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Pulmonary Paragonimiasis in Manipur, India – A Prospective Cross-sectional study.

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Abstract: *This prospective study was carried out to determine the nature of pulmonary paragonimiasis due to the ling fluke, Paragonimus westermanii in Manipur, India. Ten cases of pulmonary paragonimiasis were studied from January 2013 to February 2015. They presented to the outpatient department with the complaints of haemoptysis, chest pain, cough, shortness of breath. Radiologically, they were found to have no lesions to small consolidations or pleural effusion. Pulmonary paragonimiais was diagnosed from the presence of paragonimus eggs in sputum, pleural fluid or positive serological tests along with positive history of intake of raw or undercooked crabs or snails which harbours the paragonimus parasite. Praziquantel of 25mg/kg thrice daily for 3 days were given as a definite treatment without any major side effects along with symptomatic treatment such as pleural fluid aspiration for massive effusion. All patients responded well to praziquantel as none showed relapse till the time they were followed up (8-9 weeks).*

Key Words*: Haemoptysis, Lung fluke, Paragonimiasis, pleural effusion, praziquantel.*

I. Introduction

Paragonimiasis is one of the most important food-borne parasitic zoonoses caused by one or more of the trematode species of the genus Paragonimus. The disease is endemic in many parts of Asia, Africa and South America [1]. There are about 50 species of which, 11 are known to cause infections in human. P. westermani has been regarded as the most common and widely distributed human pathogen in Asia [2]. In India, paragonimiasis is endemic in many parts of Northeast States. The natural definitive hosts of the parasite comprise large varieties of wild mammals of the canidae and felidae families and humans. A wide range of fresh water snails, and crabs as well as crayfish served as first and second intermediate hosts, respectively. Humans acquire infection, commonly by ingestion of uncooked or undercooked crustaceans containing metacercariae, the larval stage of the parasite. They may survive upto 10 years in the body [3]. The parasites primarily infect lung but extra-pulmonary infections are not infrequent. Paragonimiasis is dignosed in the laboratory by microscopic demonstration of Paragonimus ova in the sputum and other clinical specimens such as faeces and pleural fluid or by specific Paragonimus serological tests [4].

In the past, human paragonimiasis was not considered a problem of public health importance in India until recently. Pulmonary paragonimiasis presenting with bloody sputum or recurrent haemoptysis was generally mistaken for sputum smear negative pulmonary tuberculosis or some other serious conditions with similar symptoms.

Clinically, paragonimiasis may be classified as pulmonary, extra-pulmonary and pleuropulmonary forms. The clinical manifestations of paragonimiasis are peripheral eosinophilia and chest complaints including a productive cough, intermittent haemoptysis, shortness of breath. Up to half of patients will have pleural effusions, and in some they may be quite large[5]. Although pleural paragonimiasis is one of the common extra-pulmonary forms, primary massive pleural effusion without involving the lung parenchyma is a rare presentation.

II. Aim And Objects

Our objective was to analyze the clinical features, its clinical presentation, methods of diagnosis, its complication and to discuss the optimal management.

III. Materials And Methods

The present study was an institutional-based prospective cross-sectional study done at Department of Respiratory Medicine, Regional Institute of Medical Sciences, Imphal, Manipur. The study period was from January 2013 to December 2013.

The inclusion criterion was patient with recurrent Respiratory symptoms like cough, chest pain, breathlessness, hemoptysis, fever, pleural effusion with increase eosinophil count in complete haemogram and pleural fluid.

The exclusion criterion was unwilling patients, patients with co-morbid conditions such as Hypertension, Diabetes Mellitus, Hyperlipidemia, Coronary Artery Disease and Alcoholic Liver Disease, patients whose peripheral eosinophilic count and absolute eosinophilic count was found to be in normal limit.

All the subjects were interviewed, examined, and investigated according to pro forma that was pre-designed. Informed consent was secured from the patients for participation in the study. In all the participating patients, complete haemogram including absolute eosinophil count, blood sugar, blood urea and serum creatinine, serological test for Paragonimiasis (ELISA), Sputum for AFB smear and culture, sputum smear for Paragonimus eggs were done. Chest X-Ray PA view, diagnostic pleural aspiration was done in case of patients with Pleural effusion and fluid was analyzed for protein, sugar, LDH, total and differential cell count, cytology, ADA, Gram stain, AFB smear and culture and eggs for Paragonimus.

IV. Results

Ten (10) patients were diagnosed to have Paragonimiasis. Six (6) men and four (4) women, with a median age of 43 years (range: 17-70 years).

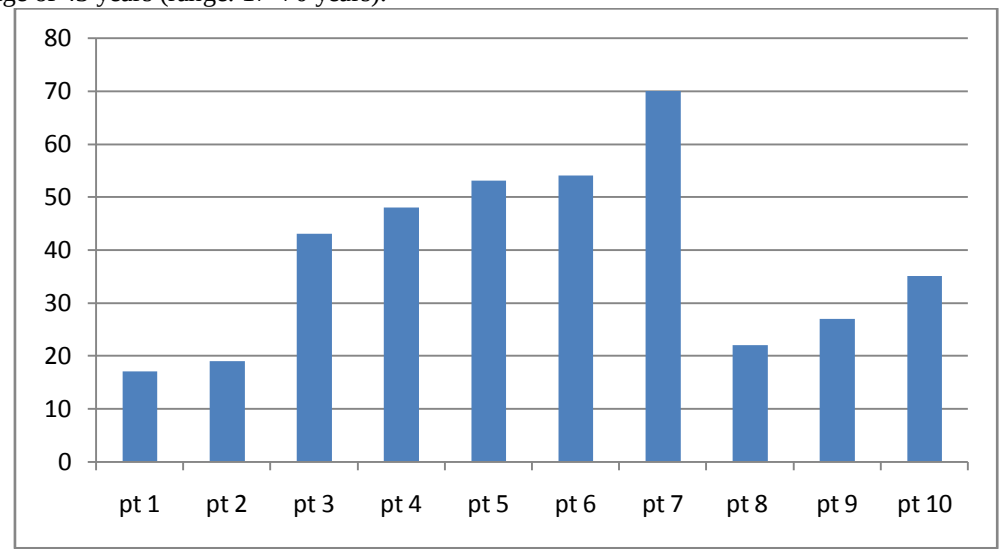


Figure 1.Bar diagram showing age wise distribution of patients.

All patients had respiratory symptoms and peripheral blood eosinophilia. One patient presented with hydropneumothorax, two patients with haemoptysis, six patients with one sided pleural effusion and one patient with pleura-parenchymal lesion.

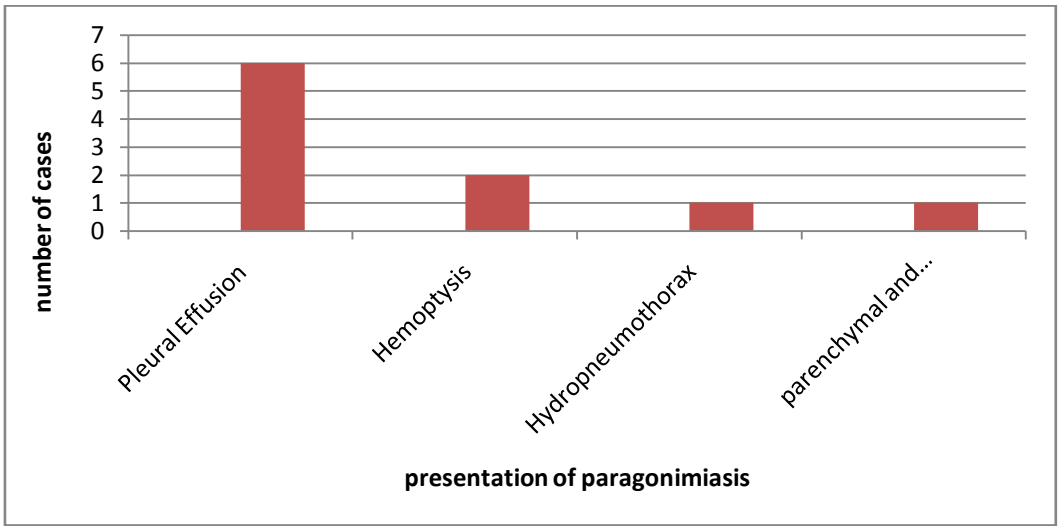


Figure 2.Bar diagram showing different presentations of Paragonimiasis

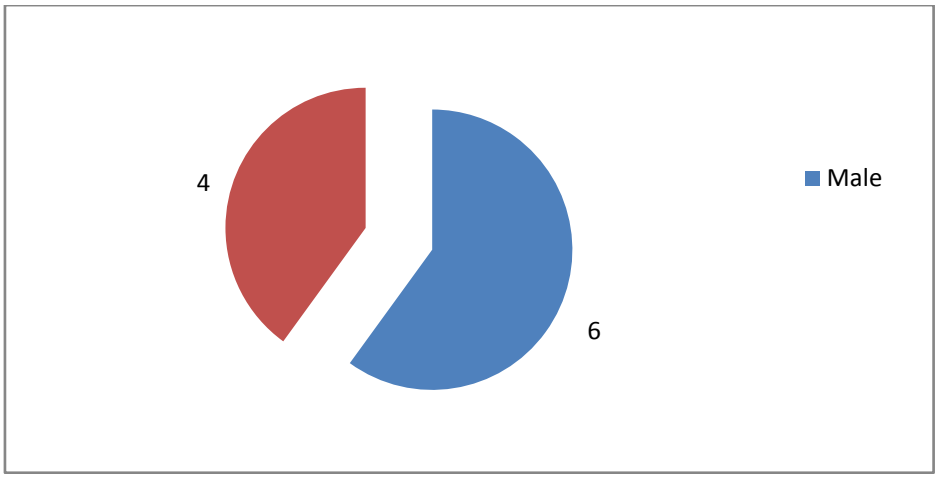


Figure 3.Pie diagram showing gender wise distribution

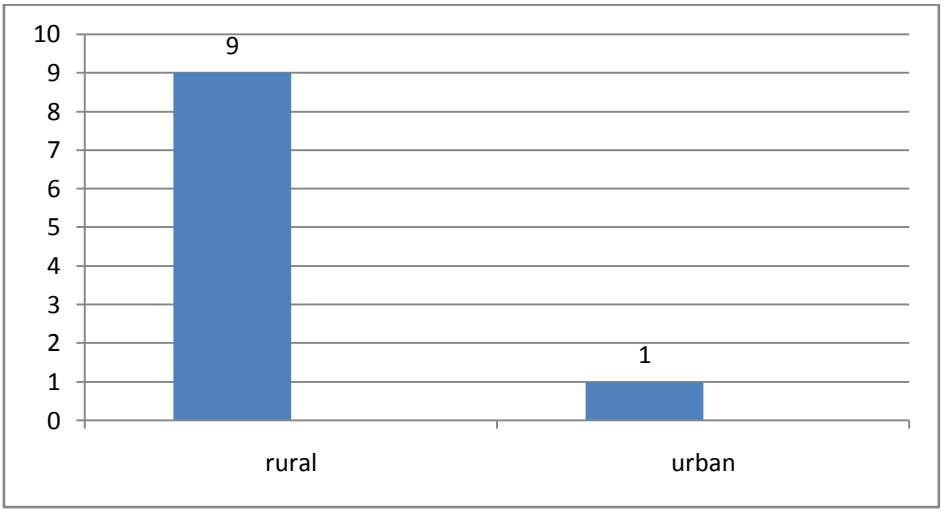


Figure 4.Bar diagram showing geographical distribution of the disease.

Table1: Patients characteristics, presentation and diagnosis

Sl. no	Age/sex/religion/occupation	address	Risk factor exposure	presentation	Diagnosis
1	48/M/Hindu/Farmer	Khangabok Thoubal	Crab intake present	Left pleural effusion	Paragonimus eggs present
2	43/F/Christian/Housewife	Mapao,Manipur	Crab intake present	Left pleural effusion	Serological test positive
3	17/F/Hindu/Student	Kanglatombi, imphal east	Crab intake present	Haemoptysis	Paragonimus eggs present in sputum
4	54/M/Hindu/Military	Chingamakha Imphal west	Crab intake present	Right pleural effusion	Serological test positive
5	53/M/Christian/Service	Ccpur Manipur	Crab intake present	Hydropneumothorax	Serological test positive
6	19/F/Christian/Student	Nagaland	Crab intake present	Right pleural effusion	Serological test positive
7	22/M/Hindu/Student	Tangjing Imphal east	Crab intake present	Left pleural effusion	Serological test positive
8	70/F/Christian/Housewife	Chandel Manipur	Crab intake present	Left pleural effusion	Serological test positive
9	27/M/Muslim/Animal Butcher	Kwakta Thoubal Manipur	Crab intake present	Hemoptysis	Serological test positive
10	35/M/Christian/Farmer	Senapati Manipur	Crab intake present	Right basal consolidation, haemoptysis, Bilateral pleural effusion.	Paragonimus eggs present in sputum

Table 1shows patient's characteristics, how they present and the method of diagnosis

Seven (7) patients were diagnosed by serological test for Paragonimus. Two (2) patients had Paragonimus eggs in sputum and one (1) patient had Paragonimus eggs in Pleural fluid.

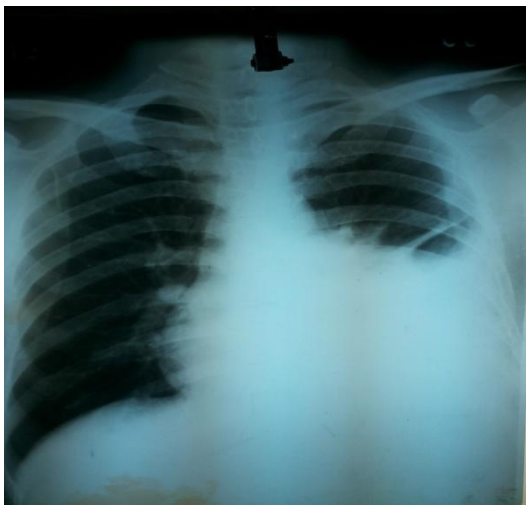
In all the nine (9) cases peripheral eosinophil count and Absolute Eosinphil Count was found to be significantly high (ranging from 545-2100/cumm). In all the patients with Pleural Effusion, the pleural fluid eosinophil count was significantly high.

V. Treatment And Outcome

Tab Praziquantel in the dose of 25 mg/kg body weight administered orally three times a day after meals for three days without any appreciable side effects. Pleural fluid aspiration, Intercostal chest tube drainage for hydropneumothorax and other symptomatic treatment were given.

All the ten (10) patients were followed up for 8-9 weeks and none of them showed recurrence.

Eggs of Paragonimus westermani found in wet mount sputum in one of the patient.



Chest X-ray PA view showing Left sided pleural effusion.

VI. Discussion

Generally, clinical symptoms and radiological appearances of paragonimiasis overlap with pulmonary TB resulting in overdiagnosis of the non-tubercular cases as smear-negative pulmonary TB. Therefore, a detailed clinical history of illness, including dietary habit of consumption of crabs, snails or crayfish and laboratory investigation such as sputum examinations for Paragonimus eggs and serodiagnoisis are essentially important in all cases with respiratory symptoms to avoid misdiagnosis. In our study we found ten (10) patients with paragonimiasis, out of which, three (3) patients had past history of taking Anti Tubercular Drugs without any relief. All ten (10) patients gave history of ingestion of raw or undercooked crabs and snails from rivers.

Pulmonary paragonimiasis is the commonest clinical form of paragonimiasis occurring in 76-90 per cent of cases[6]. Initially, the patients may present with signs and symptoms of mild pleural effusion, pneumonitis, bronchiectasis or bronchopneumonia. In our study, all the patients has respiratory symptoms like chest pain, breathlessness, cough with expectoration. Three (3) patients had recurrent hemoptysis. One had minimal bilateral pleural effusion with parenchymall consolidation in the right lower zone. One (1) patient had Hydropneumothorax and six (6) patients had one sided pleural effusion.

Here in this study, seven (7) patients were diagnosed by serological test for Paragonimiasis. Two (2) patients had Paragonimus eggs in Sputum and one (1) patient had Paragonimus eggs in Pleural fluid. Serological test (ELISA) is highly sensitive (96%) and specific (99%) for P. westermani.

All ten (10) patients had excellent clinical response to praziquantel given at a dose of 25 mg/kg orally 3 times daily for 3 days with improved symptoms and resolution of eosinophilia. It is in accordance to the earlier report where Cure rates of more than 95% have been reported [7].

VII. Conclusion

There is a need to generate awareness among the clinicians and public regarding paragonimiasis and to consider it in differential diagnosis of TB. This infection of Paragonimus is easily avoidable by consuming properly cooked and avoiding consumption of raw snails, crabs or crayfish. Public health education messages should warn people not to ingest uncooked crabs or snails. Physicians should consider the possibility of paragonimiasis among patients who present with cough, fever, hemoptysis, pleural effusion and eosinophilia.

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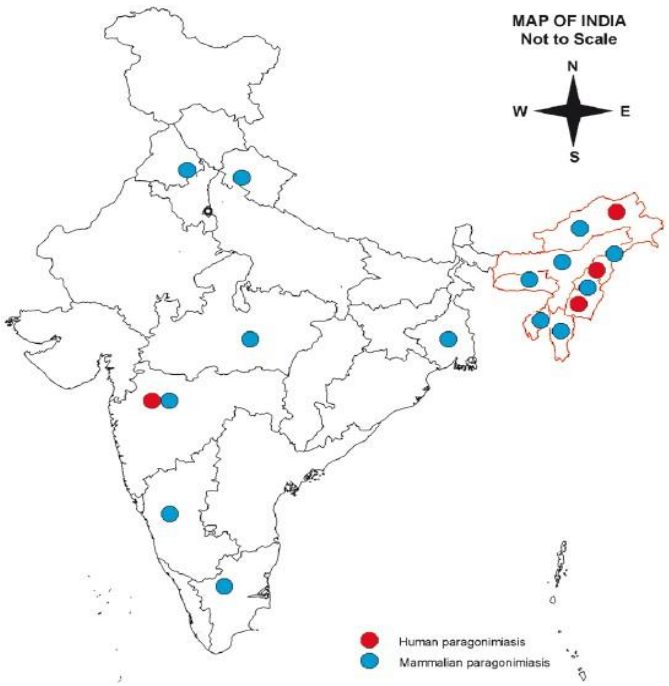

Map showing endemic area of Paragonimiasis in India