

# Shouldering the Pain: Septic Sternoclavicular Arthritis Following Pericardiostomy in a Systemic Lupus Erythematosus Patient

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## Abstract

The sternoclavicular joint (SCJ) is a rather uncommon site of septic arthritis (SA), which usually develops in patients with predisposing factors, such as intravenous drug use or diabetes mellitus. Up until now, there has been no description of SCJ SA associated with a pericardiostomy procedure. A young African Brazilian woman presented with a two-month history of shoulder pain and elevated inflammatory markers. She had been diagnosed with systemic lupus erythematosus (SLE) eight months earlier, at which time she required a pericardiostomy for a large pericardial effusion due to lupus pericarditis and nephrotic syndrome. Four months before the current presentation, she treated a soft tissue abscess on the previous site of the pericardiostomy caused by a *Pseudomonas aeruginosa*. After extensive evaluation, the cause of her shoulder pain was concluded to be due to septic arthritis of the SCJ with adjacent osteomyelitis. Computed tomography-guided bone biopsy and aspiration of synovial fluid yielded a *Pseudomonas aeruginosa*, which may have spread from the pericardiostomy orifice into the bloodstream, colonized the joint, and later developed a full-blown infection manifesting as referred pain to the shoulder. We present a highly unusual case of SCJ SA with adjacent osteomyelitis of the sternum manifesting as shoulder pain in an immunosuppressed patient with SLE.

**Keywords:** Systemic lupus erythematosus, septic arthritis, shoulder pain, sternoclavicular joint

## Introduction

The sternoclavicular joint (SCJ) is a rather atypical site of septic arthritis (SA), comprising less than 1% of SA cases. The most frequently involved bacterium is *Staphylococcus aureus*, with *Pseudomonas aeruginosa* coming second in order of frequency (1). It usually develops in patients with a history of intravenous drug use or diabetes mellitus (1,2). A few cases have also been diagnosed on patients with an already compromised joint, such in the case of rheumatoid arthritis (3). Nonetheless, up until now, there has been no description of SCJ SA as a late complication of a pericardiostomy procedure.

## Case Report

A 23 years old African Brazilian woman presented with a two-month history of right shoulder pain. She reported a weight loss of 3 kg during this period, but denied fever or other constitutional symptoms. On physical examination, mild wasting of the right

deltoid muscle was noticed, attributed to underuse, but the shoulder examination was otherwise unremarkable.

The patient had been diagnosed with systemic lupus erythematosus (SLE) eight months earlier. At the time of diagnosis, she presented with nephrotic syndrome, and a large pericardial effusion requiring pericardiostomy. Pericardial fluid cultures were negative, and the effusion abated after starting of pulse therapy with methylprednisolone and cyclophosphamide.

Four months later, she developed a soft tissue abscess on the previous site of the pericardiostomy. Culture of the abscess yielded *P. aeruginosa*. She was treated with a 10-day course of cefepime, with complete resolution of the skin infection.

On the current admission, she presented with a c-reactive protein of 47.2 mg/L, an erythrocyte sedimentation rate of 134 mm/1<sup>st</sup> hour, and a mild leukocytosis of 11,060/mm<sup>3</sup>, with no left shift. Shoulder magnetic resonance imaging (MRI) did not show any abnormality, neither did chest computed tomography (CT).



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Neuralgic amyotrophy of the shoulder (Parsonage-Turner syndrome) was suspected, but an MRI of the right brachial plexus and electroneuromyography did not confirm our hypothesis, though. Surprisingly, though, the MRI showed evidence of synovitis on the right SCJ (Figure 1A).

In the face of these controverted findings, whole body <sup>18</sup>fluorodeoxyglucose-positron emission tomography was requested. The PET/CT scan evidenced marked focal hypercaptation measuring 2.8x2.0x3.7 cm on the right SCJ (SUV<sub>max</sub> of 9.6), with bone erosion and central necrosis on the lateral border of the manubrium (Figure 1B).

CT-guided biopsy of the bone and aspiration of the synovial fluid yielded a *P. aeruginosa* with the same antibiotic sensitivity profile as the one cultured from the skin abscess. The patient was started on gentamicin and evolved with substantial improvement of the pain and decrease in inflammatory markers.

## Discussion

The SA of SCJ is a very uncommon entity. It usually affects males in the fifth decade of life, with predominance for right-sidedness (1). Risk factors include diabetes mellitus, intravenous drug use, alcoholism, hemodialysis, and human immunodeficiency virus infection (4,5). Nevertheless, no predisposing factor is identifiable in up to a quarter of patients (1,3).

The main manifestation is chest pain, present in up to 80% of cases, although referred shoulder and neck pain may also occur. Effusion is not a prominent feature since the SCJ capsule is not easily distensible. Due to delay in diagnosis, over half of the cases already present with concomitant sternal osteomyelitis (1,2).

## Conclusion

Our case highlights that, when evaluating a patient with shoulder pain, besides a thorough examination of the glenohumeral joint, it is important to consider non-articular causes of pain, such as neurologic compromise, as in Parsonage-Turner syndrome, and causes of referred pain, including conditions of the homolateral SCJ.

## Ethics

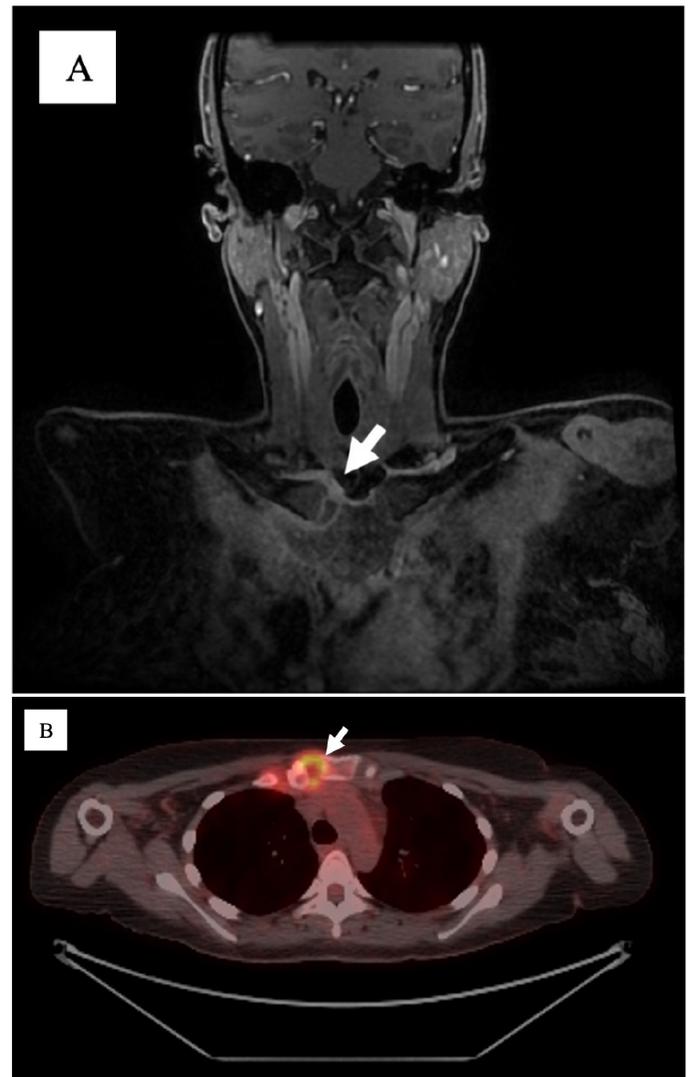
**Informed Consent:** Consent form was filled out by all participants.

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

## Authorship Contributions

Concept - Design - Data Collection or Processing - Analysis or Interpretation - Literature Search - Writing: M.B.M., R.M.R.P.

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



**Figure 1.** Evidence of an active inflammatory process on the right sternoclavicular joint. A) Coronal view of MRI, on gradient-echo sequence, evidencing synovitis of the right SCJ (arrow). B) Axial view of <sup>18</sup>F-FDG-PET/CT showing marked hypercaptation (SUV<sub>max</sub> of 9.6) on SCJ. A destructive lesion, measuring 2.8x2.0x3.7 cm, with a central area suggestive of necrosis, can be seen on the adjacent manubrium (arrow)

<sup>18</sup>F-FDG-PET/CT: <sup>18</sup>fluorodeoxyglucose-positron emission tomography/computed tomography, SCJ: Sternoclavicular joint, MRI: Magnetic resonance imaging

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