CASE REPORT

Sternoclavicular joint septic arthritis: an interesting lesson in clinical anatomy

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SUMMARY

An otherwise healthy 45-year-old man presented to our emergency department holding his left arm in abduction and external rotation. He reported pain in his left shoulder and chest for the preceding 10 days that had become much worse over the last 48 h and was eased only by holding his arm in this position. The CT of the chest revealed soft tissue swelling around the left sternoclavicular joint consistent with sternoclavicular joint septic arthritis with significant inflammatory involvement of the medial component of the left pectoralis major muscle. The patient was taken to theatre for washout of the left sternoclavicular joint and is currently recovering well at home on intravenous antibiotics.

BACKGROUND

This case beautifully illustrates the importance of clinical anatomy in everyday practice, something which is increasingly being crowded out of teaching at an undergraduate level and can be invaluable in the initial assessment of a wide range of presenting symptoms.

CASE PRESENTATION

A 45-year-old project manager with no medical history presented to our emergency department in the early hours of the morning reporting of worsening left chest and shoulder pain which he had first noticed after falling awkwardly on to his left side during a game of touch rugby 10 days previously. The pain was minimal initially but had become progressively more severe up until the day of presentation. For the past 24 h or so he had been forced to hold his left arm in an abducted, externally rotated position to minimise the pain in his shoulder and chest, claiming that any movement of the arm resulted in sharp pain which was worse in the centre of his chest. On further questioning he denied any other symptoms or history of similar events. He had no significant medical history or family history of note, was on no prescription medicines and denied recreational drug use or excessive alcohol consumption.

The examination revealed a slim, healthy looking, 45-year-old man who was holding his left upper limb abducted, externally rotated and flexed at the elbow. There was mild tenderness on palpation of the left parasternal region and over the left side of the chest and the patient would not allow any active or passive movement of the left upper arm due to severe pain in the centre and centre-left of the chest when this was attempted. Observations were unremarkable and cardiovascular and respiratory examinations were entirely normal.

ECG showed a normal sinus rhythm at a rate of 70 bpm, chest X-ray was clear and an ultrasound of the left shoulder, while somewhat limited by failure of the patient to move the arm, revealed no obvious pathology.

A provisional diagnosis of subscapularis tendon tear was made and a basic blood panel consisting of full blood count (FBC), urea and electrolytes and C reactive protein (CRP) was performed prior to referral to the orthopaedic team.

INVESTIGATIONS

FBC revealed a white cell count (WCC) of $15.0 \times 10^9/L$ and CRP was raised at 98 mg/L.

Repeat testing less than 24 h later showed the WCC at $15.3 \times 10^9/L$ and the CRP significantly higher again at 250 mg/L.

CT of the chest performed at around the same time as the repeat blood tests revealed soft tissue thickening at the left sternoclavicular joint consistent with sternoclavicular septic arthritis with significant inflammatory involvement of the medial component of the left pectoralis major muscle (figure 1).

Two sets of blood cultures taken in the absence of fever but prior to antibiotics being given each grew methicillin sensitive *Staphylococcus aureus* and surgical exploration under general anaesthetic confirmed frank pus in the joint, culture of which also revealed methicillin sensitive *S aureus* (MSSA).

TREATMENT

Surgical exploration, capsulotomy and sternoclavicular joint washout was performed under general anaesthetic and the patient was continued on 2 g intravenous flucloxacillin four times a day during his stay as an inpatient.

Figure 1 CT image of our patient showing sternoclavicular joint soft tissue swelling and inflammatory involvement of the medial aspect of the left pectoralis major.

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OUTCOME AND FOLLOW-UP

Following 9 days in the hospital the patient made a good recovery and was discharged to complete a further 4 weeks of intravenous flucloxacillin with the home intravenous antibiotic service.

DISCUSSION

Septic arthritis of the sternoclavicular joint is a rare but well-recognised condition.

It normally affects men at an average age of around 45¹ and normally occurs in the setting of risk factors such as diabetes mellitus, osteo or rheumatoid arthritis of the joint, recent sternal trauma, intravenous drug misuse, recent central line insertion or other risk factor for bacteraemia.² The condition usually presents with fevers and chest or shoulder pain and in contrast with commoner sites for septic arthritis (such as knee or elbow), it is typically subacute over an average period of 14 days.¹ Complications such as abscess formation, sternal osteomyelitis and mediastinitis are relatively common³ and probably related mainly to the time delay before presentation to medical services.

The patient we report on today was typical in terms of his age, gender, duration of symptoms and possible preceding chest trauma. Closed sternal trauma with haematoma formation has been previously reported in association with an MSSA sternal abscess but only with a clear source for bacterial seeding into the sternal haematoma in the form of intravenous drug use and presumed secondary bacteraemia.⁴ In the case of our patient, there may well have been subclinical haematoma formation around the sternoclavicular joint associated with his mild sports injury but there were no skin breaks identified, recent surgery, intravenous drug use or clear portals of entry for *S aureus* to establish a bacteraemia and subsequent septic arthritis. The case was somewhat atypical in that in addition to the above, the patient had no other risk factors for sternoclavicular joint septic arthritis, he was never febrile at any point throughout his admission and he appeared to have suffered a soft tissue injury that could have potentially explained his symptoms. Despite this, however, we believe that the unique examination findings in this case point directly towards the underlying pathology and believe that careful examination of the patient by a clinician with a sound understanding of basic clinical anatomy may have elucidated the likely pathology earlier and expedited the CT scan and the commencement of appropriate treatment.

The pectoralis major is a large muscle located on each side of the chest anteriorly that has the origin of the largest of its two heads, the sternocostal head, at the anterolateral border of the sternum. Its fibres then converge to a much smaller insertion point at the bicipital groove on the anterolateral aspect of the humerus, allowing it to pull the humerus across the body, adducting and internally rotating the arm (figure 2).

With this in mind, the history from the patient was highly clinically relevant in that he said that he had pain that was felt in the centre of the chest while trying to adduct and internally rotate the arm (hence why he held the arm abducted and externally rotated for relief, figure 3). It would appear to the authors that attempted utilisation of the pectoralis major muscle resulted in pain at the site of the inflamed medial muscle bulk giving rise to the above clinical picture. The further finding of tenderness to palpation over the left edge of the sternum, even in the absence of significant warmth or erythema, strengthens the suspicion that the underlying pathology is located around the left sternoclavicular joint and left medial region of the pectoralis major muscle and not in the shoulder itself, where the patient complained of pain at rest.

Figure 2 Pectoralis major anatomy and action.

Referred shoulder pain is indeed a common presenting symptom in sternoclavicular septic arthritis, affecting around one-quarter of patients.¹ However, the finding of a patient presenting to medical attention holding his arm in voluntary abduction and external rotation has never been described as far as we know with this condition. Nor as far as we are aware has the experience of ipsilateral peristernal chest pain with attempted internal rotation or adduction of the arm been described with sternoclavicular joint septic arthritis prior to now. These unique clinical findings, especially when combined with tenderness to palpation over the ipsilateral sternal edge and ipsilateral medial chest wall we believe should alert the physician to the probability that the site of injury is located at or around the medial aspect of the pectoralis major and the sternoclavicular joint on the affected side. Once the site of the pathology has been identified as such in a patient with the appropriate demographic risk factors then the diagnosis of septic arthritis of the sternoclavicular joint should be considered high on the list of differential diagnoses and CT imaging should be requested urgently.

Figure 3 Illustration of the position in which the patient held his arm for relief. Pain was felt at the red-shaded area when the patient moved the arm in the direction of the red arrow.

Learning points

- ▶ Not all musculoskeletal pathologies run a benign or indolent course.
- ▶ Sternoclavicular septic arthritis, although rare, should be considered in the differential diagnosis of chest and shoulder pain.
- ▶ Atypical presentation in patients with no risk factors is not uncommon.
- ▶ Delay in diagnosis can lead to life-threatening complications.
- ▶ Sound understanding of basic clinical anatomy is an essential part of patient assessment.

Competing interests None.

Patient consent Obtained.

Provenance and peer review Not commissioned; externally peer reviewed.

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