Available online at www.sciencedirect.com

SciVerse ScienceDirect

journal homepage: www.elsevier.com/locate/mjafi

Original Article

Are pulmonary opacities a marker of pulmonary tuberculosis?

Lt Col Vikas Marwah [a,*], *Brig MS Barthwal* [b], *Brig AK Rajput* [c]

[a] *Classified Specialist (Respiratory Medicine), Army Hospital (R&R), Delhi Cantt, India*
[b] *Commandant, Military Hospital Mhow, C/o 56 APO, India*
[c] *Consultant (Medicine & Respiratory Medicine), Army Hospital (R&R), Delhi Cantt, India*

ARTICLE INFO

Article history:
Received 15 August 2012
Accepted 3 February 2013
Available online 8 July 2013

Keywords:
Pulmonary opacities
Radiological misdiagnosis
Pulmonary tuberculosis

ABSTRACT

Background: On most occasions treatment of pulmonary tuberculosis is started by physicians based predominantly on radiological opacities. Since these opacities may not be suggestive of active pulmonary tuberculosis and most of these opacities may even remain unchanged after complete treatment, starting treatment solely on the basis of these opacities may lead to ambiguous end points of cure. In view of this, study of misdiagnosis of radiological opacities as active pulmonary tuberculosis by physicians was undertaken in one of the respiratory centers of Armed Forces hospitals.

Methods: This was a prospective study of patients referred to our center for confirmation of active disease and institutional therapy. All patients who were diagnosed as pulmonary tuberculosis predominantly on radiological basis by physicians were evaluated for active pulmonary tuberculosis clinically, radiologically and microbiologically. Patients found to have inactive disease were followed for one year. At three monthly review, history, clinical examination, sputum AFB and chest radiographs were done.

Results: There were 36 patients [all males, mean age: 36.9 years (range: 22–46 years)]. The most common initial presentation was of asymptomatic persons (33.3%) reporting for routine medical examination. The commonest radiological pattern was localized reticular opacities (52.8%)On follow up, only one patient was diagnosed to have pulmonary tuberculosis. The final diagnosis was consolidation in 6, bronchiectasis in 8, pulmonary tuberculosis in 1 and localized pulmonary fibrosis in 21 patients.

Conclusion: Diagnosing and treating tuberculosis predominantly on radiological basis is not appropriate and sputum microscopy and culture remains the cornerstone of diagnosing pulmonary tuberculosis.

Introduction

The Revised National Tuberculosis Control Programme (RNTCP) was launched in our country for overcoming the factors considered responsible for the failure of the earlier National Tuberculosis Programme (NTP).[1] One such factor was over-dependence on radiology and under-use of sputum microscopy for the diagnosis of pulmonary tuberculosis.[1,2]

* *Corresponding author.*
E-mail address: docvikasmarwah@gmail.com (V. Marwah).
0377-1237/$ – see front matter © 2013, Armed Forces Medical Services (AFMS). All rights reserved.
http://dx.doi.org/10.1016/j.mjafi.2013.02.002

Diagnosis of tuberculosis is based on examination of sputum by quality sputum microscopy.[3,4] However, it has been observed that most of the physicians do not insist on quality sputum microscopy for diagnosis and in the absence of positive sputum microscopy for acid fast bacillus (AFB), antitubercular treatment (ATT) is started solely on the basis of radiological opacities. These opacities may remain unchanged even after full course of ATT in most of these cases leading to ambiguous end points for cure and also with attendant side effects due to unnecessary administration of ATT. In view of this, present study of misdiagnosis of radiological opacities as active pulmonary tuberculosis by physicians was undertaken in one of the respiratory centers of Armed Forces hospitals.

Material and methods

This was a prospective study carried out over 18 months in one of the respiratory centers of armed forces hospital. Thirty-six patients who were diagnosed as pulmonary tuberculosis predominantly on radiological basis by physicians and were smear negative for pulmonary tuberculosis were evaluated for active pulmonary tuberculosis by means of detailed history and clinical examination. Laboratory investigation like erythrocyte sedimentation rate (ESR), blood counts, sputum smear for AFB, gram staining, cultures for pyogenic organisms, Lowenstein Jensen (LJ) and radiometric MTB culture, fungal studies and malignant cells were performed. All these patients were subjected to computed tomography (CT) of thorax.

The patients who were smear AFB negative were subjected to fiber optic bronchoscopy (FOB) and broncho alveolar lavage (BAL) analysis for AFB and MTB culture on LJ medium. All patients who were found to have no evidence of active disease were followed up with three monthly reviews till one year. During review, patients were evaluated by history, clinical examination, sputum for AFB and chest radiograph.

Results

There were 36 patients [all male patients, mean age 36.6 years (Range 22–46 years)]. Table 1 shows that most common initial presentation was of asymptomatic persons reporting for routine medical examination. Table 2 shows that the most common opacities on chest radiograph were reticular opacities seen in 19 (52.8%) patients. CT thorax showed reticular opacities in 19 (52.8%), nodular opacities in 12 (33.3%), cystic opacities in 8 (22.2%) [Fig. 1], calcific opacities in 7 (19.4%) and

Table 1 – Initial presentation at peripheral hospital.

Presenting complaints	No (%)
Streaky hemoptysis	05 (13.9%)
Fever (<1 week)	08 (22.2%)
Productive cough (<2 weeks)	07 (19.4%)
Unquantified weight loss	02 (5.5%)
Breathlessness	02 (5.5%)
Asymptomatic	12 (33.3%)

Table 2 – Pattern of opacities on chest radiograph.

Radiologic opacities	No (%)
Reticular opacities	19 (52.8%)
Cystic opacities	04 (11.1%)
Acinar opacities	06 (16.7%)
Nodular opacities	07 (19.4%)
Calcific opacities	07 (19.4%)

acinar opacities in 6 (16.7%) cases. Opacities were localized in all cases and upper zone involvement [Fig. 2] was seen in 23 patients (63.9%), mid zone in 10 (27.8%) and lower zone in 6 (16.7%). Sputum smear was false positive in one case and MTB culture was false positive in one patient. BAL for AFB smear and culture were negative in all the cases. 12 patients (33.3%) were already on ATT (EHRZ) started by physicians and one was on second line ATT started on radiological basis. On follow up, one patient showed radiological deterioration of nodular opacities at six months and was diagnosed to have smear negative and culture positive pulmonary tuberculosis and was treated with ATT. All other patients remained asymptomatic with negative sputum AFB in all cases during follow up. Acinar opacities had shown complete resolution in all 6 cases. The final diagnosis was pneumonic consolidation in 6 (16.7%), bronchiectasis in 8 (22.2%), localized pulmonary fibrosis in 21 (58.3%) and pulmonary tuberculosis in one (2.8%) patient.

Discussion

The study was carried out in an Armed Forces chest center where serving soldiers suspected to have pulmonary tuberculosis are referred by physicians for evaluation. It was observed that ATT is often started predominantly on radiological basis in asymptomatic patients or those with illness of short duration. These patients are evaluated in detail for disease activity and those who are diagnosed to have active pulmonary tuberculosis are given institutional supervised chemotherapy till cure is achieved.

In our study it was observed that patients were diagnosed to have pulmonary tuberculosis solely on the basis of

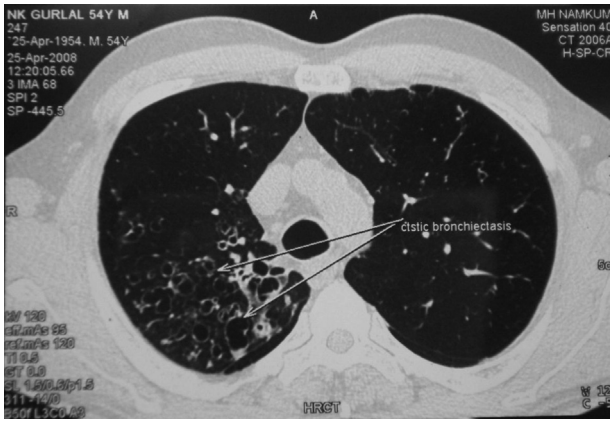

Fig. 1 – High resolution computed tomogram showing cystic lucencies in right upper lobe.