Research Paper Medical Science

Prevalence of Pulmonary Tuberculosis Among Respiratory Symptomatic Subjects in Patients Presenting in the out Patient Clinic at a Tertiary Health Care Centre in Rohilkhand Region.

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ABSTRACT

Aims and objectives : To determine the prevalence of pulmonary tuberculosis among respiratory symptomatic subjects in an out-patient primary health unit.

Methods : A prospective study was conducted in the department of pulmonary medicine, Rohilkhand Medical College and Hospital, Bareilly. The suspected patients were subjected to a complete set of detailed history and examination . Socio-demographic data were collected during the history examination. The RSI (respiratory symptomatic individuals) provided sputum specimens for detection of acid fast bacilli . The patients sputum was examined under a fluoroscent microscope using an auramine rhodamine stain in the RNTCP certified designated microscopy centre(DMC) laboratory by the experienced lab techinicians.

Results : Among the 110 patients with reported respiratory symptoms studied for more than two weeks were enrolled into the study from november 2014 to november 2015. Amongst the cases studies 30 individuals reported positive for AFB(acid fast bacilli) on sputum smear microscopy.

Conclusions : The prevalance of pulmonary tuberculosis is high in the rohilkhand region . The patients who present with the respiratory symptoms esp. with the cough with expectoration for more than 2 weeks with lesions on the chest x ray should be considered for pulmonary tuberculosis on priority basis so as to initiate the treatment as soon as possible and to minimize the risk of spread of the infection.

KEYWORDS : Prevalence, Active case finding, Tuberculosis, Pulmonary tuberculosis, Respiratory symptomatic.

Introduction

Tuberculosis continues to be a major cause of morbidity and mortality worldwide. There are an estimated 8.8 million incident cases of tuberculosis globally.

India has the highest burden of TB in the world, an estimated 2 million cases annually. This accounts for approximately one fifth of the global incidence of TB.It is estimated that about 40% of the Indian population is infected with TB bacteria. The vast majority of infected people have latent TB rather than active TB disease. It is also estimated by the World Health Organisation (WHO) that 300,000 people die from TB each year in India.For the 12th five year plan for 2012 – 2017, the vision of the government was for a TB free India, through achieving Universal Access by provision of quality diagnosis and treatment for all TB patients in the community.

The overall budget required in 2012 – 2017 to achieve this Universal Access vision, to save 750,000 lives from TB, and to control MDRT TB, was estimated to be Rs. 5825 crore ($1.17 billion) over the period 2012 – 2017.

The bacterium that causes TB is called Mycobacterium tuberculosis. Inactive tuberculosis means that one can even unconsciously and unknowingly acquire the bacteria for tuberculosis within them but not even know about it because it is inactive. Whereas, active tuberculosis is the start of the bacteria developing, and the signs and symptoms begin to be visible. This is when tuberculosis is active within a person, and is a serious issue leading to even more serious results. Although the TB bacteria can infect any organ (e.g., kidney, lymph nodes, bones, joints) in the body, the disease commonly occurs in the lungs.

Common symptoms include:

- coughing that lasts longer than 2 weeks with green, yellow, or bloody sputum
- weight loss
- fatigue
- fever
- night sweats
- chills
- chest pain
- shortness of breath
- loss of appetite

Systematic screening for active TB is defined as the systematic identification of people with suspected active TB, in a predetermined target group, using tests, examinations or other procedures that can be applied rapidly. Among those whose screening is positive, the diagnosis needs to be established by one or several diagnostic tests and additional clinical assessments, which together have high accuracy. Systematic screening in high risk groups is a possible complement to efforts to improve the patient-initiated pathway to TB diagnosis (that is, diagnosing TB among people who actively seek care with TB symptoms, also called "passive case-finding").

Estimating the burden of respiratory symptomatic individuals (RSI) and pulmonary TB in the prison system is important to determine fund allocation in this high-risk setting. The main objective of this study was to determine the prevalence of RSI and possible predictors associated with them, and the rate of pulmonary TB through active case finding (ACF) in suspected patients of tuberculosis.

Materials and Methods

The study was conducted on patients reporting at the Department of Pulmonary Medicine at OPD / IPD clinic in the Bareilly district. Staining was done in the DOTS/ Microscopy centre of the Department of Pulmonary Medicine, Rohilkhand Medical College, Bareilly .The Institutional Ethical Committee permission was taken. 2 sputum samples i.e. one spot and one morning sample were taken from patient for smear examination. The duration of study was one year ie: from November 2014 to November 2015.

After collecting spot sample, individuals were provided with pre-labeled sample containers for the collection of morning sample at home. New unscratched slides labeled with study numbers were used for smear preparation. The smears were stained by Ziehl Neelsen and Auramine O staining. Zeihl Neelsen and Auramine O staining technique

and smear gradings were done as per RNTCP Technical Manual Guidelines as mentioned in the table below*.

LED fluorescent microscopy(400x:1 length =40 fields=200 HPF) RNTCP staining grading	IUALTO/WHO scale (1000x field = HPF) grading Grading	Minimum number of fields to be examined Minimum number of fields to be examined
Zero AFB /length No AFB per 100 oil immersion field	Negative negative	40 100
1-19 AFB /length 1-9 AFB per 100 oil immersion field	Scanty Scanty	40 100
20 -199 AFB /length 10-99 AFB per 100 oil immersion field	1+ 1+	40 100
5- 50 AFB /I field on average 1-10 AFB per oil immersion field	2+ 2+	20 50
>50 AFB /I field on average >10 AFB per oil immersion field	3+ 3+	08 20

*as mentioned in the manual for sputum smear Fluorescent microscopy(RNTCP) .

** The module for Laboratory Technicians(RNTCP) pg no 22* .

As the first step, patients reporting cough for over 2 weeks were enrolled. They were then asked to sign the written consent form. For purposes of this study a diagnosis of pulmonary TB was defined as at least one positive sputum smear or a positive culture for *Mycobacterium tuberculosis*.

The prevalence of RSI and pulmonary TB were calculated and associations with potential predictor variables were assessed with the chi-square test when appropriate, and multivariate logistic regression was used to assess the independent effects of each covariate. Data were analyzed using SPSS (v.12.0, SPSS Inc, Chicago, IL, USA).

Results

Between November 2014 to November 2015 , a total of 110 patients were studied and were included in this study. Their median age was 27 years (range: 18–67 years old). Patients included in the study were classified into for age, race, marital status, education, employment.

Among the 110 patients, 90 patients had reported respiratory symptoms for over 2 weeks. All patient who had no resolution of their respiratory symptoms following broad-spectrum antibiotic therapy provided 2 sputum specimen for smear examination. Among the 110 RSI, 30 (27.2%) were diagnosed with pulmonary TB.

Amongst these 90 patients nearly 80 patients had a complaints of cough with expectoration(88%), Shortness of breath in 44 (48%), chest pain in 36 (40%), hemoptysis in 10 (11%), fever with / without chill and rigor in 62 (68.8%)was seen.

Amongst the 90 cases studied 22 patients were 3+, 44 patients were 2+ , 14 patients were 1+ , 10 patients were scanty.

Discussion

An important epidemiological challenge for TB control in india is inadequate and late case detection . Understanding the factors that underpin delays in accessing TB services as well as delays in receiving prompt diagnosis and treatment is central to effective control [(1).] In this review, results of qualitative and quantitative analyses indicate that patient and diagnostic delays in TB diagnosis and care are mediated by a constellation of individual patient factors and health systems factors.

As noted by Glanz *et al*[(2)] individual-level factors include demographics, knowledge, attitudes, behaviors, beliefs, perceived barriers, skills, gender, level of education, socioeconomic status and so on. Health systems factors include factors that operate within the health system that promote or hinder patients' access and treatment [(2)] . These include health system financing, health services delivery, resources and support systems, governance community inputs and human resources [(3)]. At the individual level, results in the review showed that socio-demographic, mostly economic factors (lack of health insurance), rural residence, gender, educational level and low knowledge of TB are important determinants of patient delay.

The review showed that rural residence was an important determinant of patient delay in seeking and receiving care for TB. Programs such as DOTS have proven successful in detecting and treating TB infection in india. However, concerns have been raised regarding the impact of such programs on the most vulnerable members of the populations, particularly the rural poor population. In spite of the progress made by TB control programs, "the prevalence of active PTB in india , has in fact, increased" · Thus, greater focus on equitable distribution of TB-related resources and improved targeting of vulnerable rural populations is of central importance in the control of TB ·

Another cultural aspect of TB diagnosis and treatment delay is the stigma that is attached to the disease, which drives individuals to hide their condition from others, thus hindering them from accessing available diagnosis and treatment services. One study which focused on public awareness about TB concluded that approximately 72% of respondents held some stigmatizing attitudes towards the disease. Increasing public knowledge and awareness of TB as a disease that can be diagnosed and successfully treated if detected early is important for TB control efforts in the country · Available evidence shows that interventions to reduce the TB stigma can be effective if designed to empower individuals with TB to resist stigmatizing judgments, while working to change norms about the disease ·

Conclusion:

TB symptoms should be better explained to the population and healthcare professionals should be better trained to both reduce such delays and initiate treatment as early as possible. Patient and diagnostic delays in TB care are mediated by individual and health facility factors. Population-based interventions that seek to reduce TB stigma and raise awareness about the benefits of early diagnosis and prompt treatment are needed. Policies that remove patients' financial barriers in access to TB care, and integration of the informal care sector into TB control in urban and rural settings are central factors in TB control.

The prevalance of pulmonary tuberculosis is high in the rohilkhand region . The patients who present with the respiratory symptoms esp. with the cough with expectoration for more than 2 weeks with lesions on the chest x ray should be considered for pulmonary tuberculosis on priority basis so as to initiate the treatment as soon as possible and to minimize the risk of spread of the infection.

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