



Pakistan Journal of Life and Social Sciences

www.pjlss.edu.pk

Pulmonary Tuberculosis: Still Prevalent In Human in Peshawar, Khyber Pakhtunkhwa, Pakistan

Sultan Ayaz^{1,*}, Tahira Nosheen¹, Sanuallah Khan¹, Shahid Niaz Khan¹, Liala Rubab¹ and Masood Akhtar²

¹Department of Zoology, Kohat University of Science and Technology, Kohat, Pakistan

²Department of Parasitology, University of Agriculture, Faisalabad. Pakistan

ARTICLE INFO

Received: Feb 12, 2012
Accepted: May 01, 2012
Online: May 14, 2012

Keywords

Tuberculosis
Prevalence
Human
Pakistan

ABSTRACT

Tuberculosis (TB) continues a persistent challenge to health and development worldwide. A total of 153 sputum samples were collected from Khyber Teaching Hospital Peshawar Khyber Pakhtunkhwa, from patients suspected for pulmonary TB and were studied under microscope. Of the total samples collected, 49 (32.02%) were positive for TB. Female (33.33%) were more infected than male (30.66%). High occurrence (68.96%) was recorded in age group 10-20 year, followed by 21-40 years (35.29%) and the lowest was recorded (15.06%) in individuals with age more than 40 years. It is concluded that pulmonary TB is still prevalent in district Peshawar, Khyber Pakhtunkhwa Pakistan.

*Corresponding Author:

Sultan_ayaz@yahoo.com

INTRODUCTION

Mycobacterium tuberculosis (TB) is a slow-growing facultative intracellular parasite. During infection it is exposed to many different environmental conditions depending on the stage and the severity of the disease (Manganelli et al., 1999). It remains a major worldwide health problem with global mortality ranging from 1.6 to 2.2 million lives per year. The situation is further exacerbated with the increasing incidence of drug resistant TB (Aftab et al., 2009).

With an estimated annual incidence of over nine million cases, TB is believed to be responsible for more adult deaths each year than any other single infectious agent (WHO, 2009). The highest burden of disease is currently borne by the less developed countries of Africa and Asia where efforts to control TB are hampered by weak health systems and in some settings, by the high prevalence of co-infection with HIV (Corbett et al., 2006). The recent emergence of multi drug-resistant strains that cannot be cured with standard treatment regimens has served to emphasize the urgency of the situation (Zager and McNerney, 2008; Zignol et al., 2006). Control of TB in high burden countries relies on the detection and treatment of

infectious cases, most usually by testing patients attending a health clinic that report a cough of at least three weeks duration. The diagnostic tests available in these settings are sputum smear microscopy, an insensitive technique requiring a skilled practitioner and chest radiography, a technique lacking in specificity as well as sensitivity (Perkins and Cunningham, 2007).

Pulmonary TB is commonly diagnosed by microscopic examination of spontaneously expectorated sputum. Sputum induction is frequently proposed as a technique to improve sample collection for TB diagnosis, and has been found to be relatively easy to perform and generally well tolerated. Prevalence and economic status depending on the investigation for pulmonary TB differs between countries (Mohan et al., 1995). The diagnosis of probable pulmonary TB needs a positive nucleic acid amplification test result or a positive smear, occurs in both sexes, in all age groups and can affect virtually all organs of the body (Noertjojo et al., 2002). TB is one of the most common infectious diseases of developing countries including Pakistan, India, Bangladesh, Afghanistan and Nepal (Blumberg et al., 2003).

The present study was carried out to determine the prevalence of TB in patient admitted to Khyber

Teaching Hospital Peshawar, Khyber Pakhtunkhwa, Pakistan.

MATERIALS AND METHODS

Study Area

The study was carried out of Khyber Teaching Hospital Peshawar, Khyber Pakhtunkhwa Pakistan. Data was collected through designed proforma, regarding date of registration to hospital, gender, age, weight, diagnosis and treatment.

Sample collection

A total of 153 sputum samples were collected in 2010 directly from the patient in clean and sterile sputum container and were labeled properly. All the samples were brought to Molecular Parasitology and Virology Lab, Department of Zoology, Kohat University of Science and Technology, Kohat for TB screening.

Microscopic examination

Slides were prepared from the sputum with standard protocol, stained and then examined under the microscope (100X). TB was identified in the stained slides as red rods.

Prevalence rate

The prevalence rate was determined by using the following formula:

Prevalence rate = $\frac{\text{No. of patients having TB positive}}{\text{Total no. of patients}} \times 100$

Statistical analysis

Data was analyzed with statistix9 software for windows.

RESULTS

Tuberculosis remains a well known health problem in the world. In this study, among the 153 samples, 49 (32.02%) were positive for TB. Gender wise prevalence was determined in this study where high prevalence was recorded in female 33.33 % (26/78) than male 30.66% (23/75) (Table-1). The data was significant when analyzed by using chi square test with $P < 0.05$.

High prevalence 68.96% (20/29) was recorded in age ranges from 10-20 year. In age 21-40 years 18 (35.29%) were found positive while lowest 15.06% (11/73) was observed in age 40 years (Table-2).

A high prevalence 17(37.77%) was recorded in the month of July, followed by May 18 (34.61%) and June 14 (25%) of 2010 (Table-3).

DISCUSSION

TB remains a leading health problem in the world, with an estimated 8 million new cases annually, of whom about 3.5 million cases (44%) have infections (smear positive) pulmonary disease (WHO, 1997; Dye et al.,

1999). TB remains a serious threat to public health in developing countries (Khalilzadeh et al., 2006). Pakistan, together with other Asian countries makes up over 50 percent of the global burden of the tuberculosis. In this study high prevalence was recorded in female than male which similar to the findings of others (Ullah et al., 2008).

Table 1: Gender Wise Occurrence of Tuberculosis in Peshawar

Sex	Sample tested	Positive Result	%age
Male	75	23	30.66%
Female	78	26	33.33%
Overall result	153	49	32.02%

Table 2: Age-wise Occurrence of Tuberculosis

Age (years)	Total Sample tested	Samples Positive	Parentage
10-20	29	20	68.96
21-40	51	18	35.29
>40	73	11	15.06
Overall result	153	49	32.02

Table 3: Month-wise Prevalence of Tuberculosis

Months	Total Sample tested	Positive	Parentage (%)
May	52	18	34.61
June	56	14	25
July	45	17	37.77
Overall result	153	49	32.02

In the present study, high prevalence (37.77%) was recorded in July, followed by May (34.61%) while lowest (25%) was recorded in June, 2010. In this study is in line with other studies (Centis and Migliori, 2002; Valadas et al., 2003).

The limitations of the current study were the nature and the unavailability of induced sputum. The value of induced sputum for sputum smear-negative tuberculosis is the burning issues (Anderson et al., 1995; Conde et al., 2000; Al-Zahrani et al., 2001).

Conclusion

It was concluded that Pulmonary TB is the most common prevailing disease in the rural communities in Peshawar and high incidence was recorded in female as compared to male.

REFERENCES

Aftab R, F Amjad and R Khurshid, 2009. Detection of mycobacterium tuberculosis in clinical samples by

- smear and culture. *Pakistan Journal of Physiology*, 5: 27-30.
- Al-Zahrani K, H Al-Jahdli, L Poirier, P Rene and D Menzies, 2001. Yield of smear, culture and amplification tests from repeated sputum induction for the diagnosis of pulmonary tuberculosis. *International Journal of Tuberculosis and Lung Disease*, 5:855-860
- Anderson NI and D Menzies, 1995. Comparison of sputum induction with fiber optic bronchoscopy in the diagnosis of tuberculosis. *American Journal of Respiratory and Critical Care Medicine*, 33: 1570–1574.
- Blumberg HM, WJ Burman and RE Chaisson, 2003. American Thoracic Society/Centers for Disease Control and Prevention/Infectious Diseases Society of America: treatment of TB. *American Journal of Respiratory and Critical Care Medicine* 167: 603–662.
- Centis R and GB Migliori, 2002. Evaluation of tuberculosis treatment result in Italy, report 1999. *Monaldi Archives of Chest Diseases*, 57: 297-305.
- Conde MB, SL Soares and FC Mello, 2000. Comparison of sputum induction with fiber optic bronchoscopy in the diagnosis of tuberculosis: experience at an acquired immune deficiency syndrome reference center in Rio de Janeiro, Brazil. *American Journal of Respiratory and Critical Care Medicine* 162: 2238–2240.
- Corbett EL, B Marston, GJ Churchyard, KM DeCock, 2006. Tuberculosis in subSaharan Africa: opportunities, challenges, and change in the era of antiretroviral treatment. *Lancet*, 367: 926-937.
- Dye C, S Sheele, P Dolin, V Pathania and MC Raviglione, 1999. Global burden of tuberculosis: estimated incidence, prevalence, and mortality by country. *Journal of American Medical Association*, 282: 677-686.
- Khalilzadeh S, H Masjedi, M Hosseini, A Safavi and MR Masjedi, 2006. Transmission of Mycobacterium tuberculosis to households of tuberculosis patients: A comprehensive contact tracing study. *Archives of Iranian Medicine journal*, 9: 208- 212.
- Manganelli R, E Dubnau, S Tyagi, FR Kramer and I Smith, 1999. Differential expression of 10 sigma factor genes in Mycobacterium tuberculosis. *Molecular Microbiology*. 31: 715–724.
- Mohan A, JN Pande, SK Sharma, A Rattan, R Guleria and GC Khilnani, 1995. Bronchoalveolar lavage in pulmonary tuberculosis: a decision analysis approach. *QJM Oxford Journal.*, 88: 269–276.
- Noertjojo K, CM Tam, SL Chan and MM Chan-Yeung, 2002. Extra-pulmonary and pulmonary Tuberculosis in Hong Kong. *International Journal of Tuberculosis and Lung Disease*, 6: 879–886.
- Perkins MD and J Cunningham, 2007. Facing the crisis: improving the diagnosis of tuberculosis in the HIV era. *Journal of Infectious Disease*, 196: S15-27.
- Ullah S, SH Shah, A Rehman, A Kamal, N Begum and G Khan, 2008. Extrapulmonary tuberculosis in Lady Reading Hospital Peshawar, NWFP Pakistan: survey of biopsy results. *Journal of Ayub Medical College Abbottabad*, 20: 43-46.
- Valadas E, T Hanscheid, ML Fernandes and F Attunes, 2003. Smear microscopy to diagnose tuberculosis early and prevent further transmission in a population with a high prevalence of HIV infection. *Journal of Clinical Microbial Infectious*, 9: 1045–1047
- WHO, 2009. World Health Organisation: Global tuberculosis control: surveillance, planning, financing. Geneva.
- WHO, 1997. World Health Organization, (Report No. WHO document WHO/TB/97.220.
- Zager EM and R McNerney. 2008. Multidrug-resistant tuberculosis. *Journal of BMC Infectious Diseases*, 8: 10.
- Zignol M, MS Hosseini, A Wright, CL Weezenbeek, P Nunn, CJ Watt, BG Williams and C Dye, 2006. Global incidence of multidrug-resistant tuberculosis. *Journal Infectious Disease*, 194: 479-485.