Tuberculosis of the sternoclavicular joint

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ABSTRACT

Purpose. To review the diagnosis and treatment of tuberculosis of the sternoclavicular joint in 13 patients.
Methods. Records of 9 men and 4 women aged 26 to 47 (mean, 36.5) years who presented with tuberculosis of the right (n=8) or left (n=5) sternoclavicular joint were reviewed.
Results. All 13 patients had a raised erythrocyte sedimentation rate at presentation. Nine patients presented with systemic symptoms including malaise, fever, or loss of weight/appetite. Local symptoms included cold abscess (n=5), tenderness and non-fluctuant swelling (n=4), and discharging sinus (n=4). The mean duration of symptoms was 2.7 (range, 1–7) months. Four patients had multifocal involvement of the proximal ulna (n=1), lung (n=2), and meninges (n=1). Aspiration (n=3), fine needle aspiration cytology (n=4), drainage (n=2), or curettage (n=4) of the swelling, abscess, or sinus was performed, and the diagnosis was confirmed by histopathology (n=8), polymerase chain reaction (n=5), or culture (n=1). Two patients were diagnosed based on clinical suspicion. 11 patients responded to antituberculous therapy (ATT), and symptoms resolved after 6 to 8 weeks. Two patients did not respond to ATT after 3 months and were screened for immunocompromising disorders or drug resistance. Their CD4 count and CD4:CD8 ratio was low, and an immunomodulation regimen was prescribed as an adjunct to ATT.
Conclusion. A high level of clinical suspicion is needed to diagnose tuberculosis of the sternoclavicular joint in patients with pain/tenderness, discharging sinus, or cold abscess. A combination of histopathological and microbiological tests, and PCR can confirm the diagnosis.

Key words: sternoclavicular joint; tuberculosis, osteoarticular

INTRODUCTION

Tuberculosis of the sternoclavicular joint is rare,1
accounting for 0.16%,0.37%, or up to 2% of osteoarticular tuberculosis. Thus, the diagnosis is often delayed or missed resulting in increased morbidity such as disfiguring scar, instability of the sternoclavicular joint, ruptured abscess, and disseminated tuberculosis. This study reviewed the diagnosis and treatment of tuberculosis of the sternoclavicular joint in 13 patients.

MATERIALS AND METHODS

Between May 2010 and April 2014, 926 patients presented to our hospital with osteoarticular tuberculosis. Records of 9 men and 4 women aged 26 to 47 (mean, 36.5) years who presented with tuberculosis of the right (n=8) or left (n=5) sternoclavicular joint were reviewed (Table).

RESULTS

All 13 patients had a raised erythrocyte sedimentation rate at presentation. Nine patients presented with systemic symptoms including malaise, fever, and loss of weight and appetite. Local symptoms included cold abscess (n=5), tenderness and non-fluctuant swelling (n=4), and discharging sinus (n=4). The mean duration of symptoms was 2.7 (range, 1–7) months. Four patients had multifocal involvement of the proximal ulna (n=1), lung (n=2), and meninges (n=1).

Radiographs were unremarkable in all except for one with a lytic lesion at the medial end of the clavicle. Computed tomography was performed to delineate the extent of bone and soft tissue involvement.

Aspiration (n=3), fine needle aspiration cytology (n=4), drainage (n=2), or curettage (n=4) of the swelling, abscess, or sinus was performed, and the diagnosis was confirmed by histopathology (n=8), polymerase chain reaction (n=5), or culture of acid fast bacilli on Ziehl-Neelsen staining (n=1). Two patients with negative test results were diagnosed based on clinical suspicion.

12-month antituberculous therapy (ATT) with isoniazid, rifampicin, ethambutol, and pyrazinamide was per directly observed treatment, short-course regimen.4 11 patients responded to ATT, and symptoms resolved after 6 to 8 weeks. Two patients did not respond to ATT after 3 months and were screened for immunocompromising disorders or

<table>
<thead>
<tr>
<th>Sex/age (years)</th>
<th>Local symptoms</th>
<th>Symptom duration (months)</th>
<th>Erythrocyte sedimentation rate (mm)</th>
<th>Radiography</th>
<th>Histopatology</th>
<th>Polymerase chain reaction</th>
<th>Culture</th>
<th>CD4:CD8 ratio</th>
<th>Follow-up (months)</th>
<th>Outcome</th>
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</thead>
<tbody>
<tr>
<td>F/29</td>
<td>Impending burst abscess</td>
<td>2</td>
<td>25</td>
<td>Normal</td>
<td>Positive</td>
<td>Positive</td>
<td>Negative</td>
<td>-</td>
<td>17</td>
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<td>F/34</td>
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<td>1</td>
<td>34</td>
<td>Normal</td>
<td>Positive</td>
<td>Negative</td>
<td>Negative</td>
<td>-</td>
<td>13</td>
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<tr>
<td>M/44</td>
<td>Discharging sinus</td>
<td>3</td>
<td>42</td>
<td>Lytic lesion at clavicle</td>
<td>Negative</td>
<td>Positive</td>
<td>Negative</td>
<td>Low</td>
<td>21</td>
<td>Required immunomodulation</td>
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<tr>
<td>M/47</td>
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<td>7</td>
<td>29</td>
<td>Normal</td>
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<td>Negative</td>
<td>Negative</td>
<td>-</td>
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<tr>
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<td>4</td>
<td>40</td>
<td>Normal</td>
<td>Positive</td>
<td>Negative</td>
<td>Negative</td>
<td>-</td>
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<tr>
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<td>33</td>
<td>Normal</td>
<td>Negative</td>
<td>Negative</td>
<td>Negative</td>
<td>-</td>
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<tr>
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<td>51</td>
<td>Normal</td>
<td>Positive</td>
<td>Negative</td>
<td>Positive</td>
<td>-</td>
<td>19</td>
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<tr>
<td>F/33</td>
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<td>36</td>
<td>Normal</td>
<td>Negative</td>
<td>Negative</td>
<td>Negative</td>
<td>-</td>
<td>23</td>
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<td>Negative</td>
<td>Low</td>
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<td>Negative</td>
<td>-</td>
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<td>29</td>
<td>Normal</td>
<td>Positive</td>
<td>Negative</td>
<td>Negative</td>
<td>-</td>
<td>16</td>
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</tr>
<tr>
<td>M/42</td>
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<td>31</td>
<td>Normal</td>
<td>Negative</td>
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<td>Negative</td>
<td>-</td>
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<tr>
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<td>Positive</td>
<td>Negative</td>
<td>-</td>
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drug resistance. Both had a normal lymphocyte count, blood sugar (fasting and post prandial) level, and liver and kidney function, and were negative for HIV I or II, but the CD4 count and CD4:CD8 ratio was low. They were prescribed an immunomodulation regimen as an adjunct to ATT. They were administered for 3 days as a single dose for 6 cycles, each with a 7-day interval. In both patients, symptoms resolved within 4 months, and ATT was continued for 18 months.

**DISCUSSION**

The pathogenesis of osteoarticular tuberculosis remains controversial. The usual pattern is haematogenous from a fresh or reactivated pulmonary focus. Tuberculosis of the sternoclavicular joint is rare, because the blood supply to the joint derives from a periarticular arcade of blood vessels that originate from the internal mammary artery. Contiguous spread from an apical pulmonary tuberculous focus to the sternoclavicular joint is also feasible. Tubercular arthritis is typically monoarticular, resulting from haematogenous spread from primary infection. It most commonly involves the spine, followed by the hip and knee joints, and rarely the sternoclavicular joint.

Tuberculosis of the sternoclavicular joint is usually insidious in onset. Thus, a high level of suspicion is necessary to make the diagnosis in patients who present with painful or painless swelling, cold abscess, or sinus. Radiography is usually normal, because of confluence of structures. Computed tomography and magnetic resonance imaging are more useful, particularly in the bone window setting.

As osteoarticular tuberculosis is a paucibacillary disease, microbiological and histopathological tests may be negative. The differential diagnoses of tuberculosis of the sternoclavicular joint include sternoclavicular hyperostosis, osteitis condensans, aseptic necrosis (Friedrich’s disease), osteoarthritis, spontaneous subluxation, rheumatoid disease, myeloma, and secondary deposits. Infective arthritis of the sternoclavicular joint can be caused by microorganisms such as *Staphylococcus aureus* (49%), *Pseudomonas aeruginosa* (10%), and *Mycobacterium tuberculosis* (3%). Septic arthritis of the sternoclavicular joint caused by *S aureus* usually occurs in adults with an infected central venous line, intravenous drug abuse, distant-site infection, immune suppression, trauma, or diabetes mellitus. Pyogenic arthritis is associated with local signs of inflammation such as redness, increased temperature and the systemic sign of high-grade fever. These signs are usually absent in tubercular arthritis.

ATT achieves good outcome for tuberculosis of the sternoclavicular joint. Surgery can be performed to confirm the diagnosis and to decompress an impending burst abscess or the mediastinal structure. Non-response to ATT may be due to drug resistance or an immunocompromised state. Osteoarticular tuberculosis is a paucibacillary disease; culture may be negative for tubercular bacilli and drug sensitivity testing may not be possible. An immunomodulation regimen is suggested.

**CONCLUSION**

A high level of clinical suspicion is needed to diagnose tuberculosis of the sternoclavicular joint in patients with pain/tenderness, discharging sinus, or cold abscess. A combination of histopathological and microbiological tests, and PCR can confirm the diagnosis.

**DISCLOSURE**

No conflicts of interest were declared by the authors.

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