

Case Report

Paragonimiasis: First autochthonous case report from Nepal

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Introduction

Paragonimiasis is a disease caused by the trematode of genus *Paragonimus*. It has been recognized as an important cause of pulmonary disease world wide, especially in Asia, Africa and America.¹ Paragonimiasis is a disease which is frequently misdiagnosed as pulmonary tuberculosis. In the areas where people eat crab/crayfish, this disease should be considered in the differential diagnosis to avoid anti-tubercular treatment for non-tubercular conditions.¹ We are reporting a case of pulmonary paragonimiasis in a child who had been evaluated for hyper-eosinophilia (55%) and pleural effusion since 8 months.

Case presentation

A 6 year old male child was admitted to TUTH, Nepal in pediatric ward on January 6, 2016 with chest pain and non-productive cough for 3 days. History of patient revealed that he had already been admitted to the hospital for 4 times for hyper-eosinophilia and similar symptoms in past 7 months. He also gave the history of consumption of crab meal 1 year back. Chest X-ray revealed bilateral pleural effusion.

Investigation and outcome:

Following the admission, examination of stool and sputum for investigation of possible parasitic infection was recommended by the physicians involved, based on the blood report which indicated hyper-eosinophilia. The stool sample received was then subjected to wet mount examination, both in normal saline and iodine.

Similarly, sputum sample and gastric lavage collected were tested by Gram staining, ZiehlNeelsen staining and culture techniques for possible bacterial and parasitic pathogens.

Gram Staining of sputum revealed pus cells <25 and epithelial cells >10 per low power field with plenty of normal flora. ZiehlNeelsen staining of the sputum revealed absence of acid fast bacilli and routine culture resulted in growth of normal flora. Examination of stool revealed absence of pus cells, RBC, parasites. Likewise, wet mount and iodine mount of sputum failed to detect any parasite. However wet mount and iodine mount of gastric lavage revealed oval yellowish eggs of helminthes with operculum and prominent shoulders (approximate size of 80 by 55 µm) suspected to be that of *Paragonimus* species (figure 1). Morphology of the egg was then studied and dimension measured using cell sensation software version 1.12 for DP73 camera installed to the Olympus BX53 microscope used for the microscopy. The photographic evidence of eggs with the results of measurement were then forwarded to CDC (Centre for Disease Control and Prevention) which was later confirmed to be that of *Paragonimus* species by CDC, Atlanta. The patient was treated with Praziquantel 25mg/kg three times daily for 2 days for his weight of 19kg by which he improved and follow up 2 weeks after treatment revealed decrease in eosinophil count in peripheral blood smear and Wet mount of gastric lavage failed to detect the eggs of *Paragonimus*.



Figure 1

Discussion

Paragonimiasis is an infection caused by trematode of the genus *Paragonimus*.² It is common in parts of South-East Asia and China.³ It is estimated that 22.8 million people worldwide are at a risk of paragonimiasis, with 195 million people in China.⁴ About 50 species of *Paragonimus* have been described from Southeast Asia, Africa and America.⁵ *Paragonimus westermani* is the most common species in Southeast Asia and China.⁶ The life cycle of *Paragonimus* is complex that requires two intermediate host and one definite host (snail-crustaceans-humans). Eggs passed in stool hatch in water to become ciliated miracidia which invade the first intermediate host (snail). Parasite develop in snail to form cercariae which leave the snail and invade the second intermediate host (crustaceans).⁷ Cercariae develops into infective stage called metacercaria. Definitive hosts like humans get infected by consumption of raw or undercooked crayfish and crabs, which possess the viable metacercaria (infective stage) of *Paragonimus*.⁸ In definite hosts, the metacercaria excyst in the duodenum and migrate to the lungs to mature into adult worms that produce eggs.⁸ The unembroned eggs erode the bronchial wall and lead to cough and sputum production laden with eggs or if swallowed pass through stool. So diagnosis of Paragonimiasis can be made by demonstration of eggs in the sputum, gastric lavage or stool under microscope. In our case, we have demonstrated the ova of *Paragonimus* in gastric lavage (morning sample) in a six year old child as sputum could not be collected due to his small age. The patient probably got infected by consumption of crabs from Trishuli River, nearby his home.

Cough and haemoptysis is a common symptom of paragonimiasis so it may be misdiagnosed as

pulmonary tuberculosis, unresolving pneumonia, lung cancer, hypereosinophilic syndrome etc. Most of the times, in our part of the world where tuberculosis is endemic, patient usually get treated with antitubercular drug and without improvement⁷ and patient further get investigated for MDR tuberculosis. It is difficult to make diagnosis of paragonimiasis by microscopy. Although, the presence of ova in expectorated sputum is specific, the sensitivity of this test is low (28% - 38%) and repeated sputum sample examinations may increase the sensitivity of the test.⁹ Stool examination is also insensitive and the ova are not usually found in pleural fluid.¹⁰ Serological testing is useful for establishing the diagnosis of paragonimiasis. However, it is not available in our country. The Centre for Disease Control and Prevention perform an ELISA that is highly sensitive (96%) and specific (99%) for *Paragonimus westermani*.¹¹ The current recommended treatment for paragonimiasis is Praziquantel 25mg/kg given orally three times daily for 2 days. Cure rates of 95% have been reported.¹² Our patient was also treated with the same dose of Praziquantel and got improved.

Conclusion

The presence of eosinophilic pleural effusion and peripheral blood eosinophilia are one of the clinical manifestations of *Paragonimus* infection which was present in our case. The diagnosis of paragonimiasis can be made by detecting the characteristic golden brown ellipsoidal or oval operculated ova with prominent shoulder in the sputum or BAL samples or gastric lavage (in case of small children) or less commonly in the tissue section or in the stool sample by microscopy or by a positive anti-paragonimus antibody test. In our case, we were able to detect ova of *Paragonimus* in gastric aspirate and Praziquantel was given to the patient, by which he improved. *Paragonimus* is endemic in Nepal but less frequently diagnosed or more frequently misdiagnosed. It is a public health problem that can be easily avoided by health education and can be diagnosed with simple sputum microscopy test. So, physicians should consider the possibility of Paragonimiasis among patients presenting with cough, haemoptysis and eosinophilia, with the history of consumption of raw or undercooked carb.

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Conflict of interest: None declared

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