Case Study

CASE SERIES OF POTT’S SPINE DIAGNOSED BY ZN STAIN AND BACTEC MGIT IN A TERTIARY CARE HOSPITAL

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ABSTRACT

Introduction: Pott’s spine is a destructive form of tuberculosis and accounts for approximately half of all cases of musculoskeletal tuberculosis. Spinal Tuberculosis is most often missed due to inadequate sample and lack of clinical history. Most of the Extrapulmonary tuberculosis (EPTB) can be diagnosed by Ziehl Nelson stain (ZN) only, when clinically suspected samples are adequate and optimally stained. We are reporting four case series of spinal tuberculosis diagnosed by ZN stain and confirmed by Bactec MGIT Culture.

Material & Methods: These four clinically suspected spinal biopsies were received for ZN stain and MTB culture by MGIT.

Results: All the four spinal biopsies were found positive by ZN stain as well as by BacTec MGIT. All the four cases were HIV negative. ESR and CRP of all four cases were raised.

Discussion & Conclusion: Spinal tuberculosis can be easily diagnosed by ZN stain in resource constraint lab. Despite its common occurrence and the high frequency of long-term morbidity, there are no straight forward guidelines for the diagnosis and treatment of spinal tuberculosis. Early diagnosis and prompt treatment is necessary to prevent permanent neurological disability and to minimize spinal deformity.

CASE HISTORY

A series of four cases with similar complaints of significant low back pain were admitted in our tertiary hospital.

<table>
<thead>
<tr>
<th>Case</th>
<th>Age</th>
<th>Sex</th>
<th>Co morbid condition</th>
<th>Site of lesion</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>50 yrs</td>
<td>Male</td>
<td>Hypertension</td>
<td>Lumbar (L1-L3)</td>
</tr>
<tr>
<td>2</td>
<td>61 yrs</td>
<td>Male</td>
<td>Type 2 Diabetes mellitus</td>
<td>D8-D9</td>
</tr>
<tr>
<td>3</td>
<td>40 yrs</td>
<td>Female</td>
<td>Nil</td>
<td>D9-10</td>
</tr>
<tr>
<td>4</td>
<td>30 yrs</td>
<td>Female</td>
<td>Nil</td>
<td>D11-D12</td>
</tr>
</tbody>
</table>

MATERIAL MEHTODS

All four cases were investigated radiologically and by our laboratory services to find out the etiology.

Biopsy of all cases were taken after all aseptic
precautions from different site of lesion for Histopathology, ZN staining and Bactec MGIT Culture.

ZN stain was done with a positive control as per standard guidelines.

Complete investigations with different parameters were done to diagnose the cause of spinal tuberculosis. (Table-1).

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Case1</th>
<th>Case2</th>
<th>Case3</th>
<th>Case4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Count</td>
<td>13100</td>
<td>11900</td>
<td>13200</td>
<td>16900</td>
</tr>
<tr>
<td>ESR</td>
<td>70MM 1hr</td>
<td>80MM 1hr</td>
<td>72mm 1hr</td>
<td>18mm 1hr</td>
</tr>
<tr>
<td>CRP</td>
<td>148.7</td>
<td>88.4</td>
<td>43.30</td>
<td>17.07</td>
</tr>
<tr>
<td>Hemoglobin (g/dl)</td>
<td>8.4</td>
<td>8.8</td>
<td>8.5</td>
<td>10</td>
</tr>
<tr>
<td>ELISA (Viral markers)</td>
<td>Negative</td>
<td>Negative</td>
<td>Negative</td>
<td>Negative</td>
</tr>
<tr>
<td>Procalcitonin</td>
<td>2.69</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ZN Stain</td>
<td>18-20 AFB/100 Oil Immersion Field</td>
<td>20-22 AFB/100 Oil Immersion Field</td>
<td>15-20 AFB/100 Oil Immersion Field</td>
<td>5-10 AFB/100 Oil Immersion Field</td>
</tr>
<tr>
<td>Bactec MGIT</td>
<td>Positive</td>
<td>Positive</td>
<td>Positive</td>
<td>Positive</td>
</tr>
</tbody>
</table>

**RESULTS**

**Case1**
The ZN stain of spinal tissues shows plenty of neutrophils with 18-20 AFB/100 Oil Immersion Field (OIF) (Fig-1).

**Radiological Findings:** MRI Spine shows spondylodiscitis at L1-L3 level with intradiscal abscess formation with extension of abscess in the ventral epidural space of spinal canal causing spinal canal stenosis along with Right psoas myositis and left psoas muscle abscess (46.7x28.4x53.3mm). It also showed degenerative changes at L5-S1 level. (Fig-2)

**Case2**
Biopsy from D8 –D9 was taken for Histopathology, ZN staining and Bactec MGIT Culture. The ZN stain of spinal tissues showed many neutrophils with 20-22 AFB/100 OIF. TB culture with Bactec MGIT was positive for TB. Histopathological findings showed areas of necrosis, few epithelioid granulomas and many entrapped necrotic bony trabeculae. No malignancy was seen.

**MRI dorsal Spine** showed spondylodiscitis at D9-D10 level with spondylitis involving D8, D9 & D10 vertebral bodies. Paravertilbe and extradural collection behind D9 and D9-D10 disc with resultant spinal cord compression. Tuberculosis etiology was suspected due to calcified bodies in paravertilbe collection.

TB culture by Bactec MGIT was found to be positive. Histopathological findings showed granulomatous lesion suggestive of tuberculous origin and was negative for malignancy.
CT scan of dorsal spine showed lytic destruction of D9 vertebrae with associated mild paraspinal collection and calcification. Narrowing of left D8-D9 neural foramina.

All lab reports were within normal range except ESR (80 MM 1hr), Total count (11900), Hb (8.8), CRP(88.4), procalcitonin (2.69), CA 125(44.4).

**Case 3**
After all aseptic precaution, biopsy from D9-D10 were taken for Histopathology, ZN staining and Bactec MGIT Culture (Table-2). The ZN stain of spinal tissues shows plenty of neutrophil with 10 AFB/100 OIF. TB culture with Bactec MGIT was positive for MTB. Histopathological findings showed granulomatous lesion suggestive of tuberculous origin and it was negative for malignancy.

All lab reports were within normal range except ESR (72 MM 1hr), Total count (13200), Hb (8.5), CRP (43.30).

MRI dorsal Spine showed infective spondylitis at D9-D10 level with destruction of intervertebral disc and adjacent vertebral end plates seen. D9 vertebra was completely destroyed. Spondylitis was seen at D6, D7, D8 and D11. Abscess was seen at D9-D10 disc at endplate level with extension of abscess in the pre and para vertebral region, in the ventral epidural space and at neural foramina. Pre and para vertebral abscess was seen from the level of superior end plate of D6 vertebra to D10 level. Intraosseous extension of collection seen in D7, D8 vertebral body with erosion of anterior cortex. Ventral epidural collection was seen posterior to D9 and D10 vertebral body. At D7 level paravertebral collection was extending into adjacent pleural space and lung with consolidation.

**Case 4**
Biopsy was taken from D11-D12 for Histopathology, ZN staining and Bactec MGIT Culture (Table-2). Plenty of neutrophil with 05 AFB/100 OIF was seen by ZN stain of spinal tissues. TB culture with Bactec MGIT was positive for MTB. On Histopathological examination showed areas of necrosis, few epithelioid granulomas and many entrapped necrotic bony trabeculae.

All lab reports were within normal range except ESR (18 mm 1hr), Total count (16900), Hb (10), CRP (17.07).

DISCUSSION AND CONCLUSION

Extrapulmonary TB (EPTB) constitutes about 15%–20% of all cases of TB. The diagnosis of Pott’s spine is difficult due to the paucibacillary nature of sample, difficulty in obtaining specimens from deep-seated organs and inability to get an additional specimen. As an outcome, failure to diagnose and treat affected patients leading to increased morbidity and mortality, development of secondary resistance (including extensively drug-resistant TB) and ongoing transmission of disease.

In our case series, thoracic region is predominantly involved for spinal tuberculosis.

The prognosis for spinal tuberculosis can be improved by early diagnosis and rapid intervention. Spinal tuberculosis can be easily diagnosed by ZN stain in resource constraint lab with only little effort.
Early diagnosis and prompt treatment is necessary to prevent permanent neurological disability and to minimize spinal deformity. All four patients were started with Anti tuberculosis treatment and they are doing extremely well.

REFERENCES


