Tuberculosis of Sternum: Three Cases with Different Presentations

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Abstract

Sternum is resistant to infections and thus infrequent site of osteomyelitis. Involvement of sternum by Mycobacterium tuberculosis is rare. We report case of 37 year old male with isolated tuberculosis of the sternum, a 14 year old girl with tuberculosis of the sternum and Potts spine and a 55 year-old male with tubercular sinus of the sternum, three different presentations of the same disease.

Introduction

Sternum is one of the least common bones of the body to get infected. Sternal osteomyelitis accounts for less than 2% of cases of osteomyelitis. Tubercular involvement of sternum (TBM) is rare and may occur in isolation or in association with pleuro-pulmonary or lymph node involvement. The disease has seldom been reported even from countries with high disease burden. The disease often gets detected late due to non-specific symptoms and slowly progressive course. A high index of suspicion is needed so that early diagnosis and institution of anti-tubercular treatment can prevent complications. We report three more cases each having a different presentation.

Case 1

A 12-year-old girl presented with swelling on chest, low-grade fever, non-specific backache and weight loss for 2 months. She had been to various physicians and received multiple courses of antibiotics with minimal relief. On examination there was a 2 x 2 cm soft slightly painful swelling in the lower part of sternum fixed to the underlying bone.

Case 2

A 37-year-old male presented with swelling in the chest wall, low-grade fever and weight loss for 3 months. He had received multiple courses of antibiotics with minimal relief. On examination there was a soft painless fluctuant swelling in the lower part of sternum fixed to the underlying bone.
was positive for acid-fast bacilli with Ziehl-Neelsen stain. He received 4-drug anti-tubercular treatment and has improved.

Case 3

A 55-year-old male presented with complaints of swelling in the lower part of the sternum which had been excised one month back subsequent to which he developed a persistent discharge of pus. He also complained of significant weight loss of about 6 kilograms during the past month. Examination revealed a discharging sinus in the lower sternal area with some granulation tissue around it (Figure-3). Rest of the general physical and systemic examination was normal. CT scan showed heterogeneous soft tissue mass at lower end of sternum extending up to the skin surface. Aspirate of the pus was negative for acid-fast bacilli with Ziehl-Neelsen stain, however culture grew mycobacterium. He received 4-drug anti-tubercular treatment and has shown improvement since then.

Discussion

The above three cases demonstrate the complete spectrum of sternal tuberculosis, i.e. isolated involvement in adult male to co-existent spinal tuberculosis in a 12 year old girl and presentation of disease as isolated sinus. Sternal is resistant to infections and thus infrequent site of osteomyelitis. Pyogenic infections especially due to staphylococcus are reported as the most common cause of sternal osteomyelitis. Involvement due to tuberculosis is rare even in endemic countries where the disease is rampant. In a study only 2 of 4000 patients with tuberculosis had sternal involvement. Mc Leelan et al 2000 reviewed previously published cases of tubercular osteomyelitis and showed that the disease had male preponderance and was seen in middle age. Majority of the cases have been reported in adults. Sternal affliction is rarer in younger age group and only scattered case reports have appeared in literature. So it may be said that the disease is predominantly seen in middle aged adults in the 4th and 5th decade although no age is immune and it has also been reported in an infant.

The clinical presentation of the disease is variable. Swelling and pain are the most common symptoms reported. Majority of cases are spotted late as the symptoms are non-specific since tubercular cold abscess has an insidious course therefore patients may remain undiagnosed for a long time. Our patients could also be diagnosed after a lag of 2-3 months. This is unlike pyogenic involvement, which has a rapid course.

Table 1: Laboratory Investigations of Three Cases

<table>
<thead>
<tr>
<th></th>
<th>Case 1</th>
<th>Case 2</th>
<th>Case 3</th>
</tr>
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<tbody>
<tr>
<td>Hemoglobin (g/dl)</td>
<td>9.5</td>
<td>10.5</td>
<td>11.8</td>
</tr>
<tr>
<td>Leukocyte count/mm³</td>
<td>8600</td>
<td>9400</td>
<td>7100</td>
</tr>
<tr>
<td>ESR (mm/hr)</td>
<td>70</td>
<td>60</td>
<td>50</td>
</tr>
<tr>
<td>HIV 1 and II</td>
<td>Negative</td>
<td>Negative</td>
<td>Negative</td>
</tr>
<tr>
<td>Sputum AFB-3 samples</td>
<td>Negative</td>
<td>Negative</td>
<td>No sputum</td>
</tr>
<tr>
<td>Chest X-ray</td>
<td>Normal</td>
<td>Normal</td>
<td>Normal</td>
</tr>
</tbody>
</table>

The disease can occur either as an isolated involvement or with focus elsewhere. It has been suggested that the disease may occur by contiguous spread from other sites.

Although biopsy and culture of the Mycobacterium is considered as the gold standard it has been demonstrated that fine needle aspiration cytology is the most commonly used technique for establishing a diagnosis. It is easy, inexpensive and can provide early clues to establish a diagnosis. Sternal radiographs are non-specific and do not provide additional clues to diagnosis. Even a technetium bone scan is non-specific and cannot provide a clue about etiology. CT has traditionally been used for evaluation of tubercular sternal involvement as it also picks pleuro-pulmonary pathology. Majority of cases reported after 2000 have done a CT scan as a part of diagnostic work up. However MRI is now being used increasingly as it may pick additional soft tissue changes.

Four drug anti-tubercular therapy with isoniazid, rifampicin, pyrizinamide, and ethambutol forms the backbone of treatment. Consensus regarding management of osteomyelitis of sternum due to tuberculosis is lacking. Although anti-tubercular treatment may suffice, surgical debridement may be needed. In either case the patient should be closely followed up. We feel that localized disease like cold abscess of sternum without bony erosion can be managed medically or surgically alone, however extensive disease with co-existent focus mandates use of drugs and surgery alone has no place in such cases.

Conclusion

Tubercular involvement of sternum can occur in various clinical settings and can involve any age group. It needs a high index of suspicion for early diagnosis. CT scan and/or MRI have become integral part of the diagnostic work up. All of our patients responded to standard 4 drug ATT. Although anti-tubercular treatment is sufficient in majority, some patients may benefit from surgery.

References