INTRODUCTION

Tuberculosis is a slowly progressive, debilitating disease that kills more than 1.5 million people worldwide. It is internationally reported that more males as compared to females are screened and diagnosed with tuberculosis in developing as well as developed world and a male-female ratio (MFR) of 1.96 + 0.6 has been reported around the globe. This gender discrepancy is so pronounced that male gender was reported as a risk factor for tuberculosis by some studies.

ABSTRACT

Objective: To determine the gender differences in smear positive subjects of tuberculosis presenting to a tertiary care chest disease hospital from urban population of Sindh province.

Methods: Laboratory records of Provincial Reference Laboratory at Ojha Institute of Chest Diseases were retrospectively examined for the year 2013. Z-test for proportions was performed using Social Science Statistics® Calculator, while Odds ratio and Relative risk were calculated using online calculator available at Vassar Statistics®.

Results: A total of 3006 suspects were screened over the period of twelve months in 2013 including 1766 males (58.75%) and 1240 females (41.25%). Of these, 452 males (25.59%) and 381 females (30.72%) were tested positives. There was a statistically significant (p-value = 0.01174) difference in the proportion of test positives among males and females. Male suspects outnumbered females by 1.42:1, however amongst the confirmed TB cases, this ratio reduced to 1.18:1. Odds ratio (OR) for smear positivity amongst males was 0.77, (95% CI 0.66-0.91) with a significantly lower odds (p-value <0.01) among males compared with females.

Conclusions: The proportion of smear positivity in females exceeded that of males despite the fact that fewer females were screened for tuberculosis as compared to males. This may be suggestive of that we are only looking at the tip of the iceberg and a large number of undetected cases is present in females. This observation highlights the significance of prompt identification of active cases among the female population in Karachi. It is therefore suggested that efforts must be directed to active case finding in female population in the Karachi. It is important that efforts must be directed to active case finding in female population in the Karachi population.

Key words: Tuberculosis, Karachi, Smear positivity, Gender

tuberculosis due to differences in hormonal and physiological profiles between the two sexes. The possibility that differential MFR might not be due to health inequalities only cannot be overlooked. To study the different trends in diagnosis of tuberculosis, laboratory records of Provincial Tuberculosis Reference Laboratory at Ojha Institute of Chest Diseases were retrospectively examined and analyzed for the year 2013.

MATERIALS & METHODS

Data for all incidental cases from the laboratory records of Provincial Tuberculosis Reference Laboratory at Ojha Institute of Chest Diseases, Dow University of Health Sciences, Karachi were retrospectively studied for the year 2013. Data were collected without patients’ particulars and were de-identified. Institutional approval was obtained to analyze the data.

All procedures followed were in accordance with the ethical standards of the responsible committee on human experimentation (institutional and national) and with the Helsinki Declaration of 1975, as revised in 2008.

Data were analyzed using online statistical calculators. Z-test for proportions was performed using Social Science Statistics Calculator, while Odds ratio and Relative risk were calculated using calculator available on Vassar Statistics.

RESULTS

A total of 3006 suspects were screened over the period of twelve months in 2013 including 1766 males (58.75%) and 1240 females (41.25%), out of which 452 males (25.59%) and 381 females (30.72%) were tested positive (Table I).

<table>
<thead>
<tr>
<th></th>
<th>Males</th>
<th>Females</th>
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<tbody>
<tr>
<td></td>
<td>Frequency</td>
<td>Percent</td>
</tr>
<tr>
<td>Positive</td>
<td>452</td>
<td>25.59</td>
</tr>
<tr>
<td>Negative</td>
<td>1314</td>
<td>74.41</td>
</tr>
<tr>
<td>Total</td>
<td>1766</td>
<td>100</td>
</tr>
</tbody>
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Male suspects outnumbered females by 1.42:1, however amongst the confirmed TB cases, the ratio was 1.18:1. Odds ratio (OR) for smear positivity amongst males and females was 0.7756, (95% CI 0.6601-0.9112). Risk ratio was calculated to be 0.833 (95% CI 0.7422-0.9349). Fisher Exact test showed a p value of .0022.

DISCUSSION

Analysis of one year records indicated that more males sought medical care as compared to the females, though smear positivity was significantly higher in female patients. This signifies that a large number of diseased female population is being overlooked and disease prevalence may be higher than it appears to be. The higher number of males being screened and diagnosed as TB patients may be considered an indication of higher prevalence in the male population but significantly higher ratio of smear positivity in female population shows that there is a possibility that more females are suffering from the disease than it appears to be, which is also in contrast to most of the reported findings from across the world where more males are diagnosed and treated for tuberculosis, which leads to a higher smear positivity and higher diagnostic ratio among male population.

Our results also show that odds of smear positivity in females are more as compared to males and females were at higher risk of being smear positive. These findings are in contrast to the observed international trends of male predominance in tuberculosis diagnosis and matches European epidemiological profile in early-middle era of the previous century. Studies published from Pakistan show an equal MFR in 2008, however a higher female case notification was observed in females younger than 45 years of age. Another analysis reports MFR in Sindh is on the higher side in the country as compared to other provinces. However, the comparison of patients screened and tested positive has not been reported in both of these studies. Our results match the epidemiological profile of some African countries such as Malawi, where although absolute incidence in male patients was reported to be high, females showed greater sputum positivity. These findings highlight the importance of investigation of the exact reasons of lesser number of females seeking medical help so that the issues can be addressed properly as delays in health-care seeking behavior in Pakistani females have already been documented. Allocation of resources towards active case finding in families affected with tuberculosis would help in detection of latent cases in the community. Efforts must also be directed towards health education and advocacy in the female population so that the time taken to seek medical help can be reduced and spread of the disease can be stopped. The disease can be easily transmitted from mother to children due to a natural intimate contact. Educating and training lady health workers specifically for tuberculosis can provide additional support in diagnosis and treatment of tuberculosis.
REFERENCES


