**Title:** Risk factors for carbapenem-resistant EnterobacteriaceaeBacteremia in cancer patients: results from ROCAS Study

**Authors**

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**Background:**

Carbapenem-resistant Enterobacteriaceae (CRE) are increasing as prevalent pathogens in cancer and Hematopoietic Stem Cell Transplant (HSCT) patients. CRE bacteremias are associated with ineffective initial empirical therapy and high mortality rates.

**Material / Methods:**

Prospective, multicenter study. Adult cancer and HSCT patients with Enterobacteriaceae bacteremia were included in 12 centers of Argentina, from May 2014 to June 2018. To evaluate risk factors for carbapenem-resistant Enterobacteriaceae, variables with p < 0.05 in univariate analysis were included in a logistic regression model for multivariate analysis.

**Results:**

Four hundred and forty three patients (56.7% male) with Enterobacteriaceae bacteremia were included. Regarding underlying disease, 266 (60 %) had hematologic neoplasms, 85 (19.2 %) had TCPH and 92 (20.8 %) had solid tumors. There were 310 (70%) neutropenic (90 % high risk according to MASCC score). The most frequent microorganisms isolated were *E. coli*: 204 (46 %), *Klebsiella* spp.: 182 (41.1%) and *Enterobacter* spp.: 35 (7.9%). In univariate analysis, the factors associated with CRE were: previous colonization with KPC carbapenemase-producing Enterobacteriaceae (CPE) (OR 10.6, 95% CI 4.4-25.5), previous carbapenem use (OR 4.1, 95% CI, 2.3-7.7), recent antibiotic use for more than 7 days (OR 4.6, 95% CI, 2.6-8.1), recent colonization with KPC-CPE (OR 24.9, 95% CI 11.3-55), neutropenia (OR 3.6, 95% CI, 1.6-8.2), central venous catheter (OR 3.4, 95% CI 1.7-6.7) and ≥ 10 days of hospitalization until bacteremia (OR 4.4, 95% CI, 2.3-8.6). In multivariate analysis, the independent factors associated with CRE were: recent antibiotic use for more than 7 days (OR 4, 95% CI, 1.8-9, p= 0.001), recent colonization with KPC-CPE (OR 40.5, 95% CI 11.6-141.7, p=0.0001), neutropenia (OR 2.9, 95% CI, 1.00-8.6, p= 0.049) and ≥ 10 days of hospitalization until bacteremia (OR 2.75, 95% CI, 1.2-6.2, p= 0.015)

**Conclusions:**

We identified four risks factors for CRE bacteremia that have to be taken into account when selecting the empirical antibiotic of this population. Because recent colonization with KPC-CPE was the strongest one, we suggest systematic surveillance as part of the routine clinical practice.