SHORT COMMUNICATIONS

PRESCRIPTION PATTERN OF TUBERCULIN SKIN TEST (TST) IN A TEACHING HOSPITAL

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ABSTRACT

Background: Tuberculin skin test (TST) is one of the tools for the identification of latent tubercular infection and is an ancillary test for diagnosis of active tuberculosis.

Aims & Objective: The objective of this study was to assess specialty department wise prescription of Tuberculin Skin Test (TST) in a government teaching hospital.

Material and Methods: Considering resource constraint and feasibility, one month was randomly selected during 2012 and two working days in each week were systematically covered i.e. Mon-Tue (first week), Wed-Thus (second week), Fri-Sat (third week) and again Mon-Tue (fourth week). Selected information of all patients reporting to receive TST on these days was recorded on a pre-structured proforma. TST was administered by a single investigator using standard protocol and results observed between 48-72 hours.

Results: A total of 372 ambulatory suspect TB patients reported to received TST with mean age of 25 years (±18.13); female constituted 52.4%. Specialty department wise prescription of TST was as follows: paediatrics (29.3%); general medicine (18.0%); OBG (15.9%); surgery (12.9%); chest and TB (11.3%), orthopaedics (8.1%) and others (4.6%). The results of 227 (61.02%) patients who returned for follow up were grouped into < 10 mm (54.0%) and ≥ 10 mm (45.79%).

Conclusion: Proportion of age distribution of patients in study sample was found to be similar in comparison to population structure of India. Paediatric (up to 14 years) patients were in majority (29.3%) amongst study samples where TST results could be of some significance.

KEY-WORDS: Tuberculosis; Latent Infection; Tuberculin Skin Test; Teaching Hospital

Introduction

Tuberculosis (TB) is an air borne infectious disease. Each year, there are around nine million new cases of TB and close to two million deaths. Since it is a global public health problem, all countries are affected, but 85% of cases occur in two continents-Africa (30%) and Asia (55%), while India and China alone account for 35% of all cases. The Stop TB Partnership has set an ambitious target to halve TB prevalence and death rates by 2015, compared with 1990 levels, thus paving the way for the elimination of TB (defined as less than one case of TB disease per one million population per year) by 2050.[1]

TB is mainly a disease of adults and affects more men than women. In regions where the transmission of M. tuberculosis has been stable or increasing for many years, the incidence rate is relatively high among infants and young adults and most cases are due to recent infection or re-infection.[2] As transmission falls, the burden of illness shifts to older adults and a higher proportion of cases arises from the reactivation of latent infection. Therefore, in the countries of Western Europe and North America that now have low incidence rates, indigenous TB patients tend to be elderly, whereas patients who are immigrants from high-incidence countries tend to be young adults.[3] Tuberculosis (TB) can involve any organ system in the body with pulmonary tuberculosis the most common presentation while extra pulmonary tuberculosis (EPTB) constitutes 15%-20% of total case load (immuno-competent) and more than 50 percent in HIV infected patients.[4]

The evaluation of TB suspect range from medical history, physical examination, test for M. Tuberculosis infection, radiological investigation to bacteriologic examination of clinical specimen.

Tuberculin skin test (TST) or Monteux test is one of the tools for the identification of latent TB infection and is an ancillary test for diagnosis of active tuberculosis. Tuberculin test positivity indicates that the patient had a prior infection, either recent or remote. Given that the life time risk of developing active TB once infected is less than 15% and the positivity is likely to persist for years after the infection, the positive predictive value of the test in confirming active disease is low. Despite its low predictive value, TST often plays a significant role in clinical decision making in complex situation.[5] We carried out a prospective descriptive study to determine proportion of TST prescribed by various specialty departments in a teaching institution.

Materials and Methods

The study was conducted in one of the publically funded teaching institution of northern India which provides specialist's tertiary care services to patients largely belonging to lower/ middle socio economic strata of both urban and rural setting. Currently, it caters to an avg. daily outpatient (OPD) attendance of 5000 patients and more than 80,000 annual admissions supported by 1750 in-patient beds. It was noticed that quantum of TST administered at this centre had been rising over the years from monthly average of 1069 during 2009, 1115 (2010) and 1120 (2011), a trend though similar to rise in overall OPD attendance. However, there was no information on proportion of TST prescription from various specialty departments as this variable is not captured in routine recording and reporting. It is noted that newer generation test for diagnosis of latent TB infection like blood based interferon-gamma release assays, Quanti FERON-TB, Quanti FERON-TB Gold test and T spot-TB test are not available in this setting.

Considering feasibility, one month was randomly selected during the year 2012 and two working days in each week were systematically covered i.e. Mon-Tue (first week), Wed-Thus (second week), Fri-Sat (third week) and again Mon-Tue (fourth week). Selected information (specialty, age, gender, diameter of wheal) of all suspect TB patients reporting to receive TST on the selected days was recorded on a pre-structured proforma. TST was administered by a single investigator using standard protocol and results observed between 48-72 hours.[6]

Results

A total of 372 ambulatory suspect TB patients reported to received TST with mean age of 25 years (±18.13) (table-1); female constituted 52.4% of study sample. Specialty department wise prescription of TST is shown in table-2. The results of 227 (61.02%) patients who returned for follow up were grouped into < 10 mm (54.0%) and ≥ 10 mm (45.79%).

Table-1: Comparison of Age Distribution of Study Sample and Population of India

Age-Group (years)	Population India (2011)[11]	Study Sample
Up to 14	29.1%	33.6%
15-59	62.6%	59.4%
60+	8.3%	7.0%
Median	25.47	22

Table-2: Specialty Department wise Prescription of TST in a Teaching Hospital

Department	N (%)
Paediatrics	109 (29.3)
General medicine	67 (18.0)
Obst. and Gynaecology (OBG)	59 (15.9)
Surgery	48 (12.9)
Chest and TB	42 (11.3)
Orthopaedics	30 (08.1)
Others	17 (04.6)

Discussion

No country has ever undertaken a nationwide survey of TB incidence because of the large sample sizes required and associated major logistic and financial challenges. Globally, data on true burden of tuberculosis (TB) infection and disease according to age and gender stratification is not available.[7] But we do have estimates based on mathematical modeling that are reasonably sufficient for managerial decision required for TB control. Approximately one-third of the world's population is infected with mycobacterium tuberculosis. In USA, about 3.2% population is infected with incidence of TB as 3.4/100,000 persons.[8]

In contrast, about 40% of Indian population is infected with TB bacillus. The incidence and prevalence rate of all cause TB in India is 168 and 249/100,000 persons respectively. It is often stated that almost 70% of TB patients are aged between

15-54 years. Nearly two thirds of cases are male albeit with higher toll among young females as more than 50% of them occur before 34 years of age. The actual burden of paediatric (0-14 years) TB is not known due to diagnostic difficulties but has been assumed that 10% of total TB load is found in children.[9] Similarly, TB in elderly is frequently associated with other chronic diseases, clinical presentation is atypical and diagnosis more difficult.

In current context, epidemiologically, low burden TB countries are treating latent infection in high risk individual and disease case while high burden TB countries have primary strategy towards treating active disease with certain exception. Caution is needed in interpreting TST reaction including other factors like immunity, co-morbid condition, contact history, age, epidemiological, clinical characteristics of TB in the community and the BCG status of the subjects, especially children. It has been estimated by WHO that less than 50 percent of all cases are currently diagnosed and treated across the globe.[10] In most of the industrially advanced countries, the data on disease and death are obtained from disease notification under national tuberculosis organization. This is not the case in developing country like India with limited resources, challenging circumstances, large under-diagnosis, and in-effective surveillance system, however on an encouraging notes TB has been made notifiable disease recently in the country since substantial proportion of patient visit private sector.

Proportion of age distribution of suspect TB patients in study sample was found to be similar in comparison to population structure of India. Paediatric (up to 14 years) patients were in majority (29.3%) amongst study samples where TST results could be of some significance but not amongst the rest. Some information especially history of old or treated TB disease, HIV status and treatment with steroids was not available. It is author perception, which may be possibly amplified, that clinicians often prescribe TST mechanically as routine investigations without considering the merit of case (e.g. new or old treated case of Koch's etc), age of patient or other relevant factors since it happens to an inexpensive test. Probably, with TST results in hand, physician feel more confident clinically in dealing with a suspect TB patient who presents a diagnostic challenge. However, no further conclusion is being drawn on the element of utility or over-prescription of TST in this setting, albeit it does throw some light in this direction. There was no related literature available on Pubmed search for comparison purpose. In conclusion, study provides snap shot of specialty wise pattern of TST prescription in a teaching hospital of northern India with a limitation of non-generalizability of study findings.

Conclusion

Proportion of age distribution of patients in study sample was found to be similar in comparison to population structure of India. Paediatric (up to 14 years) patients were in majority (29.3%) amongst study samples where TST results could be of some significance.

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