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A CLINICO-DEMOGRAPHIC STUDY OF TUBERCULAR-PLEURAL EFFUSION AND IT'S BASIS OF DIAGNOSIS

Medicine

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ABSTRACT

Background: Tubercular Pleural effusion is commonest cause of Pleural effusion in India
Aim: To study the Clinico-demographic profile & Basis of diagnosis of tubercular pleural effusion.
Material & methods: Cases of Tubercular pleural effusions enrolled for ATT under DOTS for study duration of 2 years were enrolled.
Results: 224 cases of pleural effusion were enrolled. The average age was 37years with male preponderance. Right side effusion (n=141), Left sided (n=68) and only 15 Bilateral were present. Basis of diagnosis in majority was Pleural fluid tests. In 48 patients Gene Xpert MTB test had been done with only 10 reporting Presence of M.Tb .
Conclusion: the basis of diagnosis in all cases of tubercular pleural effusion was various tests of pleural fluid and not merely presence of effusion in radiological tests

KEYWORDS

Tubercular pleural effusion, Adenosine Deaminase level, EPTB

INTRODUCTION

Tuberculosis (TB) is a chronic infectious disease.[1]Tuberculosis manifests most commonly as Pulmonary tuberculosis (85% cases) and in others as Extra Pulmonary Tuberculosis (EPTB).[1]

EPTB may clinically present as pleural effusion, TB of lymph node, Abdomen, Bone, Neurological, Genitourinary tract. Pleural tuberculosis has been reported in approximately 5% of patients of TB.[2] Pleural effusions are the commonly occurring EPTB, second only to the lymph node tuberculosis.[3]

Clinical presentation of cases of EPTB are insidious in onset, atypical in presentation and their diagnosis is often challenging, not only due to difficulty in obtaining samples for testing, but also due to decreased sensitivities and predictive values of tests of tuberculosis for them, as compared to the sputum based tests in Pulmonary TB, because the bacillary load is less in the EPTB samples compared to sputum samples.

Hence, EPTB deserves an increasing focus for proper management of TB cases. Medical colleges working under the framework of Revised National Tuberculosis Control Programme (RNTCP) have expertise and necessary facilities to diagnose, treat and monitor EPTB cases and can play a major role in TB control program.

This study describes Clinico-demographic profile of tubercular pleural effusion patients enrolled for treatment with DOTS under RNTCP in a Government Medical College of Central India. The basis of diagnosis of these tubercular pleural effusion cases, before they are started on treatment has been studied, hence, reflecting the utilization of expertise and facilities.

MATERIALS AND METHODS

This study was conducted at the Tuberculosis and Respiratory medicine department of a government medical college located in Central India.

Study design & duration: A cross sectional cohort analysis. One year Retrospective data and one year prospective data from the start of study

Study population: The total number of tubercular pleural effusion cases registered at TU of Medical college for DOTS treatment for a retrospective period of four quarters and prospectively for another 4 quarters from date of starting study were enrolled for the study.

Method: The enrolled cases were studied for the demographic data of age, sex, area of residence. Clinical profile of patient with regards to the side of pleural effusion, the type of patient whether, new (treatment naïve) or retreatment category was recorded. The basis of diagnosis of the tubercular pleural effusion was studied in this study. The Pleural effusion could have been diagnosed as tubercular by any of the ways, such as on clinical basis by the help of radiological tests, Cyto-biochemical tests of pleural fluid analysis having pleural fluid profile of Lymphocyte rich exudates, Adenosine Deaminase (ADA) levels, or by the Gene Xpert MTB/Rif (CBNAAT) test of pleural fluid.

The data collected was tabulated and analyzed for descriptive analysis using SPSS software version 17.0 on a personal computer.

The study was approved by Institutional Ethics Committee wide letter No: IEC/2016/1900.

RESULTS

A total of 224 cases of tubercular pleural effusion were enrolled for the study, out of these 158 were New (treatment naïve) and 66 were Retreatment cases.

Ninty nine cases were resident of Jabalpur district itself and 125 were residents of outside Jabalpur. Sixty three females and 161 male patients were enrolled.

Majority of patients had right sided pleural effusion (n= 141), 68 had left side Pleural effusion and only 15 had bilateral pleural effusion. The average age of patient was 37.1 years.

Most of the cases had been diagnosed by Cyto-Biochemical test of pleural fluid Profile containing tests of ADA level, Total leucocyte count, Differential Lecucocyte count, Pleural Fluid protein level. Only 4 cases were started on treatment on the basis of positive smear for AFB report. Among these 224 cases Gene Xpert MTB/Rif assay (CBNAAT) test was done in only 48 patients. Ten (20.8%) cases were positive for presence of *Mycobacterium tuberculosis* and three also reported Rifampicin resistance in this test. All 3 MDR TB cases belonged to retreatment category with past history of ATT intake.

Among the studied population, none of the patient had been advised treatment only on the basis of clinical diagnosis of tubercular pleural effusion , supported by presence of Pleural fluid in radiological tests such as Chest Radiography or Sonography of thorax.

DISCUSSION

In the developing countries like India the most common cause of exudative pleural effusion is TB, accounting for about 30-80% cases of pleural effusions, whereas, this etiology is comparatively very less in Western world.[4] Tubercular pleural effusion are known to occur in younger population, in the 2nd,3rd, 4th decade of life.[5] In our study also the mean age of patient was found to be 37 years with male preponderance .[6-7]

The patients of pleural effusion have least chances of tuberculosis on bilateral side. Right sided tubercular pleural effusions are commoner than the left side.[5,8] Similar finding were present in our study also with maximum number of cases with right sided effusions and only 6.7 %

of patients had bilateral pleural effusion.

Most cases of TB Pleural effusion are diagnosed with pleural Fluid Cyto- biochemical test, Pleural biopsies showing granulomatous lesions, Mycobacterialogical cultures and now a days, using TB PCR/CBNAAT tests. Pleural effusions in TB usually are Lymphocytic exudates in character.[9]

Procedures like pleural biopsy done either using close needle biopsy or Thoracoscopic guided biopsies are invasive, technically challenging and hence, practically have limited application in uncomplicated pleural effusion. Therefore its usage in cases of tubercular pleural effusion are still less.

Pleural fluid interferon Gamma levels and ADA level are used as important biomarkers for diagnosis of pleura TB.[10-11] ADA measurement test is a simple, cheap and lesser time consuming test, having clinical importance in countries like ours, where most of the pleural effusion are tuberculous. It may be elevated in other conditions also, but normal level of ADA should guide for workup of alternative causes of pleural effusion.[12]

Gene Xpert MTB/Rif test which is a type of molecular based test ,not only detects the presence of Mycobacterium in the sample but also reports Rifampicin resistance, if the patient is MDR TB. The positivity rate of gene expert in diagnosis is less than 25%, but has high specificity i.e. if the test is positive in a specimen, it indicates the confirmation of tuberculosis pleural effusion.[13] The Index EPTB guidelines for diagnosis of tuberculosis pleural effusion also do not recommend it in routine for every patient of tuberculous pleural effusion.[14] In our study, we had found approximately 20% case which were detected for *M.tb*. So in case where the diagnosis of pleural tuberculosis is doubtful, it can be used as an useful test; if it comes positive the diagnosis can be confirmed by the clinician.

As this study is a type of case record data only it is limited, in recommending patient's work-up criteria for diagnosing tubercular Pleural effusion, although it is desirable to have more cases of EPTB to be diagnosed by the medical colleges under RNTCP. This study shows that the cases of tubercular pleural effusions were diagnosed using pleural fluid tests and not started on treatment by merely getting evidence of pleural effusion in radiological tests in the medical college.

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