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PREVALENCE OF TUBERCULOSIS IN DISTRICT HAVELI AZAD JAMMU & KASHMIR

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ABSTRACT

Tuberculosis is an infectious disease with a common occurrence in population of Azad Jammu and Kashmir. The current study was designed to find out the prevalence of TB among the general population of a less developed District Haveli. Samples were collected from different hospitals and TB centers located in district Haveli and tested through sputum smear microscopy for conformation of positive for TB. The three-year (2015 to 2018) study was conducted to record prevalence of tuberculosis in selected area of Azad Jammu and Kashmir. The trend line of prevalence was made by using (SPSS software). Results produced linear trends yearly which indicate the need for serious steps for management of this disease.

Key words: Pulmonary, tuberculosis, infectious, sputum smear, microscopy.

INTRODUCTION

Tuberculosis (TB) is a communicable infectious disease with an enormous global burden. It has been affecting humans since ancient times (Connell et al, 2011). TB poses a great menace to global health affecting thirty two percent people with an estimated 1.7 million annual deaths worldwide (Kumar et al., 2007). Globally, every second a person get infected with TB and every ten seconds somebody dies as a result (WHO 2011). TB is second common cause of death due to infectious diseases, first being Acquired Immuno-Deficiency Syndrome (AIDS). According to this trend in 2020, TB will continue to be the one of ten leading causes of global disease burden (Khurram et al., 2012). The burden of tuberculosis in Pakistan is increasing (WHO, 2013).

In Azad Jammu and Kashmir TB is a common infectious disease and it is associated with significant morbidity and mortality. District Haveli is one of the least developed districts of the state with poor health facilities and no study has previously been carried out for the assessment of prevalence of TB. Therefore, present study was aimed to find out the gender-wise

prevalence of TB and ratio of occurrence of TB among different age groups of local population.

MATERIALS AND METHOD

Study Area

Haveli district is one of the ten districts of azad Jammu and Kashmir. It was formerly a part of Bagh district, but it separated from Bagh in 2009. The district headquarters of Haveli is Forward Kahuta. Forward Kahuta is located at the foot of the Pirpunjal region, approximately 180 km away from the cities of Islamabad and Rawalpindi. It is a hospital-based study which was conducted January 2018 to December 2018. Tehsil head quarter (THQ) and District head quarter (DHQ) were surveyed for sampling of tuberculosis patients.

Sample collection and Slide preparation

Sputum samples of suspected individuals were collected from TB centers and hospitals of district Haveli. Smears were prepared directly from clinical specimens. Sputum containers were

arranged in sequential order. Sputum containers were taken and opened corresponding to the slide number and then by using wood stick, the sputum was spread over the central area of the slides in a continuous rotational movement. The size of the smear was 20 mm by 10 mm. Then slides were placed on air dryer with the smeared surface upward and air dried for about 30 minutes. The dried smears were fixed by holding them with forceps and passing them smear side up over the flame for about 4 seconds. The slides were placed on the staining rack in a serial order, smeared side up by a gap of 1 cm. Then slides were covered with Ziehl's Nelson 1% carbol-fuchsin solution and heated from underneath with flame of a Bunsen burner until vapors started to rise. After five minutes slides were rinsed with water to remove excess carbol-fuchsin.

The slides were washed with 25% sulfuric acid solution and allowed to stand for 3 minutes, after which the red color almost completely disappeared. The sulfuric acid was gently washed to remove excess stain and excess rinsing water was drained off from slides. Slides were covered individually with 0.1% methylene blue counterstaining solution and allowed to stand for 1 minute. The slides were rinsed individually with water and drained off the slides, which were then allowed to air dry.

Slide Observation Under Microscope

After air drying, a drop of immersion oil was applied on the stained smear and focused under microscope using

the 100x objective lens. Acid fast bacilli appeared bright red or pink against the blue counter stained background, varying greatly in shape, from short, coccoid to elongated filaments; uniformly or unevenly stained. They occurred singly or in variable sized clumps and typically appeared as long, slender curved rods.

Data Analysis

Data was analyzed by SPSS Software to generate a trend line, One-way Anova for yearly gender wise comparison of tuberculosis patients was carried out.

RESULTS AND DISCUSSION

In 2018, 80 cases were diagnosed with 40 pulmonary positive cases, 30 negative cases and 10 extra pulmonary cases (Table 1). In 2017, total registered patients of TB were 70; where, pulmonary positive cases were 25, negative cases were 23 and extra pulmonary cases were 22.

In 2016, total registered patients of TB were 62; where pulmonary positive cases were 25, negative cases were 27 and extra pulmonary cases were 10. In 2015, total registered patients of TB were 56; where, pulmonary positive cases were 15, negative cases were 31 and extra pulmonary cases were 10 (Table 1). The statistical result of One-way Anova ($F > F_{crit}$) results showed that there was a significant difference in populace of male and female patients in case of pulmonary +ve TB, pulmonary -ve and Extra Pulmonary TB (p-value <0.05).

Table 1: Year Wise Summary of TB Patients in District Haveli

| Haveli Year | Population | Pulmonary +ve TB | | | Pulmonary -ve | | | Extra Pulmonary TB | | |
|----------------|------------|------------------|------|--------|---------------|------|--------|--------------------|------|--------|
| | | Total | Male | Female | Total | Male | Female | Total | Male | Female |
| 2018 | 155790 | 40 | 15 | 25 | 30 | 10 | 20 | 10 | 3 | 7 |
| 2017 | 164659 | 25 | 10 | 15 | 23 | 8 | 15 | 22 | 8 | 14 |
| 2016 | 160784 | 25 | 9 | 16 | 27 | 9 | 18 | 10 | 2 | 8 |
| 2015 | 157000 | 15 | 5 | 10 | 31 | 6 | 25 | 10 | 3 | 7 |

Table 2: Year wise Summary of TB Patients (Age and Gender wise)

| YEAR 2018 | | | | | | | | | | |
|-------------------|------------------|-------------------|--------------------|--------------------|--------------------|--------------------|--------------------|---------------------|--------------|--|
| Type of TB | 0-4 Years | 5-14 Years | 15-24 Years | 25-34 Years | 35-44 Years | 45-54 Years | 55-64 Years | >64 Years | Total | |
| | M | M | M | M | M | M | M | M | | |
| P+ve | 0 | 1 | 0 | 0 | 2 | 2 | 4 | 6 | 15 | |
| P-ve | 0 | 2 | 1 | 1 | 1 | 1 | 2 | 2 | 10 | |
| EP | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 3 | |
| | F | F | F | F | F | F | F | F | | |
| P+ve | 0 | 2 | 3 | 5 | 8 | 2 | 5 | 0 | 25 | |
| P-ve | 0 | 1 | 2 | 7 | 5 | 3 | 2 | 0 | 20 | |
| EP | 0 | 1 | 1 | 2 | 2 | 1 | 0 | 0 | 7 | |
| YEAR 2017 | | | | | | | | | | |
| Type of TB | 0-4 Years | 5-14 Years | 15-24 Years | 25-34 Years | 35-44 Years | 45-54 Years | 55-64 Years | >64 Years | Total | |
| | M | M | M | M | M | M | M | M | | |
| P+ve | 1 | 2 | 1 | 2 | 2 | 2 | 0 | 0 | 10 | |
| P-ve | 0 | 0 | 0 | 3 | 1 | 3 | 1 | 0 | 8 | |
| EP | 0 | 0 | 0 | 2 | 1 | 1 | 3 | 1 | 8 | |
| | F | F | F | F | F | F | F | F | | |
| P+ve | 0 | 2 | 12 | 12 | 8 | 10 | 5 | 2 | 10 | |
| P-ve | 2 | 1 | 12 | 7 | 5 | 9 | 9 | 11 | 10 | |
| EP | 0 | 1 | 7 | 3 | 3 | 1 | 2 | 0 | 10 | |
| YEAR 2016 | | | | | | | | | | |
| Type of TB | 0-4 Years | 5-14 Years | 15-24 Years | 25-34 Years | 35-44 Years | 45-54 Years | 55-64 Years | >64 Years | Total | |
| | M | M | M | M | M | M | M | M | | |
| P+ve | 0 | 0 | 0 | 1 | 1 | 3 | 2 | 2 | 9 | |
| P-ve | 0 | 0 | 0 | 1 | 1 | 3 | 4 | 0 | 9 | |
| EP | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 2 | |
| | F | F | F | F | F | F | F | F | | |
| P+ve | 0 | 2 | 2 | 2 | 3 | 3 | 2 | 2 | 16 | |
| P-ve | 2 | 1 | 1 | 1 | 1 | 1 | 3 | 8 | 15 | |
| EP | 0 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 7 | |
| YEAR 2015 | | | | | | | | | | |
| Type of TB | 0-4 Years | 5-14 Years | 15-24 Years | 25-34 Years | 35-44 Years | 45-54 Years | 55-64 Years | >64 Years | Total | |
| | M | M | M | M | M | M | M | M | | |
| P+ve | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 5 | |
| P-ve | 0 | 0 | 0 | 2 | 1 | 1 | 1 | 1 | 6 | |
| EP | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 3 | |
| | F | F | F | F | F | F | F | F | | |
| P+ve | 0 | 2 | 2 | 2 | 2 | 2 | 0 | 0 | 10 | |
| P-ve | 2 | 1 | 2 | 7 | 5 | 2 | 2 | 4 | 25 | |
| EP | 0 | 1 | 0 | 0 | 3 | 1 | 2 | 0 | 7 | |

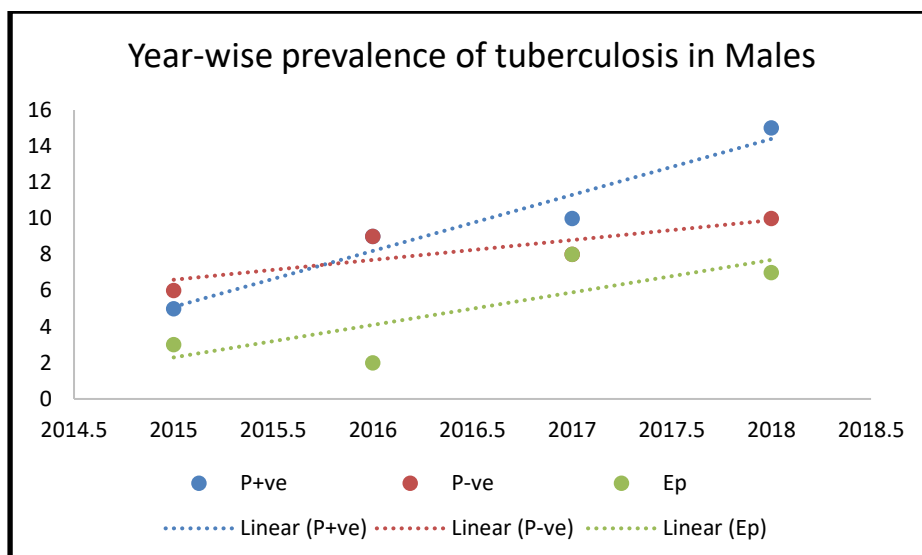


Figure 1: Year-wise prevalence of tuberculosis in males

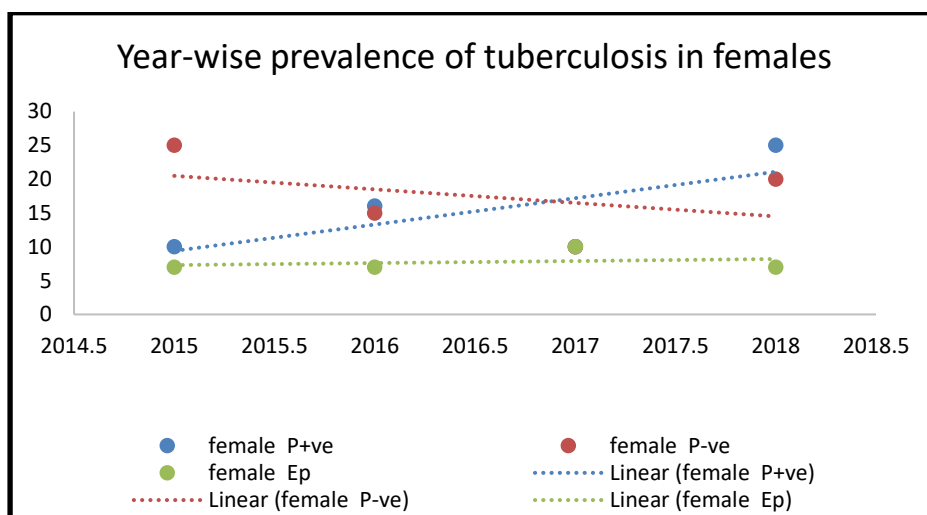


Figure 2: Year wise trend line of tuberculosis in females.

In this study, the number of female patients was more than male patients. Total females in this four-year study were 192 and males were 76. Male to female ratio (MFR) in various regions was found to be 1.35:1.00 in Africa, 1.49:1.00 in Americas, 2.03:1.00 in Southeast Asia, and 2.16:1.00 in Europe (Khurram et al., 2012). The results of this study are not similar to the one conducted by Khurram et al. (2012); Male to female ratio in this study did not match with the MFR for South-East Asia. Rather it was even lower than the ratio in

Africa. In our study but there are areas like Afghanistan (MFR 0.50:1.00), Lebanon (MFR 0.70:1.00) and Iran (MFR 0.90:1.00) where females were affected more than the males. It is interesting to note that Pakistan is bordered toward east with India with high MFR and towards west with Afghanistan and Iran with low MFR.

Age-Wise Prevalence

According to age, population was divided into different groups. In this study, the most commonly affected people were middle aged. Frequency in children was found to be low. Distribution of TB in different age groups in 2018 showed that out of a total of 218 TB patients, 51 (6%) were in the 15-24 years age group, which was the most affected age group. In 2017, the highly affected age group was 15-24 years, as out of a total of 62 TB patients 14 patients belonged to this group. In 2016, the highly affected age group was 15-24 years and above 65 years as out of a total of 72 TB patients, 13 were belonged to these age groups. In 2015, the highly affected age group was 15-24 years and 25-34 years as out of 56 TB patients, 11 patients were between the age group of 15-24 and 13 patients were from the age group of 25-34 years. In a study conducted in northern Pakistan, 61.52% patients of TB were of 20–50 years of age (Ihsanullah et al., 2010). Age-wise distribution of TB cases showed that TB is more prevalent between the ages of 15 to 34 years.

CONCLUSION

The result of this study showed that females were more prone to tuberculosis than males in the study area. The trend line showed a gradual increase in the burden of disease. The study also reports age wise susceptibility of disease in the age group of 15 to 3 years and in patients above the age of 64 age as more prone to tuberculosis.

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