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THE BUDDING TUBERCULOSIS

Medicine

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ABSTRACT

Endobronchial Tuberculosis (EBTB) is recognised less often, has bad consequences and causes spread of infection in the community. It has been defined as "tuberculosis infection of the tracheobronchial tree with microbial and histopathological evidence or "a complication of progressive primary Tuberculosis".

An 8yr old male child, presented with non-remitting cough low grade fever and weight loss since 1 month. There was past history of non-resolving pneumonia 4 months back. There was no family history of tuberculosis. On examination the child was malnourished, anaemic with bitot spots. Chest findings revealed diminished movements and decreased breath sounds over the left hemithorax. Investigations showed elevated total WBC counts.ESR was elevated. Tuberculin skin test was negative. Sputum smear examination and culture was normal. Chest X-ray showed patchy infiltration and consolidation in the sleft lower lobe.Child was given 10 days of I.V antibiotics before referral. Despite 10 days of antibiotics child did not improve and radiographic opacities worsened so bronchoscopy was done which revealed mild hyperaemic tracheobronchial mucosa with no evidence of stenosis. Microbiological culture and smear examination of BAL fluid was negative for AFB.HRCT revealed multiple nodular opacities with multiple centrilobular branching opacities in V-Y pattern (tree in bud pattern) involving bilateral lung fields with areas of consolidation in the inferior lingual segment of left upper lobe. A diagnosis of Endobronchial tuberculosis was made and child was started on category 1 AKT along with corticosteroids. Child has clinically improved after 2weeks and is on a regular follow up.

KEYWORDS

Endobronchial TB(EBTB), tree in bud pattern, bronchoscopy, complications, endobronchial obstruction.

INTRODUCTION:

Endobronchial tuberculosis (EBTB) is defined as tuberculous infection of the tracheobronchial tree with microbial and histopathological evidence (1).Involvement of trachea and bronchi was first described by Richard Morton, an English physician in 1698 (2).Clinical presentation of endobronchial TB is variable, may present as primary or reactivation TB. However, in children it is usually a complication of primary TB. This form of TB is difficult to diagnose because the lesion is not evident in the chest radiograph frequently and thus delaying the treatment.

Diagnosis requires a high index of suspicion.Computed tomography and bronchoscopy along with microbiological investigations are the most useful diagnostic tools for the confirmation as well as for the evaluation of the tracheobronchial stenosis.The evolution and prognosis of EBTB is variable,going from complete resolution to residual severe tracheobronchial stenosis(3). The goals of treatment are eradication of tubercle bacilli and to prevent airway stenosis. Interventional bronchoscopic techniques and surgery is required for patients developing severe tracheobronchial stenosis causing significant symptoms.

CASE REPORT:

An 8yr old male child born of non-consanguineous marriage, hailing from Navi Mumbai, India presented to a tertiary care hospital with complaints of low-grade fever, non-remitting cough, weight loss and decreased appetite in the last 1 month. Fever was low grade intermittent type not associated with chills/rigor. Cough was insidious in onset dry non-productive, non-paroxysmal and non-spasmodic. There was no history of any diurnal or postural variation. There was no family or contact history of tuberculosis. Child had no history of chest pain, rapid breathing or haemoptysis. There was no history of repeated nebulizations, atopy, or family history of asthma or allergy. There was past history of pneumonia 4 months back for which child had been admitted in PICU and received antibiotics for 21 days following which child had been discharged after symptomatic improvement. There has not been any documented radiological clearance since then as the child has been lost for follow up. Child had recurrent episodes of cold and cough during this period for which he had received symptomatic treatment on OPD basis. The child belonged to a lower middle-class family, was partially immunised for age and developmentally normal.

Child was conscious, cooperative, poorly built and nourished, anaemic with bitot spots. On initial examination temperature was 98 F with heart rate of 108 beats/min, respiratory rate of 28/min, and blood pressure of 90/54mm of Hg. Anthrometrically child was severely wasted and stunted for his age. Bilateral cervical lymph nodes were palpable with the largest measuring 1.5cm x 1.5cm. Chest findings revealed diminished movements and decreased breath sounds over the left hemithorax. Other systemic examination was unremarkable.

Investigations showed haemoglobin of 10.9gm/dl, with elevated total leucocyte count of 19,100/cmm. Differential counts showing neutrophils 58.2%, lymphocytes 28%, eosinophils 7.2% and platelets 4,87000.

Other investigations include

Investigations	Results
ESR	60 mm
CRP	28
MAT	Negative
HIV	Negative
HbsAg	Negative
HCV	Negative
Mantoux	Negative

Sputum smear examination and culture did not grow any acid-fast bacilli. Blood culture did not reveal any organism. Chest X-ray showed patchy infiltration and consolidation in the left lower lobe.

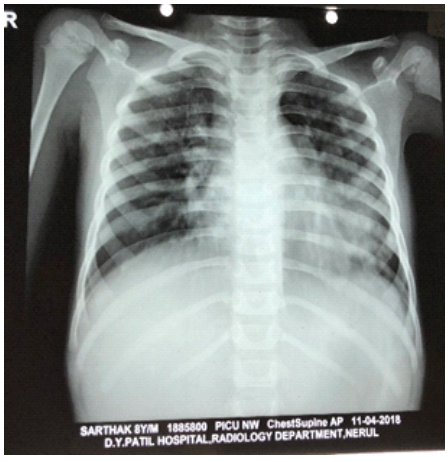

Fig no 1. CXR showing patchy infiltration in the left lower lobe.

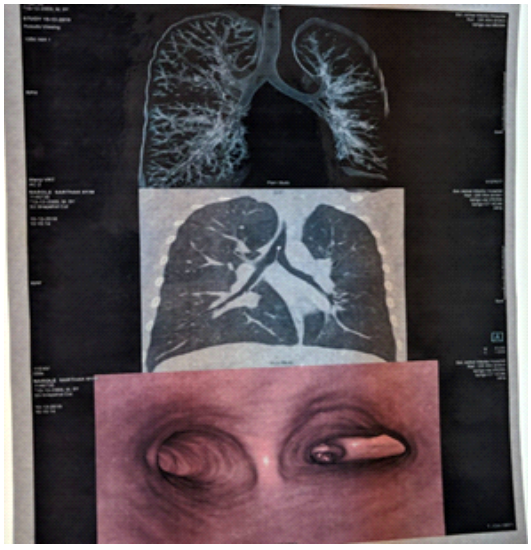

Fig no 2. Bronchoscopy showing hyperaemic tracheobronchial mucosa.

10 days of I.V antibiotics were given outside before referral to us. Despite 10 days of antibiotic coverage child did not improve clinically and radiographic opacities worsened so bronchoscopy was done which revealed mild hyperaemic tracheobronchial mucosa with no evidence of stenosis. Microbiological culture and smear examination of BAL fluid was negative for AFB.

HRCT was done which showed fibrotic, fibro bronchetatic changes and traction bronchetatic changes in lingular segment of left upper lobe and bilateral lower lobes. Multiple nodular opacities with multiple centrilobular branching opacities in V-Y pattern (tree in bud pattern) involving bilateral lung fields with areas of consolidation in the inferior lingual segment of left upper lobe were also noted. A diagnosis of Endobronchial tuberculosis was made and child was started on category 1 AKT along a short course of corticosteroids. Child has clinically improved after 2weeks and is on a regular follow up.

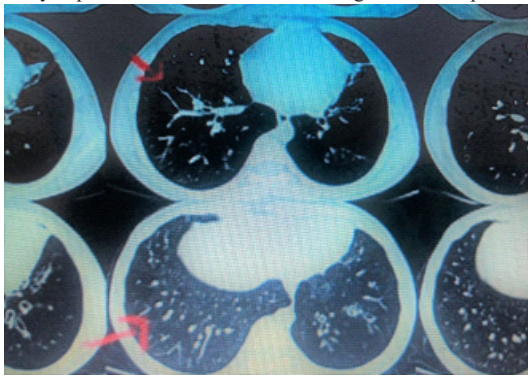

Fig no 3. HRCT showing V-Y pattern (tree in bud) appearance

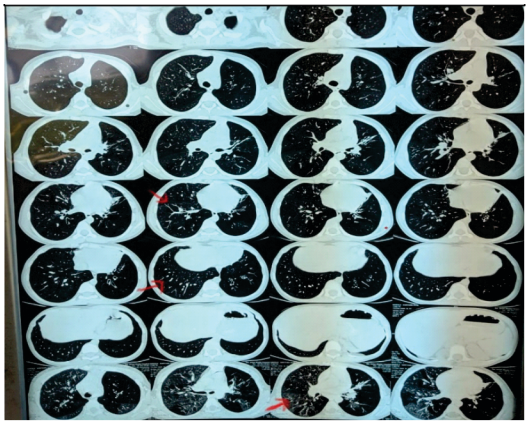

Fig no 4. HRCT showing V-Y pattern (tree in bud) appearance

CONCLUSION-

EBTB is seen in 10-40% patients with active pulmonary tuberculosis and 90% have some degree of bronchial stenosis. Inspite of the rapid advancement in diagnostic modalities, EBTB continues to remain challenging for the clinicians.Non-specific symptoms, normal chest radiograph in 10-20% of cases(4,5) and variable diagnostic yield with sputum microscopy further compound the problem; may be alleged for the diagnostic delay.In such cases, HRCT is paramount to diagnose the extent and type of tuberculosis as it is a sensitive tool and demonstrates involvement of tracheobronchial tree described classically as “tree-in-bud” appearance.Evolution of the disease is also unpredictable with frequent progression to bronchostenosis therefore requiring early intervention and proper 9 -12 ssssssssmonths coverage of AKT along with a short course of steroids to halt the natural course.Corticosteroids have shown improvement in clinical outcomes when used in children(6,7). High degree of suspicion with non-resolving pneumonias and prompt treatment would prevent complications.

DISCUSSION

EBTB in this child would give us a few clinical pointers to achieve an early diagnosis and antibiotics, reduced weight gain and negative Mantoux test would still called for a diagnosis of tuberculosis. Further on a simple test like high ESR, fundoscopy for choroid tubercle, HRCT and BAL/Biopsy would clinch the diagnosis favourably.

AKT therapy for a period of 9 months along with a short course of steroids was initiated in this child. Regular follow up in this child till date has revealed weight gain, no school absenteeism and a positive child.

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