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Case Report

Pulmonary paragonimiasis: Close mimic to pulmonary tuberculosis in endemic regions

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ABSTRACT

We, hereby, report a case of pulmonary paragonimiasis in a patient from an endemic region who was misdiagnosed with pulmonary tuberculosis as the clinical features of both diseases are the same. The subtle clue such as eosinophilia, food habits, and travel history can help us diagnose parasitic infections. Pulmonary paragonimiasis with coughing up rusty brown sputum is the most common presentation of the disease. Praziquantel is mainstay of treatment.

Highlight: This case report is to draw the attention of the medical fraternity to the diagnosis of paragonimiasis which is endemic in Asian, African, and South American countries, whose diagnosis is often delayed or missed.

Keywords: Pulmonary, Paragonimiasis, Parasite, Tuberculosis, Endemic

INTRODUCTION

Paragonimus is one of the most important food-borne parasitic trematode, which is endemic in South America, Asia, and Africa.[1] It primarily infects the lung but extrapulmonary infections like subcutaneous nodules are also commonly seen. The parasite's natural definitive hosts are wild mammals such as canines and felines along with humans. Parasites' intermediate hosts are freshwater snails, crabs, and crayfish. Ingestion of uncooked or undercooked seafood having metacercariae (excysted larvae) leads to infection in humans. Paragonimiasis is diagnosed by demonstration of parasite in tissue biopsy or microscopic demonstration of paragonimus ova in sputum, feces, pleural fluid, or by serological tests. Pulmonary paragonimiasis presenting with recurrent hemoptysis and pleural effusion is often misdiagnosed as sputum smear-negative pulmonary tuberculosis.[2]

CASE REPORT

A 62-year-old Cambodian male presented to our medical facility. He had chief complaints of cough, shortness of breath, and recurrent hemoptysis. He had a history of hypertension and left renal cell carcinoma for which a nephrectomy was done in January 2021. He is presently on sunitinib. The patient gave no history of fever, weight loss, or bleeding from any other site in the body. All routine blood investigations along with coagulation profile were sent. He was treated with amoxycillin clavulanic acid, proton-pump inhibitor, and antihypertensives. The patient had mild anemia (hemoglobin – 10 g/dL) and total leukocyte count – 5750/cumm with eosinophilia of 8% (absolute eosinophil count of 600 cells/cumm). Kidney function, liver function, and coagulation profile were within normal limits. He was treated in Cambodia for hemoptysis with antitubercular drugs for 1 year. Previous bronchoscopy lavage and pleural fluid investigations showed no microbiological evidence of pulmonary tuberculosis; thereby, antitubercular drugs were given empirically. Positron emission tomography scan done for evaluation of malignancy showed thick irregular walled cavity of size 8 mm × 13 mm (standard uptake value [SUV] max3.1) and abutting nodule of size 10 mm × 13 mm (SUV max5.8) in anterior segment of left upper lobe. There was mild left pleural effusion [Figure 1]. The differential of lung lesions was cavitating metastasis or infective etiology. The patient was planned for computed tomography-guided lung biopsy for definitive diagnosis as the lung lesion was peripheral and there was availability of expertise in-house. Biopsy sample was sent for histopathology in formalin

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and for acid-fast bacilli (AFB) stain, gene expert, and AFB liquid culture, in saline. Histopathology reports showed inflammatory infiltrates with ill-defined epithelioid granulomas with fragments of parasitic structure and cyst resembling paragonimus [Figure 2]. AFB stain and gene expert were negative and hence diagnosed as pulmonary paragonimiasis. The patient was treated with praziquantel 1800 mg (25 mg/kg body weight) in three divided doses after meals for 5 days. The patient did not give history of migratory subcutaneous nodules, symptoms cardinal to cardiovascular, or central nervous system. Patient sputum and ova were negative for paragonimus ova.

DISCUSSION

Paragonimiasis is frequently difficult to diagnose unless the physician keeps it as differential diagnosis for patient presenting with recurrent hemoptysis. The most common clinical presentation of paragonimiasis is pulmonary in 76–90% of cases.[3] The presence of eosinophilia gives a subtle clue toward parasitic infestation. The incidence of eosinophilia in paragonimiasis is as high as 75.5% as seen in our patient.[4] Pleural effusion associated with paragonimiasis shows eosinophilia of ≥10% (normal ≤3%).[5] The metacercariae ingested by humans penetrate small intestine and reach the abdominal cavity in 3–6 h. The larvae, then, invades the thoracic cavity through diaphragm. The worms invade the lung parenchyma causing inflammation, leading to respiratory symptoms. In lung parenchyma, it forms parasitic cyst which matures into adult worms and lays eggs. It takes 2–3 months to complete the cycle from time of infection to laying ova. In humans, if no treatment is administered then the parasites may survive from one to even twenty. Without accompanying infection of vital organs of heart, brain, etc, the pulmonary infection, in itself, has low mortality despite high morbidity.[6] The worms when wanders away from normal path causes extrapulmonary manifestations among which migratory subcutaneous nodules are the most common. The primary respiratory symptoms of paragonimiasis are cough (28.9%), hemoptysis (27.3%), chest pain (18.5%), and respiratory distress (10.4%).[4] In asymptomatic patient, paragonimiasis presents as abnormal findings on X-ray chest. The chest radiological findings of paragonimiasis can be from pleural lesions such as pleural thickening, pleural effusion, and pneumothorax) to lung parenchymal lesions such as nodules and cavity.[7] The differential of paragonimiasis on basis of clinicoradiological findings is lung carcinoma or pulmonary tuberculosis. In the present case, the patient received antitubercular drugs on clinicoradiological basis in spite of no microbiological evidence. Biopsy of lung lesions is gold standard for diagnosis as the detection sensitivity of parasitic ova by microscopy in sputum, feces, and pleural fluid is low. In the present case, biopsy of peripheral lung lesion led to definitive diagnosis, and sputum and feces were negative for ova. The serological tests (enzyme-linked immunoassay [ELISA], dot-ELISA, Western blot, etc.) are important to differentiate extrapulmonary paragonimiasis from other parasitic infections and tumors as they have high sensitivity and specificity.[8] The only issue with serological test is availability of kits at the medical facility. The antihelminthic drugs currently available for treatment of paragonimiasis are praziquantel, triclabendazole, and bithionol. Praziquantel 25 mg/kg taken in three divided doses for 5 days can lead to high cure rate of up to 100%.[2] The rare but major adverse reaction to praziquantel are pain and swelling over lips and eyelids, skin rashes, itching, and fever. Our patient received praziquantel for 5 days and experienced no adverse effect.

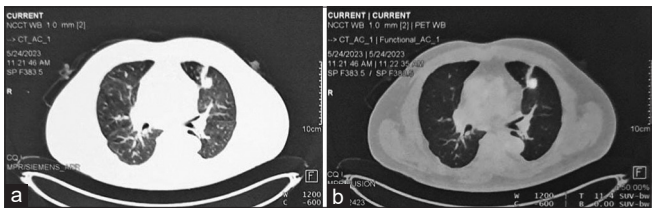

Figure 1: (a and b) Positron emission tomography scan showing FDG (Flurodeoxyglucose) avid cavity and nodule in the anterior segment of the left upper lobe of the lung.

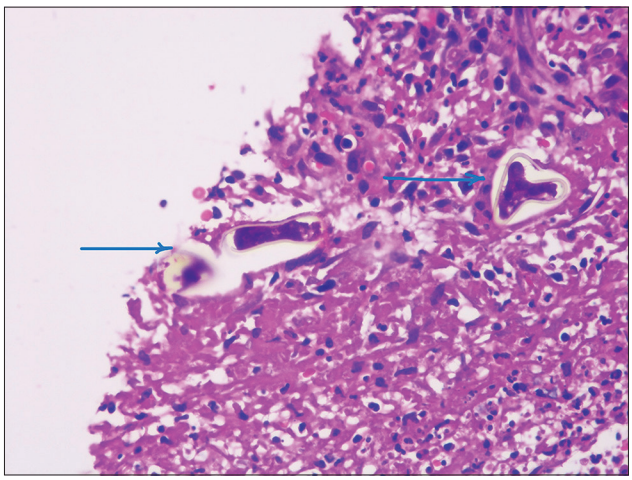

Figure 2: Histopathology section shows parasitic fragments surrounded by inflammatory infiltrate and necrosis. Hematoxylin and eosin stain ×400.

CONCLUSION

Paragonimiasis diagnosis is often delayed or missed as it requires a high index of suspicion and awareness among the medical fraternity. The clinoradiological findings in paragonimiasis mimic pulmonary tuberculosis and malignancy. The subtle clue that can help to reach a diagnosis of paragonimiasis is food habits like consumption of uncooked or improperly cooked seafood, traveling to

endemic regions, and presence of eosinophilia. Praziquantel is mainstay of treatment.

Ethical approval

The research/study complied with the Helsinki Declaration of 1964.

Declaration of patient consent

Patient's consent not required as patients identity is not disclosed or compromised.

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Nil.

Conflicts of interest

There are no conflicts of interest.

Use of artificial intelligence (AI)-assisted technology for manuscript preparation

The authors confirm that there was no use of artificial intelligence (AI)-assisted technology for assisting in the writing or editing of the manuscript and no images were manipulated using AI.

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