Interest. Conflicts that the editors consider relevant to the content of the manuscript have been disclosed.

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