Panton-Valentine leukocidin-positive *Staphylococcus aureus* necrotising pneumonia complicating pandemic A(H1N1) influenza infection

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DESCRIPTION

A 40-year-old man with a history of intravenous drug abuse and internal fixation for a right fifth metacarpal fracture was admitted for acute respiratory distress syndrome and septic shock following influenza-like illness worsening since 6 days. Laboratory tests showed an inflammatory syndrome (white cell count 17 000/mm3; C reactive protein 325 mg/L; procalcitonin 54 mg/L). Figure 1 showed a bilateral extensive necrotising pneumonia. The alveolar fluid sampled on admission showed no airway haemorrhage, but yielded a methicillin-susceptible *Staphylococcus aureus* carrying Panton-Valentine leukocidin (PVL) genes and was positive for A(H1N1) influenza virus in PCR. Blood cultures and HIV testing were negative. The empirical ceftriaxone–clindamycin–vancomycin–oseltamivir regimen was changed for oseltamivir (75 mg/12 h) for 10 days and oxacillin (200 mg/kg/day) and clindamycin (600 mg/6 h) for 6 weeks. As a secondary infection on the orthopaedic device was suspected, it was removed, but cultures remained sterile. Mechanical ventilation was stopped at day 18 and the patient was discharged home after 7 weeks without respiratory sequelae.

PVL-positive staphylococcal infections are uncommon conditions, leading to skin and soft-tissue infections and necrotising pneumonia in young patients without comorbidities.1 It usually complicates viral respiratory infections, especially influenza, as viral-induced lung epithelium damage facilitates staphylococcal adhesion and tissue invasion.2 PVL mostly targets neutrophils, causing pore formation that leads to local release of inflammatory mediators promoting tissue necrosis.3 Leukopenia and haemoptysis constitute specific factors associated with mortality.4 Anti-staphylococcal penicillin or vancomycin associated with an antitoxinic, antimicrobial (clindamycin, rifampin or linezolid), constitutes the reference treatment. Intravenous immunoglobulins could be added in refractory cases.4

Figure 1 Chest X-ray (A) and thoracic CT scan (B, C and D) showing bilateral necrotising pneumonia complicating A(H1N1) influenza infection due to PVL-positive *Staphylococcus aureus*.

Learning points

▸ Necrotising pneumonia is a life-threatening condition due to Staphylococcus aureus producing Panton-Valentine leukocidin.
▸ Characteristic patterns include a rapidly extensive pneumonia occurring in young patients after an influenza-like illness. It could be associated with haemoptysis, leukopenia and cutaneous rash which constitute factors associated with mortality.
▸ An optimal antimicrobial therapy must be promptly initiated, including an anti-staphylococcal penicillin or vancomycin, associated with an antitoxin antibiotic such as rifampin, clindamycin or linezolid. Intravenous immunoglobulins can be added in severe cases.

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