Obtaining blood cultures under antibiotic therapy is associated with a significant loss of pathogen detection. This strongly emphasizes the current recommendation to obtain blood cultures prior to antibiotic administration in patients with sepsis” Scheer et al (2018).

Abstract:

Objectives: Sepsis guidelines recommend obtaining blood cultures before starting anti-infective therapy in patients with sepsis. However, little is known how antibiotic treatment prior to sampling affects bacterial growth. The aim of this study was to compare the results of blood cultures drawn prior to and under antibiotic therapy.

Methods: Prospective clinical cohort study of septic patients. Adult ICU patients with 2 or 3 blood culture (BC) sets at the beginning of sepsis between 2010 and 2017 were included. Patients with blood culture samplings obtained prior to antibiotic therapy were compared to patients with samplings under antibiotic therapy. Blood culture positivity, defined as microbiological pathogen finding, was compared between the groups. Logistic regression was performed to adjust the impact of different factors with respect to blood culture positivity.

Results: In total, 559 patients with 1364 blood culture sets at the beginning of sepsis were analyzed. BC positivity was 50.6% (78/154) among septic patients who did not receive antibiotics and only 27.7% (112/405) in those who were already under antibiotics (P<0.001). Logistic regression revealed antibiotic therapy as an independent factor for less pathogen identification (Odds ratio 0.4; 95%CI 0.3-0.6). Gram-positive pathogens (28.3%(111/392) vs. 11.9%(116/972);P<0.001) and also gram-negative pathogens (16.3%(64/392) vs. 9.3%(90/972);P<0.001) were more frequent in BC sets drawn prior to antibiotic therapy compared to sets under antibiotics.

Conclusions: Obtaining blood cultures under antibiotic therapy is associated with a significant loss of pathogen detection. This strongly emphasizes the current recommendation to obtain blood cultures prior to antibiotic administration in patients with sepsis.
Impact of antibiotic administration on blood culture positivity at the beginning of sepsis

Reference:


DOI: https://doi.org/10.1016/j.cmi.2018.05.016