



RESEARCH ARTICLE

LOPHOMONAS BLATTARUM (L. BLATTARUM) ASSOCIATION WITH BRONCHOPULMONARY PATHOLOGY LATER DIAGNOSED AS LUNG CANCER – A CASE REPORT

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ABSTRACT

Lophomonas blattarum infections are very rare in human. However, in the world the major infections of *L. blattarum* occurred in China, 94.4%. The differentiate between this infection and the other pulmonary infections are very difficult because of the similar symptoms. Here we reported a case of *L. blattarum* infection confirmed by bronchoalveolar lavage fluid smear on the microscopic observations. The patient was a 40-year-old male farmer was admitted via OPD in GMC and associated Hospital, Badaun (UP) on 29 September, 2024. We briefly reviewed on this infection which is reported in the world during the recent 15-20 years. On the basis of epidemiology, diagnostic, and treatment of this disease we discussed the case to provide a better understanding of recognition, diagnosis, and treatment of *L. blattarum* infection.

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INTRODUCTION

Lophomonas blattarum is a protozoan that usually parasitizes in the intestinal tracts of termites and cockroaches; *Lophomonas* belongs to the supergroup Excavata, first rank Parabasalia, and second rank Cristamonadida in protozoa (1). It can cause infections in a variety of tissues and organs, including the maxillary sinus and other sinuses, lungs, reproductive system, and respiratory tract. This infection is difficult to differentiate from other common infections with similar symptoms (such as pneumonia, bronchitis, or inflammation) from the clinical manifestations and laboratory tests(2,3). Early and correct diagnosis is a key factor for treatment of *L. blattarum* infection. So far, *L. blattarum* human infections occur mainly in China, in addition to 6 cases from Peru in the National Reference Center of Pediatric Diseases of Lima from 2009 to 2010 (4), 2 cases from Spain (5,6), and 1 case of *L. blattarum* isolated from a clinically normal houbara bustard in the United Arab Emirates in 1999 (7). The first case of pulmonary *L. blattarum* infection was reported in 1993 (8), 136 cases have been diagnosed during the last 20 years Among the 136 cases, most of these cases were identified in China and also from other countries like Peru & Spain. Here, a new case of *L. blattarum* infection was found in Government Medical College (GMC), Badaun (UP) in India.

Also, a literature review of *L. blattarum* infection in the world during the last 20 years has been carried out in order to provide a better understanding of recognition and diagnosis of *L. blattarum* infection.

CASE DESCRIPTION

A 40-year-old male farmer was admitted via OPD in GMC and associated Hospital, Badaun (UP) on 29 September, 2024 with chief complaints of cough and expectoration for 8-9 months accompanied with fever, pain in chest, shortness of breath and loss of appetite for the same time period with previous history of pulmonary tuberculosis and ATT taken twice on basis of sputum, chest x ray 5 years back and on the basis of chest x ray 6 and half months back because of a persistent non resolving consolidation in left lower lobe. Patient was also a chronic smoker for last 30 years. Since last 20 days the patient had been experiencing progressive deterioration in condition after stopping ATT treatment. On Examination, decreased breath sounds in Left lower Lung with dullness on percussion. The vital signs included blood pressure 120/72 mmHg, pulse rate 72 beats/min, RR- 18 breaths/min, and temperature 38°C. The clinical laboratory tests for blood showed eosinophilia in peripheral smear, urine, feces, LFT and KFT were within normal limits. The C-reactive protein (CRP) was 32.7 mg/L

and the erythrocyte sedimentation rate (ESR) was 22 mm/hr. Chest computed tomography (CT) scan showed Fairly large heterogeneously enhancing lesion with few non enhancing areas of necrosis within involving the left lower lobe, subcarinal & paratracheal lymphadenopathy along with emphysematous changes in bilateral Lungs and left sided pleural effusion (image 1). Patient was taken on ceftriaxone – sulbactam combination for anti-infection and enhancement of immunity. One day after admission, his body temperature and the pulse rate were within normal limits, breath sounds were still decreased in Left lower Lung. Acid-fast bacilli (AFB) were negative in the sputum smear, and electronic bronchoscopy was done in the left lower lobe basal segment followed by Usg guided FNAC from left lower lobe consolidation on next day.

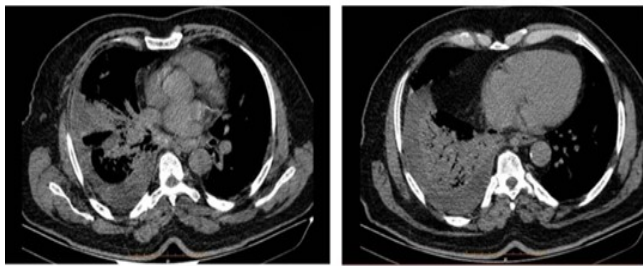


Image 1. CT scan showed Fairly large heterogeneously enhancing lesion with few non enhancing areas of necrosis within involving the left lower lobe, subcarinal & paratracheal lymphadenopathy along with emphysematous changes in bilateral Lungs and left sided pleural effusion

The BAL fluid was collected by bronchofiberscope showed live, motile protozoa with peritrichous flagella suggestive of *Lophomonas blattarum*, on light microscopy of the BAL smear. On evaluation for malignant cells the BAL fluid smear showed few atypical cells. Usg guided FNAC report showed features s/o poorly differentiated carcinoma. On confirmation of *Lophomonas blattarum* a course of metronidazole & albendazole was started, Alongwith 1 st cycle of Chemotherapy with Carboplatin & Etoposide.

DISCUSSION

After reviewing the literature (2,3,8), we found 136 cases of previous reports of *L. blattarum* infections that had occurred in 11 provinces and 2 municipalities in China since 1993. Among the patients, 80 cases were male and 55 cases were female, besides 1 with unknown gender, with ages ranging from 9-days to 95 years-old. It was shown that the infection had no significant differences by gender and age. The occurrence of patients from the southern China area was 76.5% and the others came from the northern area where the climate was warmer and more humid. Based on previous literature the diagnostic clues to *L. blattarum* infection are: First, patients have clinical symptoms of an infection without the effect of anti-infection treatment with a marked peripheral blood eosinophilia. Second, patients have underlying diseases and treated with immunosuppressants for a long time or with the pulmonary infection after surgery. Third, the X-ray and CT imaging features of the patients show ground-glass opacity, patchy consolidation, and patchy or streaky shadows distributed in bilateral lungs. Forth, the detection of *L. blattarum* can be done in sputum smears, bronchoscopy biopsy smears, or BAL. All the reported cases in China confirmed that

the treatment of the infection depends on metronidazole and tinidazole.(8) *L. blattarum* was proved to parasitize in the colon of cockroaches (9). Although *L. blattarum* usually parasitizes in intestinal tracts of termites and cockroaches, it could be discharged being accompanied with the secretion and excrement of the host's digestive tract. The cysts of this protozoa are spread by contaminated food and clothing. Therefore, someone could be infected easily by breathing the dust containing *L. blattarum*. To prevent *L. blattarum* infection, it is needed to control the source of infection, that is, termites and cockroaches. In fact, human infections with *L. blattarum* are relatively rare. In the past 2 decades, based on review from reported 136 cases in a country like China of *L. blattarum* infection, It is most likely because cockroaches and termites are the hosts of *L. blattarum*, this protozoan can breed easily in the humid environment. The clinical manifestations and signs of *L. blattarum* infection are similar to the other etiologic pneumonia and bronchitis. It is difficult to diagnose correctly. Key worthy diagnostic pointers are: ineffectiveness of pretreatment with other antibiotics before metronidazole therapy & also majority association with chronic diseases severe chronic obstructive pulmonary disease (COPD) and immunosuppressive conditions like organ transplantation. Above all, it is strongly needed to have knowledge on *L. blattarum* infection before giving diagnosis and treatment of this protozoan infection.

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Patient consent statement: The author(s) have obtained written informed consent from the patient's family for publication of the case report details and related images.

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