Co-existent Ascariasis and Multiloculated Tuberculous Pleurisy Treated with Intrapleural Streptokinase
Talha Mahmud and Omer Muhammad Naeem

ABSTRACT
This case describes a young male with pleuro-pulmonary tuberculosis having one-week history of fever and hemoptysis along with a multiloculated right sided exudative lymphocytic pleural effusion. His pulmonary diagnostic confusion was due to passage of adult *Ascaris lumbricoides* per orally but that was found to be of intestinal origin. Pleural tissue histopathology revealed necrotizing granulomatous inflammation and right upper lobe bronchial washings were positive for acid fast bacilli. His multiloculated pleural effusion was successfully resolved with intrapleural streptokinase injections via a 10 French pleural catheter. Treatment with class-I anti-tuberculous drugs led to complete clearance of remaining pleuro-pulmonary shadowing.

Key Words: Multiloculated tuberculous pleural effusion. Small bore pleural catheter. Streptokinase.

INTRODUCTION
Intestinal ascariasis usually causes abdominal symptoms but wandering worms through the gastrointestinal tract can enter into tracheobronchial tree causing pulmonary complications.1 Tuberculous pleurisy is the most common form of extrapulmonary tuberculosis after lymphatic involvement and is typically not multiloculated.2 Unlike pulmonary tuberculosis, pleural tuberculosis presents a diagnostic and therapeutic problem due to the limitations of traditional diagnostic tools.2 Diagnosis of tuberculous pleural effusion can specifically be challenging by simultaneous parasitic infestation, multiloculated pleural effusion and acute presentation with veiling parenchymal infiltrate on chest radiograph. Moreover, small bore pleural catheter insertion in combination with intrapleural streptokinase has a role in drainage and management of multiloculated tuberculous pleural effusion.

CASE REPORT
An 18 years student was hospitalized under pulmonary service having one-week history of fever and hemoptysis, along with a multiloculated right sided exudative lymphocytic pleural effusion. His pulmonary diagnostic confusion was due to passage of adult *Ascaris lumbricoides* per orally but that was found to be of intestinal origin. Pleural tissue histopathology revealed necrotizing granulomatous inflammation and right upper lobe bronchial washings were positive for acid fast bacilli. His multiloculated pleural effusion was successfully resolved with intrapleural streptokinase injections via a 10 French pleural catheter. Treatment with class-I anti-tuberculous drugs led to complete clearance of remaining pleuro-pulmonary shadowing.

Laboratory evaluation showed hemoglobin 14.3 g/dL, WBC count 12.84/cmm (60% neutrophils, 20% lymphocytes, 5% monocytes, 14% eosinophils and 1% basophils) and platelets 384/cmm. His arterial blood gas and serum biochemistry including renal and liver functions and urine examination were normal. Chest radiographic findings included a veiling opacity in right upper zone and a ‘D’ shaped homogenous opacity at middle and lower zones of right lung with obliteration of right hemi-diaphragm (Figure 1a). Chest ultrasound showed large multiloculated right-sided pleural effusion with collapsed floating lung. His provisional diagnosis was community acquired pneumonia with a complicated parapneumonic versus tuberculous pleural effusion but the diagnostic confusion was raised when on the second day of admission, patient was awakened by two adult *Ascaris lumbricoides* worms crawling out from his right upper zone and a ‘D’ shaped pleural based opacity suggestive of loculated pleural effusion (confirmed on pleural ultrasoundography).

Figure 1: (a) CXR-PA showing veiling opacity (resembling pneumonia) in right upper zone and a ‘D’ shaped pleural based opacity suggestive of loculated pleural effusion (confirmed on pleural ultrasonography). (b) Multiple air fluid levels (multi-loculations) within pleural shadowing after catheter placement.
To decompress the pleural space from multiloculated pleural effusion, a 10 F pleural catheter was placed under ultrasound guidance after performing Abram’s pleural biopsy and 700 ml straw colored fluid was removed. Pleural fluid analysis showed an exudative (LDH 634 U/L, albumin 3.0 g/dl, protein 7.5 g/dl and glucose 92 mg/dl) and lymphocytic (WBC count 1250/cmm; 25% neutrophils and 75% lymphocytes) picture. Pleural biopsy revealed granulomatous inflammation with caseation necrosis. Follow-up chest radiograph and ultrasound showed incomplete drainage of multiloculated pleural effusion with entrapped lung (Figures 1a and b). Intrapleural instillation of 250,000 units of streptokinase twice a day was carried out along with external suction of -20 cm H2O that led to complete fluid drainage (1000 ml) over 3 days (Figures 2a and b). His stool examination was positive for acid fast tuberculous bacilli.

Final diagnosis was pleuro-pulmonary tuberculosis complicated by multiloculated pleurisy and co-existent intestinal ascariasis causing peripheral blood eosinophilia. He was given mebendazole and class-I anti-tuberculous medicines that led to complete resolution of remaining pleuro-pulmonary shadowing.

**DISCUSSION**

Though both pleuro-pulmonary TB and ascariasis are not uncommon conditions but their co-existent confusing clinical presentation (resembling a pneumonic illness with multiloculated pleurisy) and successful medical management of this patient were unique features. Adult *Ascaris lumbricoides* reside in small intestine after they pass (as larvae) through the lungs (Loffler's syndrome) but very rarely, adult worms from intestine may be aspirated into the tracheobronchial tree and cause a post-obstructive pneumonia. In this patient having right upper zone opacification, multiloculated pleurisy and a worm exiting through mouth raised a suspicion of post-obstructive pneumonia complicated by effusion (multiloculated large pleurisy is atypical for TB). This was ruled out after bronchoscopy that showed patent airways (no airway obstruction caused by adult worms) with positive bronchial washings for acid fast bacilli and positive stool test confirmed the worm to be intestinal in origin.

Unlike pulmonary tuberculosis, pleural tuberculosis in most cases has an acute presentation resembling a parapneumonic effusion. This patient had pleuro-pulmonary tuberculosis and presented in an acute fashion initially raising concerns for a bacterial cause. The opacity in right upper lung zone appeared like pneumonia in the presence of a loculated pleural effusion (D-shaped opacity on chest radiograph, Figure 1a). After pleural catheter placement, the loculations were clearly seen on chest radiograph (Figure 1b) and pleural ultrasonography being superior to CT scan. Chest CT scan was not performed to avoid unnecessary radiation exposure. Tuberculous pleural effusions are small to moderate in size and multiloculated large pleural effusion (as was evident in this case) is not a characteristic of tuberculous pleurisy but a hallmark of parapneumonic effusions. The recommendation for patients with an infected loculated pleural collection is chest tube drainage by small bore pleural catheters (10 - 14 F) especially if the effusion is large. There is no indication for the routine use of intrapleural fibrinolytics in patients for pleural infection except when there is failure of drainage after chest tube placement. A Cochrane review did not find a reduction in death among patients who received fibrinolytics therapy (28 vs. 33%) but fibrinolytics reduced the risk of surgery (RR 0.63; 95% CI = 0.46 to 0.85) in complicated parapneumonic effusions and empyemas.

In patients with free flowing tuberculous pleural effusions, pleural fluid is resorbed within 6 weeks in majority with drug treatment but some patients take up to 4 months and adjunct corticosteroids can shorten the time to fluid resorption. In some cases of large tuberculous pleural effusion or tuberculous empyema,
pleural scarring can lead to a trapped lung and may need surgical intervention. This patient, who presented like a pneumonic illness clinically, was treated with broad spectrum antibiotics and his multiloculated effusion was managed as parapneumonic pleurisy (catheter drainage combined with fibrinolytic therapy). His pleural biopsy confirmed the obscure TB after 8 days when biopsy results were available.

To the authors' knowledge, there is no data on the use of fibrinolytics in multiloculated tuberculous pleural effusions. Since multiloculated infective effusions require drainage because of risk of lung entrapment and thus trapped lung requiring surgery, the authors proceeded (after informed consent) to drain this effusion (suspecting multiloculated bacterial effusion) with small bore pleural catheter in combination with intrapleural streptokinase. This is the only fibrinolytic available in Pakistan, safe with no risk of systemic hemorrhage, and lead to complete resolution of loculi and achieve lung expansion thus avoiding any surgical intervention (Figure 2 and 3).

REFERENCES