Panton-Valentine Leukocidin associated *Staphylococcus aureus* musculoskeletal infection in children. A reflective case series of long term complications

G. Yip, D. Davenport, T. Shah, M. Kokkinakis. Evelina London Children's Hospital, London, UK.

Background

Panton-valentine Leukocidin (PVL) associated *Staphylococcus aureus* infections (SA-PVL) cause severe invasive disease. The endotoxin is expressed in both methicillin sensitive (MSSA) and methicillin resistant (MRSA) strains. It forms pores in leukocytes thereby destroying them. Though rare, it is more commonly detected in cases with necrotising infection. In children, SA-PVL is most associated with septic shock, extensive and/or multiple soft tissue, bone and/or joint infections and pneumonia. This case series of SA-PVL infections with musculoskeletal involvement in a paediatric population illustrate presentation, management and destructive sequelae.

Cases

Case 1

2 month old with septic shock, acute respiratory distress syndrome and leg swelling. She had femoral osteomyelitis, a subperiosteal collection and myositis, requiring surgical debridement. She subsequently developed a pathological fracture with a non-union requiring fixation and distal femoral growth arrest.

Figure 1: Left distal femoral pathological fracture and subsequent fixation with plate

Case 2

20 month old with septic shock, acute respiratory distress syndrome and acute shoulder septic arthritis. There was subsequent chronic osteomyelitis of the humerus with a pathological fracture bone loss, treated with fixation and vascularised fibula graft.

Figure 2: Left humeral pathological fracture, bone loss and subsequent fixation and vascularized fibula graft

Case 3

15 year old with acute ankle septic arthritis, subsequent chronic osteomyelitis of the distal tibia with chondrolysis and clinical arthrodesis.

Figure 3: Ankle chondrolysis

Case 4

10 year old with right distal femoral osteomyelitis, pathological fracture and bone loss treated with external fixator and bone transport. He also had infective endocarditis and thromboemboli.

Figure 4: Distal femur pathological fracture; post debridement of sequestrum and lengthening with bone transport using external fixator

Learning points/discussion

Suspicion of SA-PVL should be considered in patients presenting with severe sepsis. PCR is essential for diagnosis. Additional antibiotics to the empirical management may be necessary, with consideration of use of IV immunoglobulins. For musculoskeletal infections, multiple surgical debridements are necessary with higher rates of devastating long term complications of joint destruction, bone loss and growth disturbance can develop. Future multiple and complex surgeries may be required. Increased awareness of the rapid onset and severe consequences of SA-PVL infections with early joint microbiology/infectious disease and surgical input are essential.