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Case Report

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Laryngeal & Lower lung field tuberculosis in pregnancy: A case report

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ABSTRACT

Lower lung field tuberculosis (LLF TB) is atypical presentation of tuberculosis. LLF TB is missed routinely because of confusing clinical and radiological presentation and usually these cases initially treated as pneumonia. In this case report, we observed 25 year pregnant female with dysphonia and cough as presenting feature of LLF TB. Chest radiograph was showing 'typical' LLF TB pattern with Cavity in lower zone on right side. Sputum examination for acid fast bacilli was positive in higher grades with 'laryngeal ulcerative lesions' in direct laryngoscopy examination. She was treated with recommended four drug regimen and documented 'cure' at the end of six months. High index of suspicion is must while evaluating these cases and all possible measures to diagnose underlying tuberculosis to have successful treatment outcome.

Keywords: LLF TB (lower lung field tuberculosis), pregnancy, cough, dysphonia

INTRODUCTION

Tuberculosis is an ancient disease affecting mankind described as far back as 10,000 BC and it is still the major health problem worldwide. According to World Health Organization (WHO) 9 million people fell ill with TB in 2013, including 1.1 million cases among people living with HIV. (1) In India 8.7 million new cases of TB (13% co-infected with HIV) and 1.4 million people died from TB, including almost one million deaths among HIV negative individuals and 430000 among people who were HIV-positive were estimated in the year 2011. (1) In India more than 40% is infected with TB and 1.9 million people develop TB disease every year. (1) Though pulmonary tuberculosis commonly affects the upper lung fields, lower lung field tuberculosis is also not uncommon. This often causes great confusion in the diagnosis. HIV/AIDS epidemic has considerably increased the incidence of middle and lower lung field tuberculosis (LLF TB) which is frequently associated with negative sputum smear due to lower bacillary load. (2)

CASE STUDY

25 year female, non-addict, housekeeping by occupation referred to outdoor unit of pulmonary medicine from obstetrics department with history of: 24 weeks of gestational age (ANC) with

Dysphonia, Cough and shortness of breath since 2 months

Initially she was having dry cough which was progressed to productive type with yellowish green sputum and altered voice texture over duration of two months, received antihistaminic, cough expectorants and antibiotics on outdoor basis. Her illness progressed to have increased sputum volume, new onset breathlessness and increase in altered voice to difficulty in speaking, low grade intermittent fever over period of one month. She was neither evaluated by obstetrician, general physician for chronic cough like chest X-ray, blood investigations during past three to four consultations, and every time told that she was having seasonal flue with superadded infection and received treatment accordingly.

She was referred to our outdoor for consultation from obstetrics department after insist of patient's relative for pulmonary consultation for her persistent progressive respiratory complaints. She was not having any history of atopy or seasonal allergies in past. Her respiratory symptoms started at 18 weeks of gestational age and progressed over 8 weeks to have advanced respiratory disease, received empirical antibiotics in view of 'gestational bronchitis.'

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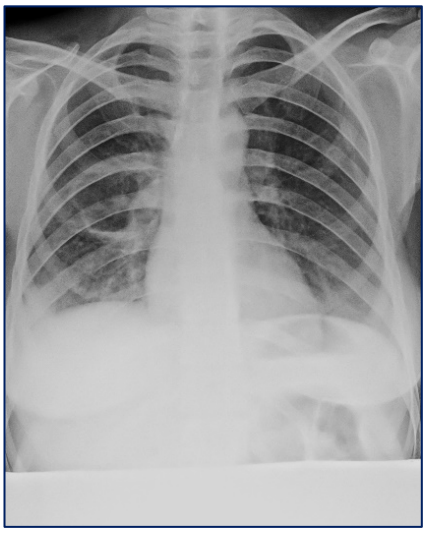

Figure 1: *Chest X-ray PA view with abdominal guard to avoid fetal radiation exposure shown cavity in right mid zone*

Her clinical examination revealed

Heart rate-104 per minute

Respiratory rate-20 per minute

Pallor

No cyanosis, clubbing or peripheral lymphadenopathy

Respiratory system examination documented breath sounds normal with adventitious sounds like crepitation and wheezing was present on right side infrascapular, inter-scapular and lower axillary area.

We performed routine hematology evaluation and chest X-ray PA with abdominal guard, and observed

Hemoglobin 7.6 gm%

Peripheral smear shows microcytic hypochromic anemia pattern

White blood cells and platelets were normal

CRP (C-reactive protein) – 54 IU/Ltr

BSL (random blood sugar level) – 96 mg%

ESR- 74mm at the end of one hour

Liver functions, **kidney functions were normal**

Figure 1 shows chest X-ray PA with abdominal guard. Characterization of lung cavity in this X-ray is – 'irregular moderately thick walled 4 cm x 4 cm cavity in right mid zone in para hilar area with minimal fluid level. Also note peri-cavitary consolidation with nodular opacities, which is hallmark of active pulmonary tuberculosis.

We also performed her throat examination and advised ENT surgeon for laryngoscopy examination which revealed 'ulcerative lesion at true vocal cords with yellowish, pale mucosa overlying it.'

As our case is pregnant female with second trimester of gestation, we deferred to perform CT thorax. Although CT thorax will help to localize exact segment involvement of lower lobes, it will have deleterious effects of radiation exposure to growing fetus. If patient doesn't respond to medical treatment or medical condition deteriorates, we have planned for CT thorax.

After laryngoscopy examination, we advised patient for 'strict cough hygiene' as case of laryngeal involvement and highly infectious nature of disease after involvement of larynx. Hospital's infectious disease control department guidelines for 'cough etiquettes and sputum collection of infective or suspected sputum positive cases' evaluation protocol for sputum collection followed and sputum for AFB (acid fast bacilli) evaluation was done. Sputum sample examination was done on three samples as spot, early morning and early morning sample. Our accredited and designated microscopy center for tuberculosis diagnosis at microbiology department conducted sputum examination and documented 3+ (+++) grading of AFB on smear examination.

We offered her 'standard four drug ATT (Anti-tuberculosis treatment) regimen' containing four drugs Isoniazid, Rifampicin, Pyrazinamide and Ethambutol given daily for two months as 'intensive phase'. We advised for sputum examination & chest X-ray at completion of intensive phase and documented 'sputum smear conversion' with no acid fast bacilli in smear examination and chest radiograph showing decrease in 'size of cavity' with decrease in peri-cavitary consolidation. We also documented satisfactory clinical response in form of increase in weight, no shortness of breath

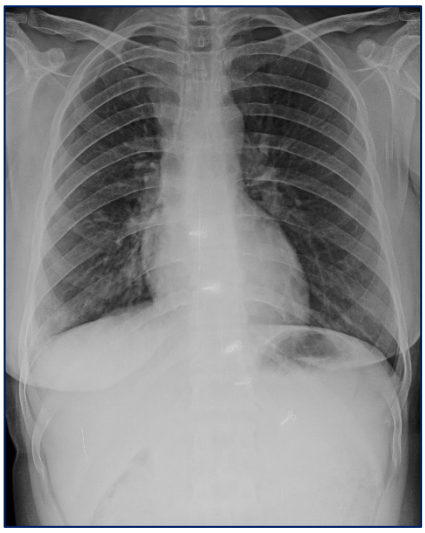

Figure 2: *Chest X-ray PA view*

and minimal cough without sputum production and normal liver functions on biochemistry analysis. We also offered pyridoxine and thiamine supplementation in addition to ATT to avoid Isoniazid toxicity.

After completion of intensive phase, patient received three drug regimen containing isoniazid, rifampicin & ethambutol daily as 'continuation phase' given for four months to complete total six months. We have started 'three drug ATT' instead of conventional "two drug ATT" as national protocol of standardized treatment schedule of RNTCP (revised national tuberculosis treatment programme) and also same endorsed by WHO (world health guidelines for treatment of tuberculosis). We have done monthly liver function tests, and documented course is uneventful with complete tolerance to ATT. At the completion of six months we documented 'radiological cure' with complete resolution and clearance of cavity and parenchymal infiltrates.

Her perinatal outcome was excellent with full term normal vaginal delivery and given birth to 3.5 kg weight newborn. We have completely evaluated newborn for possible transmission of tuberculosis from mother and documented no evidence of active tuberculosis in baby. Isoniazid prophylaxis was given for three months and tuberculin skin test (TST) was done. Results of TST were negative, isoniazid prophylaxis stopped and BCG vaccination given to baby at three months.

Figure 2 shows chest X-ray at the completion of ATT for six months. The chest X-ray shows 'radiological cure' with complete resolution and clearance of cavity and parenchymal infriltrates.

DISCUSSION

Lower lung field tuberculosis (LLF TB) is defined (3) as "tuberculous disease found below an imaginary line traced across the hila and including the parahilar regions on a standard posterior-anterior chest roentgenogram." Ossen (4) subdivided his cases into pure and impure groups: the pure group having no visible lesions in the upper lung fields and the impure group having nodular or fibrotic infiltrations in one or both apices. Other terms used for the same entity have been "basal, lower lobe, hilar, parahilar, and perihilar tuberculosis (3).

The most likely explanation for the development of lower lung field tuberculosis is transbronchial perforation of a hilar lymph node, with spread to the adjacent lung (1, 5). Thus, lower lung field disease occurs as a continuation of the primary tuberculous infection or soon afterwards in the post-primary period (6). This explanation is consistent with the high incidence of endobronchial involvement and with reported clinical and radiologic observation (6). A diagnosis of endobronchial disease is made when bronchoscopic evidence of stenosis or severe tracheobronchitis is detected or when there is roentgenographic evidence of atelectasis or tension cavities (7). Other mechanisms postulated in the pathogenesis of l0ower lung field tuberculosis have been restricted ventilation, costal breathing, and retrograde lymphatic flow from involved hilar nodes (5). It does not appear that patients with lower lung field disease have especially lowered resistance to tuberculosis (7).

According to previous studies, the following conditions occur more frequently in patients with lower lung field tuberculosis than in the general tuberculous population (8, 9):

1. Diabetes mellitus
2. Pregnancy
3. Advanced age
4. Malignancies and
5. Advanced liver and
6. Renal diseases.

Cases of TB are also classified according to the (10):

1. anatomical site of disease;
2. bacteriological results (including drug resistance);
3. history of previous treatment;
4. HIV status of the patient.

A case of pulmonary TB is considered to be smear-positive if one or more sputum smear specimens at the start of treatment are positive for AFB (provided that there is a functional EQA system with blind rechecking) (10).

Wherever feasible, the optimal dosing frequency for new patients with pulmonary TB is daily throughout the course of therapy. In countries with high levels of isoniazid resistance in new TB patients, should the continuation phase (containing isoniazid and rifampicin) be changed in the standard treatment of all new patients, in order to prevent the development of multidrug resistance (10).

TB treatment definition-(10)

Cure- A patient whose sputum smear or culture was positive at the beginning of the treatment but who was smear- or culture-negative in the last month of treatment and on at least one previous occasion.

Health personnel can prevent some drug-induced side-effects, for example isoniazid-induced peripheral neuropathy. This usually presents as numbness or a tingling or burning sensation of the hands or feet and occurs more commonly in pregnant women and in people with the following conditions: HIV infection, alcohol dependency, malnutrition, diabetes, chronic liver disease, renal failure. These patients should receive preventive treatment with pyridoxine, 10 mg/day along with their anti-TB drugs (10).

Women of childbearing age should be asked about current or planned pregnancy before starting TB treatment. A pregnant woman should be advised that successful treatment of TB with the standard regimen is important for successful outcome of pregnancy. With the exception of streptomycin, the first line anti-TB drugs are safe for use in pregnancy: streptomycin is ototoxic to the fetus and should not be used during pregnancy (10).

A breastfeeding woman who has TB should receive a full course of TB treatment. Timely and properly applied chemotherapy is the best way to prevent transmission of tubercle bacilli to the baby. Mother and baby should stay together and the baby should continue to breastfeed. After active TB in the baby is ruled out, the baby should be given 6 months of isoniazid preventive therapy, followed by BCG vaccination (11).

Pyridoxine supplementation is recommended for all pregnant or breastfeeding women taking isoniazid (10).

CONCLUSION

LLF TB is usually underdiagnosed due to diverse clinical and radiological presentation. LLF TB is missed routinely due to less diagnostic yield of conventional diagnostic modalities, and these modalities used routinely and universally.

Daily regimen containing four anti-tuberculosis drugs should be used to have excellent treatment outcome at the end of six months. All exposed newborns should receive INH preventive strategy to avoid dreadful complications of tuberculosis in these patients.

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