An African-Born Man with Chronic Recurrent Hemoptysis

(See page 1253 for the Photo Quiz)

Figure 1. Chest CT revealing an alveolar cavitated infiltrate in the lower right lobe (arrows) with pleural reaction.

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The prevalence of *P. africanus* was estimated to be 4% in a study conducted in Cameroon [5], and the prevalence of *P. uterobilateralis* was estimated to be 12% in a study from Nigeria [6]. *P. uterobilateralis* has also been reported in Equatorial Guinea [7]. The prevalence of paragonimiasis, as is the case for other food-borne trematode infections, has substantially decreased in some settings as a consequence of social and economic development, which has improved food inspection, and the use of chemical fertilizers. However, in some Asiatic countries, the incidence of trematodiasis has increased. The exponential growth of aquaculture, which is the world’s most rapidly growing food sector, and the huge increase in the consumption of aquatic products in local and international markets, seems to be responsible for the increase [8].

The life cycle of *Paragonimus* species spans at least 4 months. On reaching the water, the eggs hatch into miracidia, which penetrate snails (the first intermediate stage). Cercariae formed in the snails reemerge into the water and encyst in the gills, liver, or muscles of crayfish or crab as metacercariae (the second intermediate stage). Humans become infected by ingesting raw or undercooked crab or crayfish containing the paragonimus metacercaria. Ingestion of undercooked meat of crab-eating mammals (e.g., wild boars and rats) can also be a source of...
human infection [9]. The metacercariae migrate through the intestinal wall to the peritoneal cavity and diaphragm. In a few weeks, the flukes penetrate the lung, where, enclosed in a pseudocapsule, they grow to adulthood in a pulmonary cyst and become capable of egg production. Eggs pass into the alveoli and are expectorated or swallowed and passed in feces. In the human lungs, *Paragonimus* species can live for as long as 20 years [10].

Acute pleuropulmonary paragonimiasis derives from the migration of the worm to the lungs through the diaphragm. Pleuritic chest pain and pneumothorax are frequent. In contrast, chronic infection results from the pulmonary cyst formed in the lung, and the predominant symptoms are cough and hemoptysis [9]. Cavitation and bronchiectasis may be observed on chest radiographs or CTs (figure 1). In most cases, diagnosis of paragonimiasis is made by the demonstration of eggs in respiratory samples. Occasionally, a biopsy is needed to obtain a tissue specimen that reveals the adult flukes or eggs (figure 2) [11]. An immunoblot assay, which is >95% sensitive and specific, may help to obtain the diagnosis in some cases [12].

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