Case report

METHICILLIN-RESISTANT *STAPHYLOCOCCUS AUREUS* OSTEOMYELITIS OF THE SCAPHOID FROM A CATHETER IN THE RADIAL ARTERY

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We describe the development of methicillin-resistant *Staphylococcus aureus* osteomyelitis of the scaphoid in a 49-year-old man from an infection occurring around a catheter in the radial artery. Total scaphoidectomy and appropriate antibiotic therapy eradicated the infection.

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Osteomyelitis of the carpal scaphoid is very rare; it has been reported in association with catheterisation of the radial artery, lacerations, cat bites, and other unknown causes. Reported pathogens include *Staphylococcus aureus*, *Serratia marcescens*, and *Mycobacterium kansasii*. We describe a case of methicillin-resistant *Staphylococcus aureus* (MRSA) osteomyelitis of the carpal scaphoid arising from a catheter in the radial artery. This has not previously been reported in the English language literature.

Case report

A 49-year-old man who had suffered from hypertension for five years suddenly lost consciousness and developed a right hemiparesis. In the emergency room, an arterial line was placed in the right radial artery at the wrist using a 20-gauge sterile catheter. He was admitted to the medical intensive-care unit and received conservative treatment for an intracerebral haemorrhage at the left basal ganglia. From the second day after admission, the level of consciousness improved gradually and verbal communication became possible on the third day.

On the fifth day of admission, an erythematous swelling with inflammation developed around the site of the catheter, which was then removed; 1 g of ceftezole was administered every eight hours intravenously. He had pyrexia of 38.9°C and increased swelling and fluctuation around the site of the catheter required incision and drainage on the seventh day. Purulent fluid was obtained, and debridement of adjacent necrotic tissues led to a skin defect 2 cm in diameter. MRSA was isolated after two days of culture, and intravenous vancomycin was commenced. After two weeks the systemic and local signs of infection had subsided. The skin defect was covered with a full-thickness skin graft four weeks after the drainage. Treatment with vancomycin was continued for a further ten days until the stitches were removed and the survival of the grafted skin confirmed. The right hemiparesis gradually improved and he was discharged on the 45th day.

Five weeks after discharge he complained of a painful swelling of the wrist. Radiographs showed a large osteolytic lesion with an irregular margin in the waist of the scaphoid (Fig. 1). The whole scaphoid showed high signal intensity on gadolinium-enhanced T1-weighted MRI (Fig. 2). It was removed through a volar approach. It was filled with thick pus, and its cortex was thin and destroyed (Fig. 3). Cultures grew MRSA which was sensitive to vancomycin and teicoplanin. The latter was administered intravenously for seven weeks.

At follow-up two years later, he had no pain and no sign of local inflammation. The range of movement of the wrist was decreased, with palmar flexion of 75° and dorsiflexion of 60°. Radiographs showed migration of the capitae into the space created by removal of the scaphoid (Fig. 4).

Discussion

Although there is collateral circulation to the scaphoid from branches of the anterior interosseous artery, the blood supply is mainly from branches of the radial artery, the largest of which enters the scaphoid at the waist. Radiographs of our patient showed a large osteolytic lesion in the waist, suggesting that the infection had been spread by this route (Fig. 1).
The risk of infection from an indwelling arterial catheter is increased significantly when it is left in situ for more than four days. In our patient it was removed on the fifth day. A sterile technique, as well as Allen’s test at the wrist to assess the pattern of arterial perfusion, is very important when cannulating the radial artery. If the site for insertion is disinfected and the catheter introduced with sterile precautions, the risk of catheter-related haematogenous infection can be eliminated. Intra-arterial catheters introduced with sterile precautions for short periods of time will have a low risk of local infection.

There have been few reports of osteomyelitis of the scaphoid and its treatment. In children, *Staphylococcus aureus* osteomyelitis of the scaphoid, treated by surgical drainage and appropriate antibiotics, has resulted in good function of the wrist and regeneration of the scaphoid. *Mycobacterium kansasii* osteomyelitis of the scaphoid with small cysts in a 31-year-old man was treated satisfactorily by debridement and antimicrobial therapy. *Serratia marcescens* osteomyelitis of the scaphoid has been reported in a 26-year-old man. The scaphoid, which was full of pus, was excised.

If osteomyelitis of the scaphoid is confined only to a part of the bone, or if it occurs in children, complete excision of the scaphoid may not be necessary. However, when the entire bone is destroyed, total scaphoidectomy is required to eradicate the infection. The proximal migration of the capitate observed two years later in our patient is likely to progress and limited carpal fusion or proximal row carpectomy may be required.

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**References**