

# Primary Tuberculosis of the Sternoclavicular Joint: A Case Report

## Primer Sternoklavikular Eklem Tüberkülozu: Olgu Sunumu

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### Abstract

A 25-year-old woman presented with the complaints of swelling and pain in the right sternoclavicular joint. Physical examination revealed swelling and tenderness of the right sternoclavicular joint. Magnetic resonance imaging showed a mass involving the bone and the adjacent soft tissues. The patient was diagnosed with tuberculosis based on the histopathological examination of the mass obtained with surgical debridement and was treated with anti-tuberculosis drugs. Primary tuberculosis of the sternoclavicular joint is an extremely rare disease caused by *Mycobacterium tuberculosis bacillus*. It can be confused with other diseases which may affect this region, thereby, lead to delayed diagnosis and treatment.

### Keywords

Tuberculosis, sternoclavicular joint, diagnosis

### Anahtar Kelimeler

Tüberküloz, sternoklavikular eklem, tanı

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### Öz

Yirmi-beş yaşındaki kadın hasta sağ sternoklavikular eklemde şişlik ve ağrı şikayeti ile başvurdu. Fizik muayenesinde sağ sternoklavikular eklemde şişlik ve hassasiyet saptandı. Manyetik rezonans görüntüleme bu bölgede kemik ve yumuşak dokuyu tutan kitlesel oluşum saptandı. Cerrahi debridman sonrası elde edilen materyalin histopatolojik incelemesi ile hastaya tüberküloz tanısı konularak, antitüberküloz ilaçlar ile tedavi edildi. Primer sternoklavikular eklem tüberkülozu, *Mycobacterium tuberculosis* basiline neden olduğu oldukça nadir görülen bir hastalıktır. Bu bölgede görülebilen diğer hastalıklarla karışabileceği için, tanı ve tedavide gecikmeler olabilmektedir.

### Introduction

Although tuberculosis is a disease affecting the parenchyma of the lung, it appears as extrapulmonary tuberculosis in 15% to 25% of cases. Of these cases, 10% present with musculoskeletal system involvement (1). Musculoskeletal system tuberculosis can occur due to the dissemination of pulmonary tuberculosis or as a primary disease (2,3). Musculoskeletal system tuberculosis mostly affects the vertebra and hip, and very rarely the thoracic cage (1% to 5%) (4). Diagnosis can be difficult, particularly in primary cases, as it very rarely occurs in the

thoracic region. Herein, we report a patient who was admitted with pain in the right sternoclavicular joint and shoulder and was diagnosed with tuberculosis of the sternoclavicular joint.

### Case Report

A 25-year-old woman was admitted with the complaints of swelling and pain in the sternoclavicular joint for two months. On her physical examination, swelling and tenderness were detected in the region of the sternoclavicular joint. Her medical history was non-specific. Radiography showed no pathological finding (Figure 1). Magnetic resonance imaging (MRI) showed a mass involving the bone and the adjacent soft tissues, occluding the right sternoclavicular joint with peripheral contrast enhancement (Figure 2a, 2b).

Blood analysis results were as follows: C-reactive protein (CRP): 48.7 (0-5) and sedimentation rate: 59 mm/sec, and normal white blood cells.

The patient received preliminary diagnoses of infection and malignancy, and surgical debridement was planned. A written informed consent was obtained from the patient. She underwent surgical debridement under general anesthesia by a thoracic surgeon. No direct bacillus was observed in the direct microscopic examination of acid-fast bacilli (AFB) and no growth was detected in the six-week cultures. Pathological examination revealed granuloma structures with caseous necrosis composed of epithelioid histiocytes. The diagnosis of primary tuberculosis of the sternoclavicular joint was made histologically.

The AFB results of the sputum, urine, and stool which were obtained three times were found



**Figure 1.** No pathological finding is detected in the regions of sternoclavicular joint, lung parenchyma and other bone and soft tissues in the anteroposterior radiography

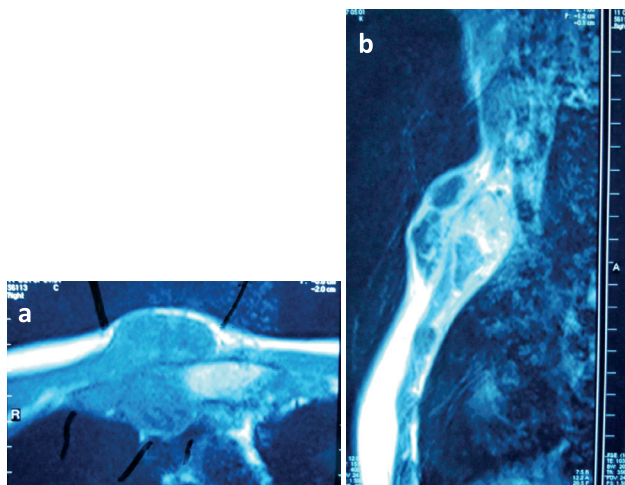
to be normal. No other focus was detected in thoracic computed tomography (CT) and abdominal ultrasound.

A combined drug therapy containing isoniazid, rifampicin, ethambutol, and pyrazinamide was administered for nine months. After two years of follow-up, no relapse was found and her complaints resolved after treatment with normal laboratory test results.

### Discussion

Approximately 1% of the musculoskeletal system tuberculosis occurs in the sternum and sternoclavicular region (4,5). Although the infection mechanism of primary tuberculosis of the thoracic cage is not fully elucidated, it is thought that it is caused by reactivation or spreading of the foci, which are formed during the hematogenous or lymphatic dissemination of tuberculosis bacilli and stayed inactive, through the lung and neighboring the pleura (6-8).

The patients with sternoclavicular joint tuberculosis often present with painful swelling, rarely with painless swelling, and very rarely with sinus (9). In our case, there was painful swelling presenting for two months. The diseases which cause pain or swelling in the same region such as pyogenic abscess, rheumatic diseases, degenerative arthritis, Tietze's syndrome, and osteonecrosis of the medial clavicle should be considered in the differential diagnosis.



**Figure 2a, 2b.** In magnetic resonance imaging, a mass formation with peripheral contrast enhancement is observed in the region of right sternoclavicular joint

For imaging of the affected region in sternoclavicular joint tuberculosis, CT and MRI can be used. Although CT is superior to MRI in evaluating the bone details, MRI shows the spread in the medulla of the bone and involvement in the soft tissue better (5). In our case, we evaluated the sternoclavicular joint of the patient with MRI before diagnosing with tuberculosis. The contrast-enhanced lesion in the sternoclavicular joint region was found to be suggestive of infectious/inflammatory diseases.

In clinical assessment, pyogenic abscess was not considered, as our case had a long history without redness and temperature increase. Rheumatic diseases were not considered, since there was no complaint in the other joints. Due to the lack of trauma and considering her young age, degenerative arthritis was ruled out. In addition, the MRI scans showed no sign of osteonecrosis in the clavicle. Although clinical findings were consistent with Tietze's syndrome, sedimentation rate and CRP levels were increased and there was a soft tissue involvement with contrast enhancement on MRI. Therefore, with a preliminary diagnoses of infection and malignancy, histopathological examinations were carried out. Although no pathological agent growth was observed in the culture, there was no atypical cells supporting malignancy, and the diagnosis of tuberculosis was, therefore, made upon detecting granuloma with caseous necrosis. Tuberculosis can be diagnosed by detecting tuberculosis bacilli in the tissue culture or showing the caseous granulomas histologically, or detecting AFB in the biopsy material (10). In the presented case, the AFB results of sputum, urine and stool were normal, however, the caseous granulomas were detected histopathologically in the biopsy material. In addition, no AFB was observed in the biopsy smears. In cases where the diagnosis cannot be made, bacterial DNA detection can be carried out with polymerase chain reaction (PCR) from infected tissue specimens (11). However, since histopathological diagnosis was made without a need for this method, we did not apply the PCR method which has also difficulties in routine application.

In conclusion, the risk of delayed diagnosis is high since the musculoskeletal system tuberculosis rarely affects the sternoclavicular region. Lately diagnosed cases can be affected by the spread of the disease to the mediastinum and great arteries due to anatomical localization. The likelihood of tuberculosis should be kept in mind in cases of unexplained sternoclavicular

arthritis, particularly in areas where tuberculosis occurs.

#### **Ethics**

**Informed Consent:** Consent form was filled out by all participants.

**Peer-review:** Externally and internally peer-reviewed.

#### **Authorship Contributions**

**Concept:** E.A., Ş.N.K., S.K., M.A., **Design:** E.A., Ş.N.K., S.K., M.A., **Data Collection or Processing:** E.A., Ş.N.K., S.K., M.A., **Analysis or Interpretation:** E.A., Ş.N.K., S.K., M.A., **Literature Search:** E.A., Ş.N.K., S.K., M.A., **Writing:** E.A., Ş.N.K., S.K., M.A.

**Conflict of Interest:** No conflict of interest was declared by the authors.

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#### **References**

1. Lee SH, Abramson SB. Infections of the musculoskeletal system by M. Tuberculosis. In: Rom WN, Garay SM (editors.) Tuberculosis. New York: Little, Brown and Company, 1996: 635-44.
2. Eren Ş, Avcı A. Sternum primer tüberkülozu: Olgu sunumu. *Türk Göğüs Kalp Damar Cer Derg* 2010; 18: 235-7.
3. Aybay C, Bağış SÖ, Karagöz A, Çakıcı A, Okçu M. Omurga Tüberkülozuna (POTT Hastalığı) bağlı omurilik yaralanmalı hastaları klinik özellikleri ve rehabilitasyon sonuçları. *Türkiye Fiziksel Tıp ve Rehabilitasyon Dergisi* 1997; 22: 11-5.
4. Tuli SM. Tuberculosis of rare sites, girdle and flat bones. In: Tuli SM, editor. Tuberculosis of the Skeletal System (Bones, Joints, Spine and bursal Sheaths). 2nd ed. New delhi: Yapee Brothers medical Publishers(P) Ltd; 2000; 155-60.
5. Shah J, Patkar D, Parikh B, Parmar H, Varma R, Patankar T, et al. Tuberculosis of the sternum and clavicle: Imaging findings in 15 patients. *Skeletal Radiol* 2000; 29: 447-53.
6. Khalil A, Le Breton C, Tassart M, Korzec J, Bigot J, Carette M. Utility of CT scan for the diagnosis of chest wall tuberculosis. *Eur Radiol* 1999; 9: 1638-42.
7. Atasoy C, Oztekin PS, Ozdemir N, Sak SD, Erden I, Akyar S. CT and MRI in tuberculosis sternal osteomyelitis: a case report. *Clin Imaging* 2002; 26: 112-5.
8. Çakmak M, Oruç M, Balcı AE. Göğüs duvarı tüberkülozu: olgu sunumu. *Fırat Tıp Dergisi* 2011; 16: 209-10.
9. Dhillon MS, Gupta RK, Bahadur R, Nagi ON. Tuberculosis of the sternoclavicular joints. *Acta Orthop Scand* 2001; 72: 514-7.
10. McLellan DG, Philips KB, Corbett CE, Bronze MS. Sternal osteomyelitis caused by mycobacterium tuberculosis: case report and review of the literature. *Am J Med Sci* 2000; 319: 250-4.
11. Kawasaki T, Sasaki Y, Shinozaki A, Bekku R, Hashimoto T, Yagi T, et al. Tuberculosis of sternoclavicular joint. *Kekkaku* 2007; 82: 475-9.