International Journal of Research in Medical Sciences
Khan Z et al. Int J Res Med Sci. 2024 Jul;12(7):2671-2673
www.msjonline.org
pISSN 2320-6071 | eISSN 2320-6012

DOI: https://dx.doi.org/10.18203/2320-6012.ijrms20241934

Case Report

Tuberculous bronchoesophageal fistula presenting with miliary tuberculosis: a case report

Zaara Khan, Sachin Khanduri, Rohit*, Sadaf Sultana, Waquar Ahmed, Kunal Dwari, Shaista Ejaz, Abhishek Singh, K. Prithvi Perumal, Tushar Yadav, Upasana Chatterji

Department of Radiodiagnosis, Era's Lucknow Medical College and Hospital, Lucknow, Uttar Pradesh, India

Received: 25 May 2024
Accepted: 17 June 2024

***Correspondence:**
Dr. Rohit,
E-mail: rohitjaglan5l@gmail.com

ABSTRACT

A 35-year-old Asian woman with no pre-existing illnesses presented with a chronic cough during eating, mucoid sputum production, low-grade fever, and significant weight loss over the past few months. She had no history of high-risk behavior, foreign body aspiration, or ingestion of toxic substances. Physical examination revealed mild pallor without other significant findings. Vital signs were normal. Laboratory tests indicated mild anemia, leukocytosis, and elevated ESR. Sputum AFB and viral/autoimmune markers were negative. The tuberculin skin test was positive. Imaging studies, including fluoroscopy with contrast and a CT scan of the thorax, identified an esophagobronchial fistula and miliary tuberculosis, with multiple diffuse lung nodules and associated changes. The CT scan showed a thick-walled fistulous tract connecting the esophagus to the right main bronchus at three points, along with miliary nodules and bronchiectatic changes. AFB staining of bronchial secretions was negative, but PCR and cultures confirmed M. tuberculosis. The patient was initiated on weight-adjusted antituberculosis therapy and nasogastric feeding. The patient showed significant symptomatic improvement after two months of antituberculosis treatment. This case underscores the importance of thorough diagnostic evaluation in atypical presentations of tuberculosis and highlights the potential for esophagobronchial fistulas to complicate pulmonary tuberculosis.

Keywords: Bronchoesophageal fistula, Miliary tuberculosis, Endobronchial spread, Mediastinal lymphadenopathy

INTRODUCTION

Noncancerous causes of bronchoesophageal fistula (BEF) are uncommon, with most cases resulting from trauma or infection, particularly granulomatous diseases. The presence of mediastinal lymphadenopathy combined with a cough after eating should raise suspicion for a tuberculous bronchoesophageal fistula. Traditionally, BEF treatment involves surgical resection of the fistulous tract. However, some case reports indicate that tuberculous BEF can be successfully managed with medical treatment alone.[1] Esophagobronchial fistula (EBF) poses a diagnostic challenge for clinicians, with significant implications for patient management. Accurate diagnosis can potentially cure patients from recurrent pulmonary infections. Typically, patients with EBF present with recurrent lower respiratory tract infections, with the most characteristic symptom being paroxysmal cough following the ingestion of liquids. Some patients avoid coughing paroxysms by swallowing in the supine position, known as Ono's sign.[2] Other symptoms may include a sensation of stomach fullness with air following expiration. Physical signs are usually absent in EBF cases. EBFs are broadly classified into congenital and acquired types, with congenital EBFs further categorized by Braimbridge and Keith into four types based on the site of the fistulous tract. Among acquired EBFs, 49% are malignant, while others result from benign causes such as trauma, tuberculosis, actinomycosis, and esophageal diverticulosis.[3]

CASE REPORT

A 35-Year-old Asian woman, with no pre-morbid illnesses presented with a history of cough during eating for 4 months duration and mucoid, non-blood tinged, white coloured sputum production with low grade fever for 1 month. She reported a 7 kg weight loss over past 3 months. Associated symptoms were shortness of breath, chest pain, vomiting or choking. There was also no history of foreign body aspiration, ingestion of toxic or corrosive substances or any surgical procedures in past. She had regular menstrual cycles and no history of high-risk behavior. On examination she exhibited mild pallor. There was no icterus, cyanosis, clubbing or lymph node enlargement. Pulse rate – 85/min, regular; Blood pressure - 112/70 mmHg; respiratory rate - 15/min; and she was afebrile. Cardiac, respiratory, gastrointestinal and central nervous system examination were within normal limits. Investigations showed WBC 11,600/cmm, with 66% neutrophils and 29% lymphocytes, Hgb - 9.4 g/dL, platelet count 210,000/cmm and ESR was 52 mm/h. Renal and liver function tests were within normal limits. Viral markers screening and autoimmune markers were negative. Sputum AFB was negative. Tuberculin skin test showed an induration measuring 14 mm. On administration of nonionic iodinated contrast on fluoroscopy through infant feeding tube there is passage of contrast from esophagus to the right main bronchus. A computed tomography scan of thorax with three-dimensional reconstruction was done which showed Multiple diffuse tiny nodule ranging ~ (1-3) mm randomly distributed in bilateral lung parenchyma-Miliary tuberculosis along with large patches of consolidation showing air bronchogram sign in lateral segment of right middle lobe and superior segment of right lower lobe with surrounding multiple discrete confluent nodules showing tree in bud pattern and tractional bronchiectatic changes with surrounding ground glass haziness. There is irregular thick-walled fistulous tract measuring ~ (16×23×28) mm with three connections to right main bronchus with first opening 6 mm distal to bifurcation medial wall of right main bronchus (size of opening ~3×2 mm). Another opening posterior wall of the right main bronchus (size of opening ~6mmx 5mm) with distance nearly 15 mm from bifurcation. Third opening is present distal (size of opening ~4.7×6 mm) with distance nearly 3.5cm away from bifurcation. Esophageal opening is located in the anterior and right lateral wall of the esophagus with defect size 7×16 mm in vertebral plane of 5th vertebral body. Moderate pericardial effusion was seen. Multiple enlarged, heterogenous lymph node largest measuring ~ (2.6×2.2) mm in bilateral lower paratracheal, right upper paratracheal, sub-carinal and sub-aortic region. AFB staining of bronchial secretions was negative, but tested positive for M. tuberculosis by PCR. Cultures done on bronchial secretions showed growth of M. tuberculosis. She was started on antituberculosis treatment modified according to weight and nasogastric feeding started. There was near complete resolution of symptoms on follow up visit after 2 months.

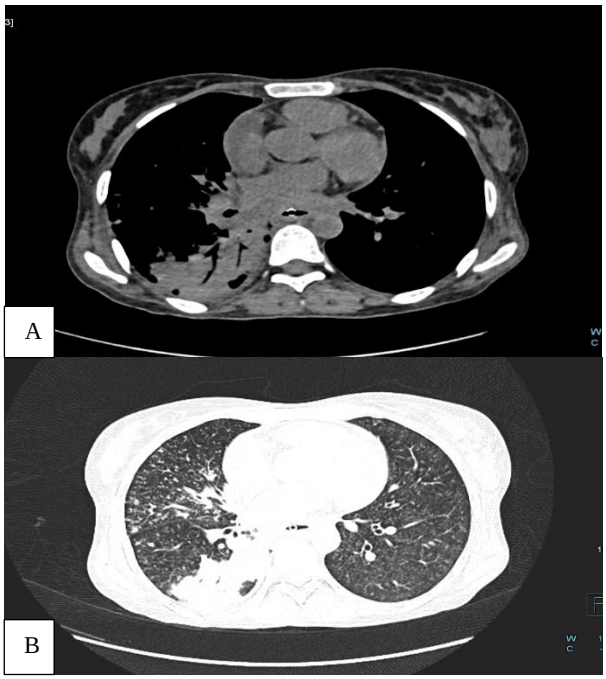

Figure 1 (A and B): HRCT thorax showing large patches of consolidation showing air bronchogram sign in the dependent part of right lung and tractional bronchiectatic changes with surrounding ground glass haziness.

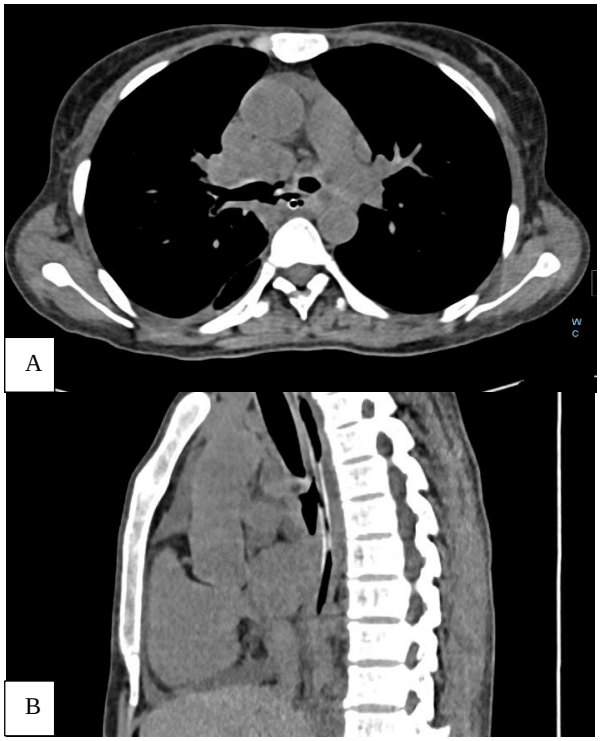

Figure 2 (A and B): HRCT showing fistulous tracts between the esophagus (with feeding catheter) and right main bronchus.

Figure 3: HRCT thorax is showing multiple diffuse tiny nodule ranging ~ (1-3) mm randomly distributed in bilateral lung parenchyma-miliary tuberculosis.

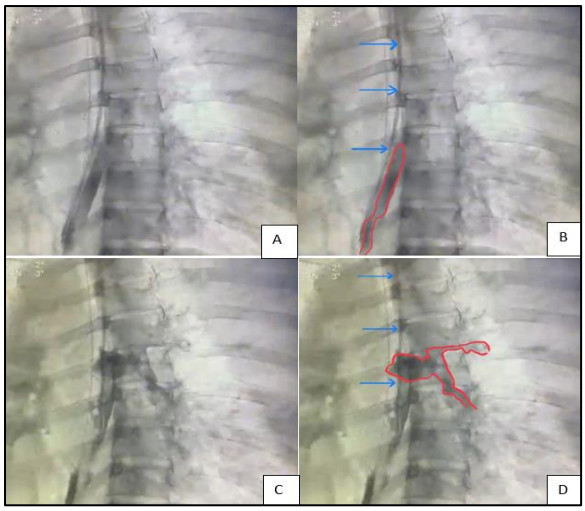

Figure 4 (A-D): Fluoroscopic images showing multiple fistulous tracts seen in form of spillage of contrast (red outline) from esophageal openings. Blue arrows are showing contrast flowing in Nasogastric tube.

DISCUSSION

The development of EBF in tuberculosis and other granulomatous diseases is often related to mediastinal lymph node involvement.[4] Inflammation surrounding these enlarged lymph nodes can involve nearby structures, particularly the esophagus and trachea near their bifurcation, leading to peri esophagitis and peri tracheitis. Subsequent healing with scar formation may produce a typical traction diverticulum of the mid-esophagus.[5] If necrosis and caseation occur in the lymph nodes, resulting local abscess formation can lead to secondary rupture into the esophagus, trachea, or main stem bronchi, forming a fistula.

In our patient, computed tomography revealed numerous necrotic mediastinal lymph nodes, suggesting that the fistula was caused by lymph node erosion rather than primary bronchial tuberculosis. Typically, EBF treatment involves surgical intervention to divide the fistulous tract and resect any irreversibly damaged lung tissue. If the fistulous tract originates from lymph nodes without parenchymal complications, simple ligation and resection may suffice.[6] However, our case did not require surgical treatment. Similar outcomes have been reported in patients with tuberculous bronchoesophageal fistula who received antituberculosis chemotherapy and nasogastric feeding, resulting in fistula healing without surgical intervention.[7,8]

CONCLUSION

Early diagnosis of tuberculous EBF is crucial, as it allows for effective treatment of both the underlying disease and the resulting fistula with antituberculosis chemotherapy, potentially avoiding the need for surgical intervention. This case highlights the importance of comprehensive diagnostic evaluation in patients presenting with atypical symptoms of tuberculosis and underscores the role of conservative management in specific cases of EBF.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: Not required

REFERENCES

1. Vasquez RE, Landay M, Kilman WJ, et al. Benign esophagorespiratory fistulas in adults. Radiology 1988;167:93-6.
2. Braimbridge MV, Keith HI. Oesophagobronchial fistula in the adult. Thorax. 1965;20:226-33.
3. Hutchin P, Lindskog GE. Acquired esophagobronchial fistula of infectious origin. J Thorac Cardiovasc Surg 1964;48:1-12.
4. Pecora DV. Tuberculous fistula of the esophagus. J Thorac Surg. 1958;36:53.
5. Jenkinson DL, Bate LC. Esophagobronchial fistula through an esophageal diverticulum. Am J Roentgenol. 1951;66:236.
6. Tomiyama K, Ishida H, Miyake M, Taki T. Benign acquired bronchoesophageal fistula in an adult. Jpn J Thorac Cardiovasc Surg. 2003;51:242-5.
7. Porter JC, Friedland JS, Freedom AR. Tuberculous bronchoesophageal fistulae in patients with the human immunodeficiency virus: three case report and review. Clin Infect Dis. 1994;19:954-7.
8. Lee JH, Shin DH, Kand KW, Park SS, Lee DH. The medical treatment of a tuberculous tracheooesophageal fistula. Tuber Lung Dis. 1992;73:177-9.

Cite this article as: Khan Z, Khanduri S, Rohit, Sultana S, Ahmed W, Dwari K, et al. Tuberculous bronchoesophageal fistula presenting with miliary tuberculosis: a case report. Int J Res Med Sci 2024;12:2671-3.