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Prevalence of Smear Positive Pulmonary Tuberculosis in Kailali, far-Western Region of Nepal

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Abstract:

Tuberculosis (TB) is a leading public health problem worldwide particularly in the developing countries like Nepal. The objective of the study was to know status of TB infection cases among the patients visiting to Malakheti hospital, Kailali, Seti zone, Nepal. A cross-sectional study was carried out on total of 545 patients made up of inpatients and outpatients at the Malakheti hospital, Kailali Seti zone between January 2008 and July 2009. A questionnaire was designed to obtain age, sex, ethnic group, occupation, marital status, address, and religion. Three consecutive days samples were collected. The World Health Organization (WHO) procedure for diagnosis of TB at the district level was adopted for this study by the Ziehl-Neelsen (Zn) method using hot technique and examined with oil immersion using binocular light microscope. Of the total 545 cases under investigation only 428 completed the study. The total number of male and female were 340(62.4%) and female 205(37.6%) respectively. Of the total visiting patient 485 were from Kailali, 53 were from kanchanpur and 7 were from others place. While age wise distribution less than 11 years, 11-19,19-60 and 60+ were 11(2.0%), 33(6.1%), 403(73.9%) and 98(18%) respectively. Total positive case of the pulmonary tuberculosis by staining method was found to be 47(10.98%) and negative cases were 381(89.02%). No significant relation was found with the variables. The study concludes that still it has high TB infection in Nepal and the prevention and treatment should be more improved.

Keywords: Tuberculosis, Acid Fast Bacilli (AFB), microscopy, WHO

1. Introduction

Tuberculosis (TB) is one of the major infectious diseases worldwide. It remains to be a major cause of morbidity and mortality throughout the world. It is estimated that one-third of the world's population is infected, 8.8 million people develop TB, and 1.45 million people die annually from the disease [1, 2].

Correct diagnosis and treatment of tuberculosis help to reduce the burden of tuberculosis, provided that infectious cases are detected and treated successfully. However, there are difficulties in achieving the goal of reducing the tuberculosis burden due to a number of challenges, such as difficulties in diagnosing tuberculosis [3].

Passive detection where self-referred out-patient attendees at health facilities are evaluated on signs and symptoms suggestive of TB and referred to the laboratory for sputum smear microscopy for Acid Fast Bacilli (AFB) remains the major diagnostic tool of TB diagnosis and management in developing countries [1, 4, and 5].

It still remains one of the major public health problems in Nepal. Health services for TB are provided by Government of Nepal's Basic Health Services, Private sectors and international or national non-governmental organizations. While TB is a serious problem in low and middle income group in this country Nepal is working for the control of the disease by launching National TB Control Programme in 1965 and adopted DOTS strategy in 1996. By the year 2001 DOTS based TB control services were provided in all the 75 districts of the country. Government of Nepal is committed to fight against TB and it has given the status of priority for this programme [6].

2. Materials and Methods

A cross-sectional study was carried out on total of 545 patient made up of inpatients and outpatients at the Malakheti hospital, Kalali seti zone between January 2008 and July 2009 constituted the group for this study. Informed consent was obtained from all patients who cooperated to provide sputum samples for screening for tuberculosis. A complete biodata of each patient was obtained with the aid of a form designed to include age, sex, ethnic group, occupation, marital status, address, and religion. Other information sought and obtained were date and time of specimen collection. Spot samples were collected under the TB laboratory supervisor and patients were instructed on how to collect the early morning (collection) samples for three consecutive days. Each sample was examined to ensure that it was sputum and not saliva. The World Health Organization (WHO) procedure for diagnosis of TB at the district level was adopted for this study by acid fast staining method.

The sputum samples were handled in a safety cabinet. Sputum accepted was purulent, opaque or greenish in appearance. Samples that were heavily blood stained (clots) were treated with Sodium hypochlorite to lyse the clots and concentrated by centrifugation subsequently freeing the bacteria ready for staining. Smears from resultant deposits were screened for acid fast bacilli (AFB) by the Ziehl-Neelsen (Zn) method using hot technique method and examined with oil immersion using binocular light microscope.

3. Results

Of the total 545 cases under investigation only 428 completed the study. The total number of male and female were 340(62.4%) and female 205(37.6%) respectively. Of the total visiting patient 485 were from Kailali, 53 were from Kanchanpur and 7 were from others place. While age wise distribution less than 11 years, 11-19,19-60 and 60+ were 11(2.0%), 33(6.1%), 403(73.9%) and 98(18%) respectively. Total positive case of the pulmonary tuberculosis by staining method was found to be 47(10.98%) and negative cases were 381(89.02%). No significant relation was found with the variables.

SN	Variables	Frequency (%)
1	Sex	
	Male	340 (62.4)
	Female	205 (37.6)
2.	Age	
	Mean age = 43.5 ±18.7	
	<11	11 (2.0)
	11-19	33 (6.1)
	19-60	403 (73.9)
	60+	98 (18)
3	Address	
	Kailali	485
	Kanchanpur	53
	Others	7

Table 1: Characteristics of the study population (n=545)

Of the total 545 cases under investigation only 428 completed the study.

Positivity of the test	Frequency (%)
Yes	47 (10.98)
No	381 (89.02)

Table2: Total number of cases under investigation

Positive Cases	Day 1 (47)	Day 2 (44)	Day 3 (44)
1+	18	14	14
2+	10	10	10
3+	19	20	20

Table 3: Analysis of Positive cases in three consecutive days

4. Discussion

The smear positivity rate is still lower than other study reported but it has still similarity with the study reported by Lonroth *et al.*, [7]. From young children, into young adulthood could partly be the old age to the propensity of such age class being actively involved in social events such being in the relatively high risk group as related in the studies of Lonroth *et al.*, [7] had high prevalence in adulthood positive cases. The study further observed a low prevalence of TB in children which finding corroborates other studies that reported low smear positive pulmonary TB cases in children, supporting the fact that children rarely produce bacteriological positive sputum [8, 9, and 10]. Bacteriological diagnosis of TB in young children has remained a major challenge particularly in resource limited areas due to diagnostic constraints [9]. The overall positivity rates of sputum positive are similar with the other study related to it [11].

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6. References

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