OSTEOMYELITIS OF THE CLAVICLE. A CASE REPORT

S. GARCÍA, A. COMBALIA, J. M. SEGUR, A. J. LLOVERA

Osteomyelitis of the clavicle is a rare complication of subclavian vein catheterization. The authors report the case of a patient with osteomyelitis in the right clavicle after subclavian venipuncture.

Keywords : osteomyelitis ; clavicle.
Mots-clés : ostéomyélite ; clavicule.

INTRODUCTION

Since its first description in 1952, percutaneous subclavian venipuncture has become a common procedure in intensive care medicine. In spite of its simplicity, many complications have been reported following its use : subcutaneous hematoma, pneumothorax, hemothorax, and sepsis. Another rare complication is osteomyelitis of the clavicle which must be considered when fever and sternoclavicular pain are present. Plain roentgenograms show no changes in early stages. Scintigraphic scanning is more useful at this stage because of its greater sensitivity. After diagnosis tomography or computed tomography must be performed in order to obtain a clear evaluation of the lesion.

CASE REPORT

A 35-year-old woman diagnosed as having scleroderma since 1991 was admitted in August 1994 because of a recurrence of her disease. She was treated with thalidomide orally and showed clinical improvement. She was readmitted one month later because of biventricular congestive heart failure. Orotracheal intubation and respiratory assistance were needed. Finally, diuretic therapy succeeded in relieving the symptoms. On hospital admission, the treatment with thalidomide was reestablished (it had been withdrawn previously because of her coronary disease). An urticariform rash appeared 48 hours later, and was considered a side effect of the drug ; therefore thalidomide was withdrawn once more. Antihistamine and corticosteroids were administered, and the symptoms disappeared.

In October 1994 the patient was brought to the intensive care unit and tracheostomy and catheterization of the right subclavian vein were considered necessary. The catheter was withdrawn 21 days later, after which a fistula appeared below the right clavicle. A plain xray focused on both clavicles showed a periosteal reaction in the middle third of the right clavicle (fig. 1). Bone scintigraphy with ^{99}Tc MDP (fig. 2) showed a flat, irregular-shaped hot spot along the edge of the bone in the same place. A gallium-67 scan (fig. 3) showed increased uptake in the middle third of the right clavicle . Both images had different morphologies. The image that appeared with the gallium-67 was round and it extended beyond the edges of cortical bone. These findings were suggestive of a bone infection with an osteitic focus in the middle third of the right clavicle. A fistula below the clavicle was confirmed later by fistulography. Osteomyelitis of the clavicle presumably resulting from subclavian venous catheterization was diagnosed in spite of the negative results of cultures.

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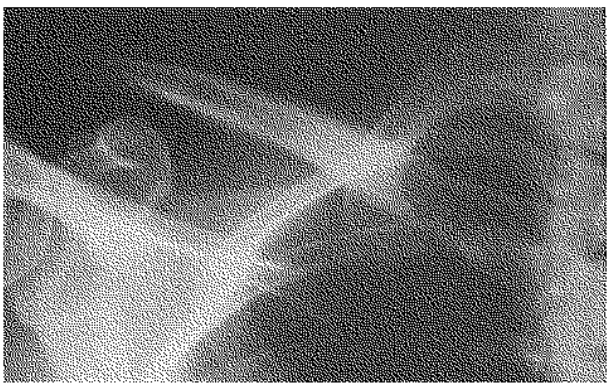

Fig. 1. — Anteroposterior roentgenogram focused on the area of the right upper hemithorax to include the right clavicle shows a diffuse periosteal reaction in the middle third of the right clavicle.

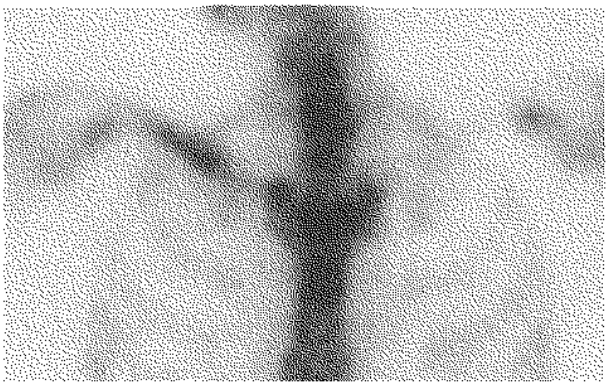

Fig. 2. — $A^{99m}TC$ MDP scan shows significant uptake over the right clavicle.

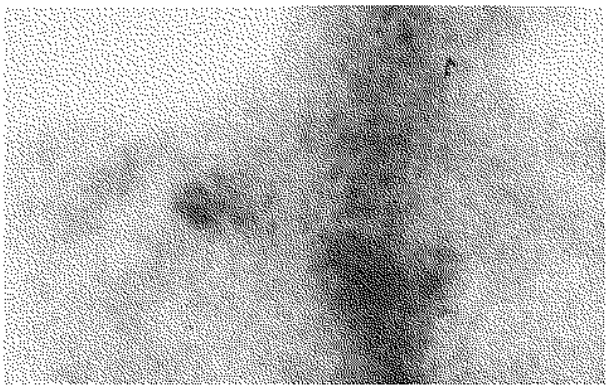

Fig. 3. — Bone gammagraphy with Ga-67 shows accumulation of the radioisotope in the middle third of the right clavicle.

We performed a surgical debridement. Peroperative methylene blue injection showed undermining of the clavicle periosteum. Finally we resected the fistula and curetted the bone in the osteomyelitic area. Cultures remained negative and pathologic examination found only nonspecific inflammatory tissue. Twenty-four months later, the patient was free of symptoms.

DISCUSSION

Infections linked to intravenous catheterization are responsible for 20 to 30% of nosocomial bacteriemias, as well as for most cases of transitory candidemia. They are the most common cause of nosocomial infections, mainly among intensive care patients. Percutaneous subclavian venipuncture has become a common route for central venous catheterization. It is useful for central venous pressure monitoring, and for long-term intravenous therapy. Complications directly related to catheter insertion arise in 3 to 12% of all cases. Any anatomical structure located near the vein can be damaged. The structures most frequently injured by a percutaneous infraclavicular approach to the subclavian vein are the pleura and the subclavian artery (5).

Iatrogenic complications following subclavian venous catheterization are well described and include subcutaneous hematoma, arterial puncture, arteriovenous fistula, pneumothorax, air embolus, catheter fragment embolization, hemothorax or hydrothorax, thrombosis and infection (1).

However, sepsis is rare and its occurrence depends on the length of time the catheter is left in place and on the kind of fluids infused (2).

Most clavicle injuries are traumatic and do not entail diagnostic difficulties. On the other hand nontraumatic clavicular injuries, are rare and the diagnosis can be difficult (3).

Primary osteomyelitis of the clavicle usually occurs in children. The infection is diaphyseal and is caused by hematogenous spread. *Staphylococcus aureus* is the organism most frequently isolated. However, anaerobic and mixed infections are also common (4).

On the other hand, in adults, clavicular osteomyelitis is usually a secondary infection, and its

link with predisposing factors has been proved. However, a primary hematogenous infection is also possible, and the predisposing factors can be absent. The predisposing factors can be systemic : coccidioidomycosis, intravenous drug abuse, tuberculosis and mitral valve prosthesis, diabetes, and previous lung carcinoma (3, 4) can be found among the predisposing factors.

The pathogenesis of infection in our patient is not fully understood. One mechanism could be direct inoculation into the clavicular periosteum during the puncture and insertion procedure. Skin flora has been found to be a significant source of microorganisms found on cannula tips (1).

Management of osteomyelitis of the clavicle includes both medical and surgical strategies. The key points are early removal of the intravenous device and prolonged antibiotic treatment. If the response is weak, or slow, or if the infection recurs (1), surgical debridement will be considered.

Although all the cultures were negative, probably because of the long antibiotic treatment, this is a case with predisposing factors for clavicle osteomyelitis : subclavian vein catheterization, intensive care unit admission and tracheostomy.

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SAMENVATTING

S. GARCÍA, A. COMBALIA, J. M. SEGUR, A. J. LLOVERA. Osteomyelitis van de clavicula.

Osteomyelitis van de clavicula is een zeldzame complicatie na subclaviacatheterisatie. Een dergelijk geval wordt door de auteurs gerapporteerd.

RÉSUMÉ

S. GARCÍA, A. COMBALIA, J. M. SEGUR, A. J. LLOVERA. Ostéomyélite de la clavicule. Présentation d'un cas.

L'ostéomyélite de la clavicule est une complication rare de la cathétérisation de la veine sous-clavière. Les auteurs présentent le cas d'un patient qui a présenté une ostéomyélite de la clavicule droite après ponction de la veine sous-clavière.