



# An unusual cause of shoulder pain: stress fracture of the clavicle

## *Nadir görülen bir omuz ağrısı nedeni: Klavikula stres kırığı*

Aksel SEYAHİ,<sup>1</sup> Ata Can ATALAR, Mehmet DEMIRHAN

<sup>1</sup>American Hospital, Department of Orthopaedics and Traumatology;  
Istanbul University, Istanbul Faculty of Medicine, Department of Orthopaedics and Traumatology

Risk faktörü bulunmaması ve ağrının atipik yeri nedeniyle klavikula stres kırığı tanısı geç konan bir olgu değerlendirildi. Otuz dört yaşında kadın hasta sağ tarafta şiddetli omuz, kol, boyun ve hemitoraks ağrısı ve sağ üst ekstremitede uyuşma yakınmaları ile başvurdu. Hastanın radyografilerinde, boyun ve brakial pleksusa yönelik manyetik rezonans (MR) ve toraks bilgisayarlı tomografi (BT) incelemelerinde patoloji görülmedi. Geriye dönük yapılan incelemede, sağ omuz MR görüntüsünde klavikula ve çevre yumuşak dokularda ödem saptanarak klavikula stres kırığı düşünüldü. Aktivite kısıtlaması ve analjezik tedavi ile hastanın yakınmaları kademeli olarak geriledi ve 10. aydaki kontrol tomografisinde stres kırığının aberan kallus oluşumu ile iyileştiği görüldü. Omuz ağrısı nedenleri arasında klavikula stres kırığı da akılda tutulmalı ve sorunun omuzdan üst ekstremiteye ve hemitoraksa yayılan atipik şiddetli bir ağrı ile ortaya çıkabileceği unutulmamalıdır. Şüphelenilen olgularda BT ve MR incelemelerinde kesitlerin klavikulanın uzun eksenine paralel olarak alınması yararlı olabilir.

**Anahtar sözcükler:** Klavikula/yaralanma/radyografi; kırık, stres/etiyoloji/radyografi.

We report a case of stress fracture of the clavicle in which diagnosis was delayed due to the unusual localization of pain and absence of predisposing risk factors. A 34-year-old woman presented with severe right-sided pain in the shoulder, arm, neck, and hemithorax, and numbness in her right upper extremity. Systemic radiographs, cervical and brachial plexus magnetic resonance imaging (MRI) and thorax computed tomography (CT) did not show any pathology. In a retrospective review of the shoulder MRI sections, an edematous appearance was noted in the right clavicle and adjacent soft tissues, suggesting a stress fracture of the clavicle. The patient was followed-up with activity limitation and analgesic treatment and her complaints subsided gradually. Control radiographs obtained 10 months later showed fracture healing with atypical callus formation. Stress fractures of the clavicle must be kept in mind in the differential diagnosis of shoulder pain presenting as an atypical severe arm pain radiating to the upper extremity and hemithorax. In suspected cases, it may be helpful to obtain CT and MRI sections parallel to the long axis of the clavicle.

**Key words:** Clavicle/injuries/radiography; fractures, stress/etiology/radiography.

Stress fractures of the clavicle are a rare entity, although acute fractures of this bone are frequently seen. After the first description in 1975, only a few case reports addressed clavicular stress fractures.<sup>[1-7]</sup> Sportive activities like weight lifting, tennis and gymnastics, radical neck dissection, nervous tick and sternoclavicular synostosis have all been mentioned as a predisposing factor in the reported cases.<sup>[1-7]</sup>

We report a case of a stress fracture of the clavicle in which the diagnosis was delayed due to unusual localization of pain and the absence of predisposing risk factors.

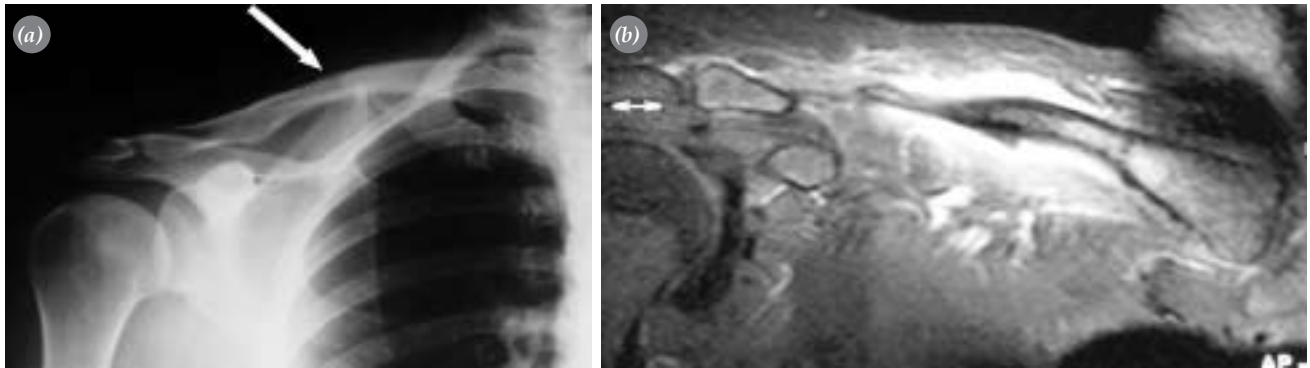
### Case report

A 34-year-old woman presented with severe right-sided pain affecting the shoulder, arm, neck, and hemithorax. She also experienced numbness in her right

**Correspondence / Yazışma adresi:** Dr. Mehmet Demirhan. Istanbul University, Istanbul Faculty of Medicine, Department of Orthopaedics and Traumatology, 34093 Çapa, İstanbul. Phone: +90212 - 635 12 35 e-mail: demirhan@istanbul.edu.tr

**Submitted / Başvuru tarihi:** 04.09.2008 **Accepted / Kabul tarihi:** 06.03.2009

© 2009 Türk Ortopedi ve Travmatoloji Derneği / © 2009 Turkish Association of Orthopaedics and Traumatology



**Figure 1.** (a) The initial anteroposterior radiograph which did not reveal any pathology. In retrospective reassessment a radiolucent fracture line (arrow) can be detected. (b) T2 weighted coronal magnetic resonance scans. Note the bone and adjacent soft tissue edema.

upper extremity. There was no history of trauma. On physical examination the range of motion of the shoulder was full, but painful in overhead movements. On palpation she had no tenderness in the shoulder, clavicle or thorax. Systemic radiographs did not reveal any pathology (Fig 1a). Generalized numbness and pain on the right extremity suggested a probable diagnosis of brachial neuritis or cervical radiculopathy and the patient was hospitalized for further investigation. The Magnetic Resonance Imaging (MRI) studies of the brachial plexus, shoulder, neck and cranium did not reveal any pathology. Psychiatric consultation was requested with the suspicion of a psychosomatic problem and a major depression was detected. The patient's complaints were not alleviated by analgesic treatment. The MRI scans were thus reassessed and

the edema adjacent to the clavicle was considered as the sign of a clavicular stress fracture (Fig 1b). Analgesic, anti-inflammatory and antidepressant therapies were arranged and the patient was discharged with the diagnosis of a suspected stress fracture of the clavicle. With activity limitation and analgesic management the patient's symptoms gradually subsided. Control radiograph and Computerized Tomography (CT) Scans taken 10 months after the admission, showed healing of the stress fracture with aberrant callus formation (Fig 2).

## Discussion

The diagnosis of a stress fracture of the clavicle can be challenging, as with all other stress fractures.



**Figure 2.** The control radiograph (a), and coronal (b) and 3D reconstructed (c) computerized tomography scans taken 10 months after the admission. The fracture is healed with aberrant callus formation.

[8,9] A healing fracture can be misinterpreted as a neoplastic or infectious disorder.<sup>[8]</sup>

The previous reports about stress fractures of the clavicle indicated several predisposing activities in which the clavicle was subject to repetitive shearing forces.<sup>[1-7]</sup> Our patient had no obvious risk factors and no other health problems except for major depression, which seemed unrelated to her stress fracture.

The nonspecific pain of a clavicular stress fracture referring to the upper extremity, can misdirect the clinician to more common causes of shoulder pain, such as rotator cuff and cervical disc diseases. At the initial assessment, a stress fracture of the clavicle was not suspected as the patient had no tenderness on the clavicle, nor any strenuous shoulder activity history. A suspected diagnosis of stress fracture could only be made after excluding several other probable pathologies with advanced imaging modalities.

On standard shoulder CT and MRI studies, because of the sigmoid anatomy of the clavicle and its retroversion the coronal and axial sections may not cross a probable fracture line.

Stress fractures of the clavicle must be kept in mind in the differential diagnosis of shoulder pain. This rare entity can manifest itself with an atypical shoulder pain referring to the upper extremity and hemithorax. CT and MRI sections taken parallel to

the long axis of the clavicle may be helpful in the diagnosis of subtle cases, with no other radiographic findings.

The authors would like to thank Dr. Carolyn Cottrell for her technical support in the writing of this paper.

## References

1. Kuroda T, Ehara S, Murakami H. Stress fracture of the clavicle associated with sternocostoclavicular hyperostosis. *Skeletal Radiol* 2005;34:424-6.
2. Shellhaas JS, Glaser DL, Drezner JA. Distal clavicular stress fracture in a female weight lifter: a case report. *Am J Sports Med* 2004;32:1755-8.
3. Yamada K, Sugiura H, Suzuki Y. Stress fracture of the medial clavicle secondary to nervous tic. *Skeletal Radiol* 2004;33:534-6.
4. Fallon KE, Fricker PA. Stress fracture of the clavicle in a young female gymnast. *Br J Sports Med* 2001;35:448-9.
5. Wu CD, Chen YC. Stress fracture of the clavicle in a professional baseball player. *J Shoulder Elbow Surg* 1998;7:164-7.
6. Abbot AE, Hannafin JA. Stress fracture of the clavicle in a female lightweight rower. A case report and review of the literature. *Am J Sports Med* 2001;29:370-2.
7. Peebles CR, Sulkin T, Sampson MA. 'Cable-maker's clavicle': stress fracture of the medial clavicle. *Skeletal Radiol* 2000;29:421-3.
8. Moon BS, Price CT, Campbell JB. Upper extremity and rib stress fractures in a child. *Skeletal Radiol* 1998;27:403-5.
9. Peris P. Stress fractures. *Best Pract Res Clin Rheumatol* 2003;17:1043-61.