

## Blood Culture in Neutropenic Patients with Fever

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### DEAR EDITOR,

In 2004, Klastersky *et al.* reported that fever is a common finding in patients with hematologic malignancies, occurring in more than 80% of the patients during or after chemotherapy.<sup>[1]</sup> He and his colleagues also reported that the most feared infection in neutropenic patients is bloodstream infection (BSI), which significantly increases the mortality rate of these patients.<sup>[2]</sup> In 2009, Viscoli *et al.*<sup>[3]</sup> and 10 years later Bodey<sup>[4]</sup> came into the same conclusion that the identification of the BSI by clinical means is complicated due to the fact that in neutropenic patients, the common signs of infection are usually absent and the only clinical sign of BSI is fever.

The aim of this study is to determine the frequency and type of infections that cause fever in neutropenic patients and how many of these febrile episodes may be due to BSI.

This cross-sectional study was conducted in Sayed Al-Shohada Hospital, Isfahan, Iran. All febrile neutropenic patients who were admitted in Sayed Al-Shohada Hospital during the period 2005–2010 were included (by assessing their medical documents). The data were analyzed using  $\chi^2$ -test, independent sample *t*-test, or variance analysis.

Out of 375 patients in this study, 77.3% and 22.7% of them were classified as Fever of Unknown Origin (FUO) and sepsis, respectively. In 68.4% of

medical documents, there was no result for culture of any body fluid. Only 2.6% of patients had positive blood culture. The most commonly used empiric antibiotics were ceftazidim and amikacin. In addition, the administration of gentamycin was significantly more in the sepsis group than in the FUO group. It is worth noting that 58.1% of patients received two antibiotics, 33.4% of them three or more antibiotics, and only 8.5% of whom were given only one kind antibiotic. The mean age for patients with neutropenia and FUO was overall higher than those who came with sepsis.

In comparison with other study findings in the world, this study showed fewer positive blood cultures. The lack of appropriate laboratory instruments and the blood culture systems seem to be the reason of such results. Because of the increasing number of febrile neutropenic patients and the higher risk of bacterial infections in these patients including the high mortality rate, it is important to have the knowledge about the more prevalent pathogens and the sensitivity of them to different antibiotics in these patients.

It seems that, because of critical situation and being worried about catastrophic outcome in neutropenia and fever, starting empiric antibiotic treatment is mandatory and this may be the most probable reason for having negative blood culture in obviously infected patients. To prevent conversion of blood culture due to such a treatment and

diminishing cost of therapy, it is reasonable to use an automated blood culture system as an urgent tool, in this group of patients.

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