CASE REPORT

Community associated MRSA: an alert to paediatricians

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Community associated methicillin resistant *Staphylococcus aureus* (CA-MRSA) is an emerging pathogen typically associated with skin and soft tissue infection, with occasional reports of fatality in previously healthy children and young adults. We report a case of invasive CA-MRSA and highlight the potential impact of such infections on empirical treatment of staphylococcal infections.

An 11 year old boy of African origin was admitted to his local hospital with left hip pain, fever, and an inability to weight bear (day 1). The day before, he had fallen on to his left hip while playing football; his symptoms started soon afterwards. He had no significant past medical history; four months previously he had moved to the UK. At presentation he was unwell and febrile (40.1℃) with a high C-reactive protein (CRP) of 104 mg/l. An ultrasound scan of his left hip was inconclusive. The pain extended to his left inguinal region and testis; he was treated with intravenous flucloxacillin and cefotaxime for epididymo-orchitis, and ibuprofen for pain relief. He remained febrile over the next four days and the pain spread to his left thigh and loin. MRSA was isolated from the single blood culture bottle taken at presentation. He developed acute renal failure on day 5 (urea 20.3 mmol/l, creatinine 396 μmol/l), which was treated with intravenous fluids without improvement; he was transferred to our renal unit. MRSA was identified again, from a blood culture drawn on day 2, and vancomycin was added to his therapy. He had no skin lesions. He now described right sided pleuritic chest pain. Examination revealed a right sided pleural rub and coarse crackles. A chest radiograph showed right basal consolidation with a pleural effusion. An MRI scan identified osteomyelitis of the left pubic ramus with a subperiostial collection, which was drained and irrigated surgically. MRSA was cultured from the intra-operative periosteum and pus specimens and histology confirmed acute osteomyelitis. His antibiotics were rationalised to vancomycin and oral rifampicin (600 mg once daily). Unusually, the MRSA isolates were susceptible in vitro to erythromycin and ciprofloxacin. He remained febrile (temperatures ⩾38℃) over the next six days, his CRP remained raised, and he developed a soft systolic murmur. Transthoracic echocardiography did not show vegetations and the murmur resolved. Pleural fluid aspirated on day 12 was purulent but sterile. His renal failure, which improved, was attributed to interstitial nephritis, secondary to β-lactams and/or ibuprofen. On day 16 his fever and CRP (35 mg/l) were settling. He was discharged to his local hospital on vancomycin and rifampicin.

The MRSA susceptibility pattern and the epidemiology suggested that this might be a community associated strain. Genotypic analyses (including pulsed field gel electrophoresis, detection of the Panton-Valentine Leukocidin (PVL) genes, exfoliative toxin D gene, and SCC*mec* type IVc) confirmed this isolate to be representative of the sequence type 80 clonal lineage, the so called European clone of CA-MRSA.[1]

DISCUSSION

Recent UK data reported a marked increase in paediatric MRSA bacteraemia.[2] Alongside this, CA-MRSA is an emerging public health concern, which has developed independently in several countries over the last two decades.[3] MRSA accounted for more than 60% of community acquired staphylococcal infections in a USA children's hospital.[4] In the UK, CA-MRSA infections are rare, but without recognition, monitoring and control, they may increase.[5] CA-MRSA strains have emerged de novo in the community and are distinct genetically from healthcare associated strains. Characteristically, CA-MRSA encodes the genetic element SCC*mec* type IV, which confers resistance to β-lactams but not other antibiotic classes; consequently they are not usually multi-resistant. CA-MRSA has caused fatal infections in young, previously healthy people who do not have healthcare associated risk factors. Sporadic outbreaks have occurred, and spread within the hospital environment has also been reported.[3]

CA-MRSA has been most frequently associated with skin infections, usually localised necrotic lesions, often with cellulitis or abscesses,[3] some requiring surgical intervention. Necrotising pneumonia is less common but has a high mortality; haemoptysis, shock, leucopenia, and multi-lobar alveolar infiltrates that usually form abscesses are classical, and blood cultures are usually positive. Necrosis and leucopenia are probably caused by PVL toxin, the genes for which are usually found in CA-MRSA isolates.[3] Toxic shock-like illness, septic shock, asymptomatic carriage, orbital cellulitis, septic arthritis, and osteomyelitis have also been described.

Our case highlights some important lessons for paediatricians in the UK. In the absence of healthcare associated risk factors, MRSA infection is unlikely to be considered and the significance of MRSA isolates may be questioned. However, an unusually susceptible isolate in a previously healthy individual may be a community associated strain. It is likely that our patient acquired CA-MRSA in the UK, although it is conceivable that the MRSA was imported from abroad. Recognition of possible CA-MRSA by epidemiology, clinical syndrome, or antibiotic susceptibility allows early initiation of therapy and helps inform therapeutic, surveillance, and control measures. If the UK incidence of such infections increases to levels seen elsewhere, the days of empirical flucloxacillin for suspected staphylococcal infection may be numbered.

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IMAGES IN PAEDIATRICS

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Tuberculous pyomyositis of the left quadratus lumborum

A case of isolated tuberculous pyomyositis, a rare presentation of tuberculosis, is reported.

A 15 year old Bangladeshi boy presented with a 15 month history of a lump on the left side of his back. There was no history of fever, night sweats, or weight loss; he had been immunised with BCG vaccine in the UK at 13 years of age.

On examination there was a left thoracic paravertebral fluctuant swelling. Spinal movements and neurological examination of upper and lower limbs were normal.

The Heaf test was strongly positive (grade IV) and an MRI scan showed an abscess within the left quadratus lumborum extending into adjacent subcutaneous tissue with no intraspinal or vertebral involvement (see fig 1).

Ultrasound guided needle aspiration obtained blood stained pus, from which fully sensitive mycobacterium tuberculosis was cultured.

Anti-tuberculosis treatment (isoniazid, rifampicin, pyrazinamide, and ethambutol) was commenced for one year. The lump subsequently decreased in size.

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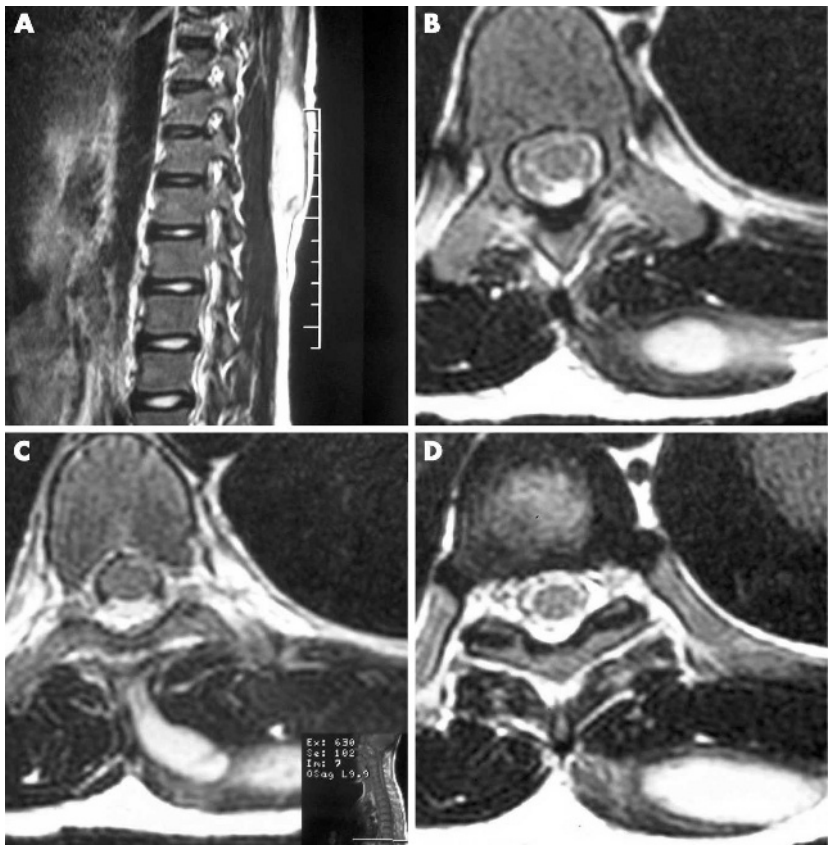

Figure 1 (A) Parasagittal T2 weighted MRI scan of thoracic spine showing intramuscular collection. (B–D) T2 weighted axial images showing left posterior paravertebral muscle collections.