Tuberculosis Involving the Sternoclavicular Joint: A Rare Presentation of Tuberculosis

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ABSTRACT

Sternoclavicular location of tuberculosis is a rare presentation of tuberculosis. We report a case of a 20-year-old female who presented with swelling in the front of the sternoclavicular joint. The diagnosis of sternoclavicular tuberculosis was made on the basis of computerized tomographic scan findings and microbiological examination of the aspirations of sternoclavicular joint. The bacteriological identification *Mycobacterium tuberculosis* was the key element in the diagnosis. The clinical outcome improved after effective anti-tuberculosis treatment. High level of clinical suspicion is needed to make the diagnosis of this rare presentation, which could be the telltale of an underlying pulmonary disease.

Keywords

Sternoclavicular; Tuberculosis; Arthritis.
INTRODUCTION

The osteoarticular site is the third location of tuberculosis after pulmonary and ganglionic locations and it represents 10% of extrapulmonary tuberculosis in immunocompetent individuals\(^1\).

The other locations are less frequent particularly at sternoclavicular level. We report the case of sternoclavicular mono-arthritis of tuberculous origin.

CASE REPORT

A 20-year-old female student presented to hospital on 20 October 2012 complaining of nocturnal fever, profuse sweating, anorexia and weight loss lasting for one year. Her symptoms were progressive and became very severe a week before admission. She gave past medical history of hemolytic anemia and was put on long-term corticosteroid therapy (prednisolone 5 milligram daily). It appeared that the anemia was wrongly labelled to be hemolytic without solid evidence. On admission her temperature was 38.5°C with pale mucus membranes. The blood pressure was 120/80 mm Hg. Her weight was 52 kg, and the height was 163 cm. Further clinical examination revealed swelling of the sternoclavicular joint with fluctuation and shiny overlying skin (Fig. 1). The rest of clinical examination was unremarkable.

Investigations demonstrated microcytic hypochromic anemia at 6.1 g/dl with hyper ferritinemia > 2,000 μg/L, suggesting anemia of chronic disorder. Her platelets were 72,000/mm\(^3\) and her white blood cells were at 9400/mm\(^3\). Erythrocytes sedimentation rate (ESR) at the first hour was 102 mm/hour and the C-reactive protein rate was 96 mg/L. The urea, the creatinine, electrolytes and the bone

![Image of sternoclavicular joint](image1.png)  
**FIGURE 1.** Swelling in the front of sternoclavicular joint.

![Image of sternoclavicular ultrasound](image2.png)  
**FIGURE 2.** Sternoclavicular ultrasound showing fluid collections.
profile were unremarkable. Her blood film was incidentally positive for malaria, which was treated with anti-malarial. The chest X-ray showed reticulo-nodular changes in both lungs. Ultrasonography of the sternoclavicular joint revealed swelling of the joint with fluid within and on both sides of the joint (Fig. 2). The thoracic CT showed area connected micronodules forming tree in bud in the lung window, suggestive of endobronchial spread of infection (Fig. 3).

The mediastinal window showed pre- and retro-sternal fluid collection communicating through the joint (Fig. 3). The thoracic CT demonstrated too an irregularity of joint’s surfaces with the appearance of erosion of the left sternoclavicular joint in favour of an arthritis (Fig. 5).

FIGURE 3.
A computed tomography scan showing a pulmonary involvement.

FIGURE 4.
A computed tomography scan showing fluid collections in front and behind sternoclavicular joint.
Aspiration of the affected sternoclavicular disclosed a purulent fluid, and direct microscopy study unveiled the presence of resistant acid fast bacilli, which were subsequently confirmed by culture at a later stage to be *Mycobacterium tuberculosis*. No other organism was isolated.

The diagnosis of sternoclavicular tuberculosis and pulmonary tuberculosis was made and the patient treated with anti-tuberculosis drugs.

The course of the illness was characterized by a complete disappearance of clinical symptoms and signs with resolution of the swelling of the sternoclavicular joint after two months of treatment. The inflammatory marker (ESR and CRP) returned to normal within one month of treatment. As there was no clear indication for the long-term corticosteroid therapy, this treatment has been stopped without any adverse effect to date.

**DISCUSSION**

The mono-arthritis is a rare location of tuberculosis, It represents 1-2% presentation of all forms of tuberculosis[2]. The most affected joints are the peripheral bearing ones (knee, spinal column, hip...) [2].

Although direct dissemination from proximal lung disease is possible in most cases the joint is affected as a result of a blood borne dissemination. In our patient the two mechanisms of dissemination are possible, taking into consideration the lung in close proximity is affected[3].

Interestingly, unlike our case, it is uncommon for the lung to be involved in most cases with tuberculous arthritis. It has been reported that only 20% of cases of tuberculous arthritis have concomitant lung disease[4]. The rarity of lung involvement with atypical presentation delays the diagnosis in most cases. Although our case may have had lung disease, systemic symptoms and swelling of the sternoclavicular joint were the main dominant presenting features. In fact in our case the involvement of the sternoclavicular joint was the telltale feature for the diagnosis of tuberculosis of the joint and lung. Similarly, Meena et al.[5] reported 9 cases of sternoclavicular joint, and the diagnosis was delayed, as in our case, in all of them.

Tuberculosis of the sternoclavicular joint are thought to happen more often in specific populations (HIV, old people, diabetics, long term corticosteroid therapy and severe undernutrition)[3]. However, the condition was also reported in cases with no immunosuppressive factors[6]. The long-term corticosteroid therapy has been noticed in our patient. This highlight the importance of screening patients in endemic areas for active and latent tuberculosis before starting long-term immunosuppressive treatment.

The thoracic X-ray gave little information about the diagnosis and the CT scan of joints may give more specific information. CT scan features suggestive of tuberculosis include soft-tissue swelling with little periosteal reaction, osteopenia, narrowing of the joint space and subchondral erosions of both sides[6]. The yield from synovial fluid examination is 20-40%[7]. The resort to the biopsy of the synovial membrane in the diagnosis of tuberculous arthritis my be more diagnostic and a high yield reported in the tuberculosis of the knee reaching 80%[8]. However, this was not needed in our case as aspiration of synovial fluid was positive on direct microscopy and culture.
The germs that are most frequently found are those of *M. tuberculosis*, *Mycobacterium bovis* and atypical mycobacteria cases[1].

An initial quadruple therapy replaced by a double therapy for a nine-month length is more often applied. A quadri therapy followed by a double therapy according to the American Thoracic Society(ATS)/Center for Disease Control protocol[9] or The WHO protocol[10] has been established. The duration of treatment that is recommended in ATS guidelines for joint tuberculosis is either 6 or 9-month duration. We have preferred the 9-month duration because of the depth of the joint involvement and the fact that the patient was on long-term corticosteroid therapy. In addition, some experts prefer a 9-month course in the treatment of joint tuberculosis because of the difficulty in assessing the response to therapy[9].

The surgical drainage is not routinely proposed in case of sternoclavicular arthritis, and was not needed in our patient. Although, some authors suggested that it leads to a faster cure[11], in most cases this approach is not needed. In fact Meena *et al.*[4] reported 9 cases of tuberculosis of sternoclavicular joint and surgical debridement was used in only one case, which was actually done during biopsy and primarily for tissue diagnosis.

**CONCLUSION**

The sternoclavicular mono-arthritis is a rare location of tuberculosis and may be the telltale sign of the diagnosis of underlying pulmonary tuberculosis. A high level of clinical suspicion is needed, and clinicians need to be aware of this rare presentation. Delay in the diagnosis is common as in most cases there is no lung involvement and the presentation is atypical. Our case also emphasizes the importance of screening patients for active and latent tuberculosis before starting long term immunosuppressive treatment.

**Conflict of Interest**

The authors have no conflict of interest.

**Disclosure**

None of the authors received any type of commercial support either in forms of compensation or financial for this study. They have no financial interest in any of the products or devices, or drugs mentioned in this article.

**Ethical Approval**

Obtained.

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النحص

تموطن السل في المفصل القصي الترقوي هو شكل نادر من أنواع السل، وفي هذا الصدد نتحدث عن حالة لمريضة تبلغ من العمر 20 عاما قدمت للمعالجة بسبب تورم في الجزء الأمامي من المفصل القصي الترقوي. وتم تشخيص هذه الحالة بواسطة الفحص بالأشعة المقطوعة التي كشفت عن إتهام في المفصل القصي الترقوي بالاختيار البكتيريولوجيا لمصل المفصل، حيث كنا العصرين الأساسيين في اكتشاف بكتيريا السل التي أكده تشخيص هذا المرض، وقد تسنت حالة المصاب السريرية بعد العلاج الفعال لممرض السل، ويستنتج من ذلك الحاجة إلى مستوى عال من الظُن السريري لتشخيص مثل هذه الحالة النادرة، والتي يمكن أن تكون مؤشرًا لمرض نادر.