Catheter-related bloodstream infections in adults receiving parenteral nutrition: does the time taken to report blood cultures impact on clinical management?

Authors: Helen Stone, Tahir Akbar, Thomas Hollingworth, Elizabeth Buse, Caroline Coward, Emma Farrelly, Zillah Leach, Hannah Leach, Priya Mistry, Charlotte S Rutter and Trevor R Smith

Aims

This project aimed to evaluate the time taken for formal reporting of blood culture results, the associated impact of this on prescribing appropriate antibiotic therapy and defining the period of starvation while parenteral nutrition (PN) is withheld for patients with catheter-related bloodstream infections (CRBSI).

Methods

Clinical data were retrospectively collected from electronic and paper records for all patients diagnosed with CRBSI from a single centre from March 2016 to March 2017. Data were collected on demographics, clinical presentation, associated comorbidities, time for blood cultures to be reported and the impact this had on antibiotic and parenteral nutrition prescribing.

Results

Sixty-eight patients with CRBSI were evaluated. Male:female ratio was 37:31 with a median age of 59 years. The median Charlson co-morbidity index for this cohort was three.

The median modified early warning score at presentation with each infection episode was four. All patients had central line cultures taken of which 41% (28/68) were positive. Sixty-eight per cent (46/68) of patients also had peripheral blood cultures taken and 28% (13/46) were positive. The most frequent organism cultured were streptococci. The median time for blood cultures to be initially reported was 24 hours and a total time of 72 hours for antibiotic sensitivities to be reported. Blood culture results led to changes in clinical management in 69% (41/68) of cases – PN being restarted or antibiotics changed.

The median time for the correct organism-specific antibiotic to be prescribed from initial suspected infection episode was 48 hours. PN was withheld for a median of 72 hours in patients who were subsequently found to have negative blood cultures. Fifty-nine per cent (40/68) of patients had a diagnosis of infection other than CRBSI – 68% (27/40) of these patients did not meet sepsis parameters and therefore PN could have been continued.

Conclusion

These data show that where patients receiving PN present with a suspected CRBSI there is a considerable delay before they receive organism-specific antibiotic therapy or are able to restart PN where this has been withheld. We also found that a significant proportion of patients did not have CRBSI and in many of these cases PN was unnecessarily withheld.

Further work is needed to examine the impact of diagnostic delays on clinical and nutritional outcomes as well as exploring the potential role of new technologies such as point of care testing on diagnostic and treatment times for CRBSI. ■

Conflict of interest statement

None declared.

Authors: Intestinal Failure Unit, University Hospital Southampton, Southampton, UK