Prognostic factors for mortality in bloodstream infections in patients with solid tumours

Ana Fernandez-Cruz*, David Ampuero, María Auxiliadora Semiglia Chong, Carmen Sandoval, Victor Vásquez, Carlos Sánchez-Carrillo, Emilio Bouza Santiago

1Hospital General Universitario Gregorio Marañón, Microbiology and Infectious Diseases, Madrid, Spain
2Hospital General Universitario Gregorio Marañón, Clinical Microbiology and Infectious Diseases, Madrid, Spain
3Hospital General Universitario Gregorio Marañón, Oncology, Madrid, Spain
4Hospital General Universitario Gregorio Marañón, Madrid, Spain

Background: Information regarding incidence, etiology and clinical behavior of bloodstream infections (BSI) in non-hematological adult patients with solid tumors is scarce. We studied prospectively all oncological patients who presented an episode of BSI before or during admission.

Material/methods: Our institution is a 1,550-bed tertiary teaching hospital in Madrid, with a 38-bed Oncology ward that takes care of patients with solid tumors. We recorded prospectively epidemiological, clinical and microbiological data from all BSI from Jan 2011-Mar 2014. Patients who died within the first 10 days were analysed and compared with the rest of the patients in the database.

Results: We recorded 304 BSI in 237 patients (79.3 per 1000 oncological admissions) during the study period. Most of them (80.5%) were at metastatic stage. Catheter was the main bacteremia source (24.3%). Gram negative microorganisms were the most prevalent (43.8%) and in 17.7% episodes, MDR microorganisms were found. Among GNB, resistance to carbapenems and amikacin was below 5%, although it was beyond 25% in quinolones and amoxicillin-clavulanate. Empirical therapy was appropriate in 73.7% of episodes, but it only was ideal in 26.4%. Ten-day mortality of the whole series (that we considered attributable mortality) was 10.9%

When patients that died and patients that survived were compared, the main differential characteristics were as follows: age (median 68 y vs 65 y, p 0.07), proportion of patients with rapidly fatal disease (McCabe score) (54.5% vs 15.9%, p 0.0001), Charlson comorbidity index (median 8 vs 7, p 0.030), presence of neutropenia (12.1% vs 2.1%, p 0.022), septic shock (15.2% vs 4.1%, p 0.035) and respiratory source of BSI (27.3% vs 7.7%, p 0.002). Regarding etiology the comparison between non-survivors and survivors showed significant differences in: Gram positive microorganisms (63.6% vs 38.6%, p 0.039), polymicrobial BSI (33.3% vs 14%, p 0.008).

In the multivariate analysis, only Gram positive and polymicrobial BSI, presence of neutropenia, severity of sepsis and severity of illness were independent prognostic factors for 10-day mortality. There were not differences according to sex, place of acquisition, kind of underlying neoplasia or tumor stage, presence of CVC, admission to ICU, empirical therapy or presence of antimicrobial resistance.
Conclusions: Incidence of BSI in oncological patients was 79.3 per 1000 admissions, with a 10-day mortality of 10.9%. MDR microorganisms accounted for 17.7% of all BSI episodes. Patients with more severe illness at presentation, more underlying conditions, septic shock, neutropenia, Gram positive and polymicrobial bacteremia had a poorer prognosis.