



ISSN: 0976-3031

Available Online at <http://www.recentscientific.com>

CODEN: IJRSFP (USA)

International Journal of Recent Scientific Research
Vol. 9, Issue, 6(F), pp. 27598-27600, June, 2018

**International Journal of
Recent Scientific
Research**

DOI: 10.24327/IJRSR

Research Article

EPIDEMIOLOGICAL STATUS OF TUBERCULOSIS IN WEST UTTAR PRADESH

Anurag Tewari¹, Ajab Singh Choudhary² and A. K. Upadhyay³

¹Department of Agriculture, School of Sciences, Noida International University, Gautam Budh Nagar, Uttar Pradesh - 203201, India

²Department of Micro Biology, Santosh Medical College, Ghaziabad, Uttar Pradesh, India

³Department of Public Health & Epidemiology, G. B. Pant University of Agriculture & Technology, Pantnagar, India

DOI: <http://dx.doi.org/10.24327/ijrsr.2018.0906.2292>

ARTICLE INFO

Article History:

Received 8th March, 2018

Received in revised form 27th

April, 2018

Accepted 16th May, 2018

Published online 28th June, 2018

Key Words:

Tuberculosis, Lowenstein Jensen (LJ) media, petroff's method

ABSTRACT

Status of TB was elucidated through examination of patients attending OPD/IPD and DOTs center at Santosh Medical College / Hospital, Ghaziabad Uttar Pradesh for the presence of tuberculosis infection. The numbers of female patients were 45 (30%) and male patients were 105 (70%). Sixteen (10.3 %) smears were positive for acid fast bacilli (AFB). All the 150 samples were decontaminated by modified petroff's method and cultured on Lowenstein Jensen (LJ) media. Our results showed that the entire 16 (10.3%) sample which were smearing positive were also culture positive. Of the 134 samples which were smear negative 5(3.3%), found to be culture positive. All the 21 isolated strains were confirmed by standard biochemical tests. On the basis of biochemical reactions, 07 were humans' type mycobacterium.

Copyright © Anurag Tewari et al, 2018, this is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution and reproduction in any medium, provided the original work is properly cited.

INTRODUCTION

Global tuberculosis is stunning as in 1993, the World Health Organization (WHO) in an unprecedented step declared tuberculosis a global emergency. Tuberculosis is the major public health problem therefore; World Health Organization (WHO, 2016) emphasized both the large death toll from tuberculosis, which kills more people than any other single infections agent, and the curability of the disease.

The World Health Organization South-East Asia Region, with an estimated 5 million prevalent and about 3.5 million incident cases of tuberculosis in 2010, carries about 40% of the global burden of the disease. Five of the eleven member states of the region are among the 22 TB high-burden countries in the world; with India alone accounting for more than 25% of the world's incident cases (TSEAR, 2012). In July 2011, national consultations to estimate the TB burden took place. According to TSEAR, 2012, revised estimated prevalence and incidence rates of all forms of tuberculosis were respectively, 256 and 185 per 100,000 populations in 2010³. However, current WHO estimates for TB incidence, prevalence and mortality have not yet been officially approved by the Ministry of Health and Family Welfare, Government of India and should therefore, be

considered provisional. The notification rate of all forms of TB and new smear-positive cases were respectively 109 and 51 in 2010³. Therefore, study was conducted to directly detect the mycobacterium tuberculosis complex in the smear negative as well as smear positive samples.

MATERIALS & METHODS

A descriptive, cross sectional study was conducted with sample size 150 at Department of Microbiology, Santosh Medical College, Ghaziabad, Uttar Pradesh, India during January 2017 to December 2017. Four groups were formed, one with patients having chronic cough for more than 2 weeks, second patients having fever for more than 2 weeks, third patients having cough with or without sputum and fourth with other sign and symptoms of tuberculosis. Sputum sample for smear and culture were collected as per the RNTCP guideline. Two sputum samples of 5 ml quantity were collected directly in to the sterile container (SPOT – MORNING) as per national standard protocol. All sputum specimens submitted to the tuberculosis cultures were subjected to a harsh digestion and decontamination procedure that liquefies the organic debris and eliminates contaminants. Thereafter, Smear prepared and examined for presence of M. tuberculosis. Positive cultures

*Corresponding author: Anurag Tewari

Department of Agriculture, School of Sciences, Noida International University, Gautam Budh Nagar, Uttar Pradesh - 203201, India

with typical colonies as rough, buff, tough, non-pigmented (cream colored) and slow – growers were confirmed by Ziehl & Neelsen, niacin and catalase test (WHO, 2016).

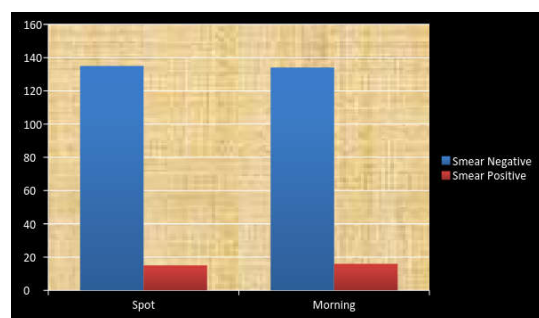
RESULT

A total of 134 cases of clinically suspected tuberculosis infection attending OPD/ IPD and DOTs centre at Santosh Medical College / Hospital, Ghaziabad Uttar Pradesh were studied. The numbers of male patients were 105 (70%) and female patients were 45 (30%). Table 1 shows that the averages mean age of the male patients were 38.15 years and the 39.77 years for female’s patients. 43.3% of the total patients had chest pain and 36.7% had infection by contact of infected person followed by hemoptysis (13.3%). The patients also showed loss of appetite (51.5%).

Table 1 Clinical profile of patients

Demographic/ Clinical features	No	%
Total No of suspects	150	
Sex		
Male patients	105	(70%)
Female patients	45	(30%)
Mean age		
Male patients	38.15 years.	
Female patients	39.77 years.	
Cough		
>2 weeks	130	(86.7%)
<2 weeks	20	(13.3%)
Fever		
>2 weeks	110	(73.3%)
<2 weeks	40	(26.7%)
Chest pain	65	(43.3%)
Breathlessness	80	(53.3%)
Hemoptysis	20	(13.3%)
History of contact	55	(36.7%)
Loss of appetite	100	(66.6%)

Graph showing comparison between spot and morning sample



Out of 150 samples, 16 (10.3 %) smears (Table-2) were positive for acid fast bacilli (AFB). In spot sample examination, 15 (10%) were smear positive while on the other hand, in the morning samples, 16 (10.3%) were smear positive. The samples positive for smear collected at spot were also positive for sample collected early in the morning. The isolation rate of *M. tuberculosis* was more (10.3%) in morning samples as compared to spot (7%). Majority of patient who were positive only in morning sample had sputum smear grade as scanty, 1+ and 3+.

Table 2 Z. N. Smear Microscopy Results with Grading

Sample	Smear Positive	Smear Negative	Smear Grading Sputum Positive			
			Scanty	1+	2+	3+
Spot (150)	15 (10%)	135 (90%)	-	04 (26.7%)	06 (40%)	05 (33.3%)
Morning (150)	16 (10.3%)	134 (89.7%)	01 (6.2%)	05 (31.2%)	04 (25%)	06 (37.5%)

Table 3 Comparison of Z. N. Smear Positivity and Culture

ZN Smear	Positive	Culture		Total
		Positive	Negative	
	16(10.3%)	NIL		16(10.3%)
	05(3.3%)	129(86%)		134(89.3%)
	Total	21(14%)	129(86%)	150

All the 150 samples were decontaminated by modified petroff’s method and cultured on Lowenstein Jensen (LJ) media. Out result showed that the entire 16 (10.3%) sample which were smearing positive were also culture positive. Of the 134 samples which were smear negative 5(3.3%) samples were culture positive.

All the 21 isolated strains were confirmed by standard biochemical tests. On the basis of biochemical reactions, 07 were humans’ type mycobacterium tuberculosis and 03 strains were non tuberculosis mycobacterium.

DISCUSSION

Among the communicable diseases, tuberculosis (TB) is the second leading cause of death worldwide, killing nearly 2 million people each year. It is estimated that about one third of the world population are infected with TB (2 billion people) and about 10% of this figure will progress to disease state most cases are in the under developed countries of the world (WHO, 2016).

In the present study the clinical history of the patients showed that number of male patients 105(70%) was higher as compared to that of female patients 45(30%). The global data on tuberculosis prevalence has shown that the prevalence of *M. tuberculosis* is similar in males and females until adolescence; but after that it appears higher in males (Lienhardt, et al., 2010). Several studies have explored reasons behind the gender bias in tuberculosis susceptibility and found that fear and stigma associated with TB makes greater impact on women than on men (Grosset, 1980). The male female ratio for TB suspects may nevertheless reflect gender – related barrier in the access to TB services or suggested by other research and anecdotal evidence (Lienhardt, et al., 2010).

Our result showed that 86.7% of patient had coughed more than two weeks. Earlier study done in 2002 in a different setting showed 47% increase in sputum positive cases among chest symptomatic with >2 weeks cough (Grosset, 1980). Also most of the patients showed chest pain and loss of appetite followed by hemoptysis and history of contact.

In the present study the smear positive rate was approximately higher for men than for women suggesting that the sex differences reflects biological phenomena rather than lower access to TB diagnosis for women. These may include not only true differences in TB incidence, but also differences in the bacillary load of sputum specimen and thereby in the sensitivity of smear examination (Zhang, and Telenti, 2016).

For developing countries, the smear microscopy to detect acid fast bacilli (AFB) in clinical specimens by Z.N. staining is likely to remain the only cost effective tool for diagnosis patients with TB and to monitor the progress of treatment. The Over all sensitivity of the smear has been reported to range from 22% to 80%. An important factor influencing sensitivity is the minimum amount of sputum submitted to the laboratory. In a long – term study, the sensitivity of a concentrated smear

from >5 ml of sputum was significantly greater than the sensitivity of a smear processed regardless of volume (Zhang, and Telenti, 2016).

CONCLUSION

TB is preventable and curable, but it can lead to death if no actions are taken. In order to prevent transmission, it is necessary to identify infectious TB patients in a timely manner. Suspected TB persons with persistent cough and expectoration lasting more than two weeks, need to be diagnosed promptly. Identification of subjects with latent tuberculosis infection is also necessary since dormant bacilli can be reactivated and cause disease, especially in HIV patients. Another measure to prevent infection is the vaccination of newborn, unexposed children. Early diagnosis plays a vital role in control of tuberculosis. Diagnosis of mycobacteria infections however remains an enigma. Although acid fast bacilli microscopy, and conventional Lowenstein Jensen culture remains the cornerstone of the diagnosis of tuberculosis, these traditional bacteriological methods are either slow or their sensitivity is quite low especially with clinical samples that contain small number of organism. This can effect treatment by either delaying it or causing inappropriate empiric therapy for tuberculosis to subjects without mycobacterial infections or with typical mycobacteria.

Bibliography

1. Grosset, J. (1980). *Bacteriologic basis of short-course chemotherapy for tuberculosis*. *Clin Chest Med*. 1(2): pp-231-241.
2. Lienhardt, C., Vermon, A. and Raviglion, M. C. (2010). New drugs and new regimens for the treatment of tuberculosis. Review of the drug development pipeline and implication for national programme. *Curropin pulm med*.16:186-93
3. Tuberculosis in the south East Asia Region (TSEAR). The regional report 2012, country profile/ India, pp-68.
4. Tuberculosis in the south East Asia Region (TSEAR). The regional report 2012, pp-1.
5. WHO (2014). Tuberculosis control program: frame work for effective tuberculosis control. Geneva: world health organization. pp-294-301.
6. World Health Organization, (2016) *Treatment of tuberculosis. Guidelines*. WHO/HTM/TB. Geneva, Switzerland.
7. Zhang, Y. and Telenti, A. (2016). *Genetics of drug resistance in Mycobacterium tuberculosis*, in *Molecular Genetics of Mycobacteria*, Hatfull, GF and Jacobs, WR, Jr., Editors., ASM Press: Washington, D.C. pp-147-151.

How to cite this article:

Anurag Tewari *et al.* 2018, Epidemiological Status of Tuberculosis In West Uttar Pradesh. *Int J Recent Sci Res*. 9(6), pp. 27598-27600. DOI: <http://dx.doi.org/10.24327/ijrsr.2018.0906.2292>
