

## Does Normal Chest X ray in Patients with Chronic Cough Exclude Pulmonary tuberculosis?

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### ABSTRACT:

#### BACKGROUND:

Tuberculosis is the second infection in causing deaths from infectious agent in the world, currently in Iraq approximately 67% of new cases of Tuberculosis involve the lung only, cough is the most common symptom of pulmonary Tuberculosis, pulmonary Tuberculosis nearly always causes detectable abnormalities on chest film, but still atypical or absent radiologic findings can occur.

#### OBJECTIVE:

This study was designed to determine whether in patients with chronic cough normal chest X ray exclude pulmonary tuberculosis.

#### PATIENTS AND METHODS:

One hundred seventy two patients attending the respiratory clinic, complaining from chronic cough and they are suspected cases of tuberculosis, were enrolled in this study. A full medical history and physical examination was done then a chest X ray was ordered, for those with normal chest X ray finding (seventy seven patients), sputum smear for acid fast bacilli (AFB) ordered.

#### RESULTS:

47 females (61%), 30 males (39%) with chronic cough with females to male ratio = 1.56/1. The age ranged between 17-67, with mean age of 37.16 years. The age of males ranged between 18-67 and the mean was 39.32 years, the age of females ranged between 17-66 and the mean was 34.93 years. X ray finding were negative in all the patients. Positive AFB in sputum smear examination by microscopy was found in only one patient but with ENT examination it was proved to be a case of laryngeal tuberculosis not pulmonary tuberculosis.

#### CONCLUSION:

Normal chest x ray in patients with chronic cough excludes pulmonary tuberculosis

**KEY WORDS:** chronic cough, tuberculosis, acid fast bacilli, chest x ray

### INTRODUCTION:

Tuberculosis, is an infectious disease caused by Mycobacterium Tuberculosis<sup>(1)</sup>, it is one of the oldest diseases known to affect humans, is a major cause of death worldwide<sup>(2)</sup>.

Tuberculosis is the second leading infectious cause of death worldwide after AIDS<sup>(3)</sup>.

Cough is one of the most common symptoms for which patients seek medical attention<sup>(4)</sup>. When cough last more than 3 weeks it is called chronic<sup>(5,6)</sup>. About 11% to 18% of the general population have chronic cough<sup>(7)</sup>, with a variety causes. Inflammatory, infectious, vascular, psychogenic and malignant conditions can be diagnosed as a

cause of cough<sup>(5)</sup>. In Pulmonary Tuberculosis the most common symptom is cough<sup>(8)</sup>.

Chest radiographic abnormalities of reactivation tuberculosis classically include lesions in the apical posterior segments of upper lung and superior segments of lower lob. Cavitations may be present Primary progressive tuberculosis may manifest as hilar lymphadenopathy or infiltrates in any part of the lung. Atypical or absent radiologic findings commonly occur in immunocompromised patients but may also occur in immunocompetent patients. CT scans may identify abnormalities not yet visible on chest radiographs<sup>(9)</sup>, but in general pulmonary tuberculosis nearly always causes detectable abnormalities on chest film, although in patients with HIV infection, a normal chest radiograph occurred in 11% of patients with positive sputum cultures<sup>(8)</sup>, and in some series the incidence is 22%

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<sup>(10)</sup>, also primary endobronchial Tuberculosis can present with normal chest X rays <sup>(11,12)</sup>.

### **PATIENTS AND METHODS:**

A cross sectional study was done in the specialized center for chest and respiratory disease and in the outpatient respiratory clinic in Baghdad teaching hospital during the period 8<sup>th</sup> of August 2010 – 21<sup>st</sup> of October 2010.

One hundred seventy two patients attending the respiratory clinic of the specialized center for chest and respiratory disease or of Baghdad teaching hospital outpatient respiratory clinic, complaining from chronic cough (cough more than three weeks duration) and who are a suspected cases of tuberculosis (complaining from either or night sweat, hemoptysis, weight loss, fever, chills, fatigue, contact of new Tuberculosis case) were enrolled in this study.

A full medical history (including cough character, duration of cough and associated symptom) and

physical examination was done for each patients then a chest x ray was ordered to each of them. The finding of chest X ray was reported by four pulmonologists, for those with normal chest X ray finding (seventy seven patients), two sputum smear for AFB (by using Zeil Nelson stain) ordered (according to the WHO recommendations) .One of the sputum sample should be morning sample and all the samples were studied in the lab of the specialized center for chest and respiratory disease. For the patient with positive AFB sputum the cough was characteristic with dysphonia and the patient was send to specialist doctor in ENT disease who confirmed the case as a case of laryngeal Tuberculosis.

### **RESULT:**

**Gender ;** This study was conducted on 77 patients suspected cases of tuberculosis with chronic cough , 47 females (61% ) ,30 males (39% ).

Female to male ratio = 1.56/1 (Diagram 1).

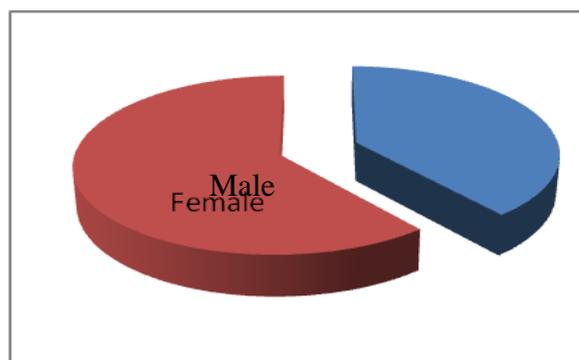


Diagram 1

**Age ;** The age ranged between 17-67, with mean age of 37.16 years. The age of males ranged between 18-67 and the mean was 39.32 years, the age of females ranged between 17-66 and the mean was 34.93 years.

**Chest X-Ray finding ;** Were negative (no suspicion of any abnormality) in all the patients ,100% .

**AFB finding ;** Positive AFB in sputum smear examination by microscopy was found in 1 patient, that mean its positive in 1.3% of the patients and negative in 98.7% of the patients (Diagram 2).

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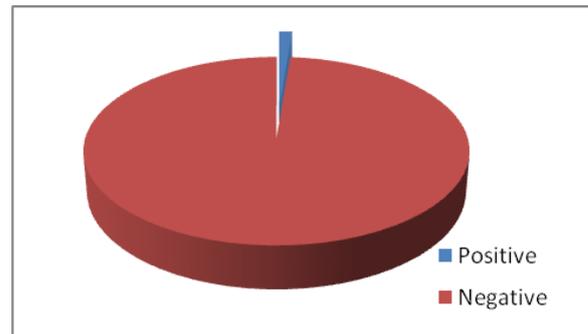


Diagram 2

### DISCUSSION:

**Cough and gender:** In our study female: male ratio was 1.56:1, (61 vs. 39 %), consistent with that reported by Irwin et al <sup>(13)</sup>, in which the female: male ratio was 1.36:1. Enhancement of cough reflex in female due to hormonal variation can explain female preponderance, Morice et al <sup>(14)</sup>, also by Dicipinigaitis PV et al <sup>(15)</sup>.

**X ray finding:** The x ray findings were normal for all the cases, and in general there is agreement that the cases of pulmonary tuberculosis nearly always they causes detectable abnormalities on chest film ,although in patients with HIV infection , a normal chest radiograph could occur <sup>(8,10)</sup>.While in Iraq the incidence of HIV infection is very low so we usually don't suspect HIV infection in those with chronic cough and normal x ray finding.

**Sputum finding ;**we get only one case with positive result of AFB but this case was diagnosed as laryngeal tuberculosis so considered as extrapulmonary Tuberculosis and those are highly infectious Tuberculosis case that has negative X ray finding<sup>(16)</sup> but not considered a case of pulmonary Tuberculosis.

### CONCLUSION:

Normal chest X ray in patients with chronic cough excludes pulmonary tuberculosis in country with low prevalence of HIV such as in Iraq.

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