INTRODUCTION

Tuberculosis (TB) is a major health problem from times immemorial. The World Health Organization estimates to show that, globally, there are 8.6 million incidents of TB, of which 80% are in 22 countries, with India ranked as the highest-burden country.\(^2\) While pulmonary TB is the most usual presentation, extrapulmonary TB (EPTB) is also an important clinical problem.\(^3,4\) EPTB is occurrence of TB at body sites other than lungs such as pleura, lymphatics, pancreatic, gastric, genital, central nervous system, and urinary. Diagnosis and treatment of infectious and non-infectious forms of TB are important, as both can be fatal.\(^5\) Extrapulmonary TB is milder form as compared to pulmonary TB in terms of infectivity.

Extrapulmonary TB often goes undetected as extrapulmonary samples contain a scanty load of acid-fast bacilli. The bacilli can be detected by Ziehl–Neelsen (ZN) staining. ZN stain is commonly used throughout the world and still remains the standard method. The current study was done to detect the acid-fast bacilli by ZN staining from extrapulmonary samples and pulmonary samples, along with culture and line probe assay (LPA).

METHODS

A total number of 567 samples were received during 1 and ½ year period bindft of Microbiology, Government Medical College (GMC), Jammu. Out of these, 308 samples were of gastric lavage, 87 pus, 125 fluids, 5 tissue, and 30 urine. All the samples were received in sterile containers. The processing of samples for ZN staining was done as per the guidelines of Revised National TB Control Program (RNTCP).\(^6\)

The study group was done by GMC Jammu. All specimens were processed without delay using standard microbiological

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techniques. Extrapulmonary and sputum samples in addition to ZN staining were also cultured on Lowenstein Johnson (LJ) medium by decontamination and concentrated by Petroff’s method. Pleural fluid and biopsy material were centrifuged and homogenized to inoculate them on media. Inoculated LJ slopes were incubated at 37°C. All cultures were read as per RNTCP guidelines. LPA was also done on samples as per kit literature.

**Biochemical Tests**

All isolates were subjected to biochemical tests for the identification of species by nitrate reduction and other tests for the identification of TB. Quality controls were also used as MTB H37RV as a positive control.

**RESULTS**

In this study, total 567 samples were received for ZN staining. Mycobacterium was observed from 32 of samples. As shown in Table 1 the highest positivity was shown among PUS samples. Other samples included were fluids from various sites (pleural, ascetic, peritoneal, cerebrospinal, synovial, etc.), urine, tissue, and sputum.

In this study majority of patients were in the age group 1-20 years followed by above 25-40 years [Table 2]. The maximum number of samples was of gastric lavage as the load from pediatric hospital samples was high.

Table 3 shows out of 567 total samples ZN staining was positive for 32 samples and culture was positive for 79 samples. Samples which were ZN positive were also culture positive except one sample which was ZN staining positive but culture negative.

All the 79 samples, which were culture positive, were also positive for MTB by LPA.

**DISCUSSION**

In the present study, total of 567 different samples were collected from extrapulmonary sites and pulmonary sites. Out of 567 samples, 32 were positive for TB.

TB should be detected at the earliest to prevent life-threatening complications. TB remains a challenging diagnosis for both clinicians and microbiologists as the clinical presentation is often non-specific; also, invasive procedures are often required for obtaining material for definitive diagnosis.

Even with limited sensitivity, smear microscopy using ZN stain in resource constraint settings is a very useful and cheap diagnostic method. In our study, we reported an isolation rate of 5.64%. The highest positivity was in pus 18.39%, comprising major burden of EPTB in line with overall national data. Culture of mycobacterium TB helped in the identification of samples which were negative on ZN staining, so culture remains the gold standard for diagnosis. In the present study, 5.5% of samples were positive by ZN staining, similar to other studies.

M.TB growth was positive in 14% of cases which are similar to other studies. LJ medium detected staining negative samples which show the significance of culture.
All of staining positive and culture-positive samples show positivity on LPA which correlates with other studies. Results of culture were in concordance with LPA. As molecular tests are not available easily everywhere, so the culture is an alternative for LPA for the identification of Mycobacterium TB. Maximum positivity was shown for PUS sample. Maximum number of samples were of gastric lavage. Different types of extra pulmonary samples were submitted for testing. Extra pulmonary samples are also promising for diagnosis.

Table 3: Comparison of AFB smear with culture results

<table>
<thead>
<tr>
<th>Results</th>
<th>Culture-positive</th>
<th>Culture-negative</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smear-positive</td>
<td>31</td>
<td>1</td>
<td>32</td>
</tr>
<tr>
<td>Smear-negative</td>
<td>48</td>
<td>487</td>
<td>535</td>
</tr>
<tr>
<td>Total</td>
<td>79</td>
<td>488</td>
<td>567</td>
</tr>
</tbody>
</table>

CONCLUSION

TB is an important clinical problem in India. The conventional staining method for screening of TB can provide good results despite a low yield in resource constraint settings. It involves a sincere examination of smears from extrapulmonary sites. When combined with culture and LPA, sensitivity is increased. Hence, in most tertiary care centers as our ZN staining along with culture can provide good results in diagnosing TB. When LPA is added, sensitivity increases.

REFERENCES