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/mm^3; 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 regiment 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.[1] 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]

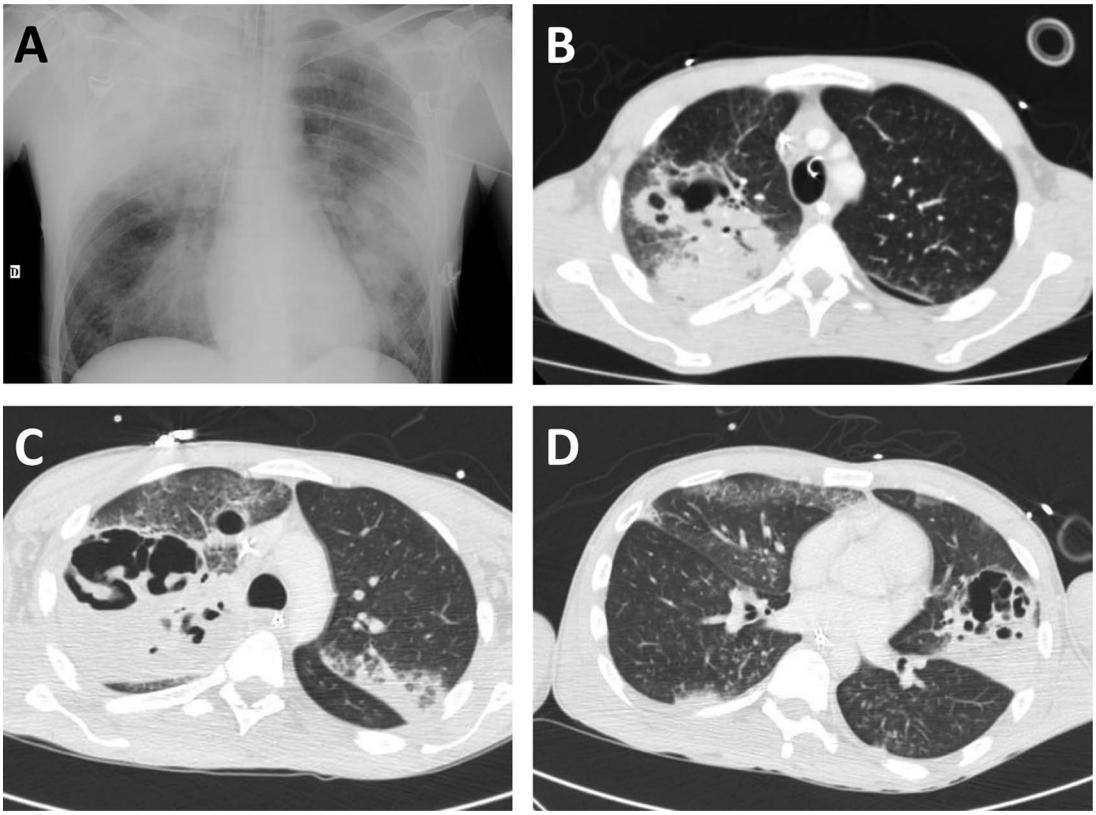

Figure 1 Chest X-ray (A) and thoracic CT scan (B, C and D) showing bilateral necrotising pneumonia complicating A(H1N1) influenza infection due to PVL-positive *Staphylococcus aureus*.

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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 antitoxinic antimicrobial such as rifampin, clindamycin or linezolid. Intravenous immunoglobulins can be added in severe cases.

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