The utility of performing blood cultures in patients with skin and soft tissue infections

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**Background:** The utility of performing blood cultures in patients with cellulitis and erysipelas is debated. Little evidence is available and the influence of the patients’ acute clinical condition on positivity rates has not been studied before. The aim of our study was to provide evidence on the usefulness of performing blood cultures in patients hospitalized with cellulitis, erysipelas or wound infections, and to assess the influence of acute disease severity and comorbidity on positivity rates.

**Material/methods:** We performed a retrospective study, including patients with erysipelas, cellulitis or wound infections who had been enrolled in two multicentre observational studies and one intervention study between 2012 and 2015 in the Netherlands. The acute clinical condition was assessed using the Modified Early Warning Score (MEWS) (severe: MEWS score ≥ 2, non-severe: <2). Patients’ comorbidity with the Charlson Comorbidity Index (CCI) (severe: CCI≥ 2, non-severe: < 2). Outcome measures included the number of positive blood cultures, including microbiology results, and the number of blood cultures performed in patients with severe versus non-severe acute clinical condition and comorbidity.

**Results:** A total of 334 patients with a suspected skin infection were admitted to 40 hospitals in the Netherlands. In 175 patients blood cultures were performed, of whom 70 (40%) were diagnosed with cellulitis, 83 (47%) with erysipelas, and 22 (13%) with a wound infection. Twenty-nine (17%) patients had a positive blood culture. The positivity rate was 19% in patients with cellulitis (13/70), 13% in patients with erysipelas (11/83) and 27% in patients with a wound infection (6/22). Most cultured species were Streptococcus species (6.9%, 12/175), gram-negative bacteria (4.6%, 8/175), and Staphylococcus aureus (4%, 7/175).
Data on the clinical condition were collected in 275 patients, of whom 100 (36%) were diagnosed with cellulitis, 114 (42%) with erysipelas, and 61 (22%) with a wound infection. Blood cultures were performed in 76% of the patients with a severe acute condition (65 of 85), compared to 48% of patients with a non-severe acute condition (92 of 190) (OR 3.5, CI 95% 2.0-6.2, p<0.001). Blood cultures were positive in respectively 18% and 13% (OR 1.5, CI 95% 0.6-3.6, p=0.4). In 53% of patients with severe comorbidity blood cultures were performed (71 of 133), compared to 60% of patients with non-severe comorbidity (86 of 142) (OR 0.7, CI 95% 0.4-1.2, p=0.2). Blood cultures were positive in respectively 25% and 7% (OR 3.4, CI 95% 1.4-8.2, p=0.006).

**Conclusions:** Significantly more blood cultures were performed in patients with a severe versus a non-severe acute clinical condition. Blood cultures from patients with severe comorbidity had a higher positivity rate than those from patients with mild or no comorbidity.