BACTEREMIA AMONG PATIENTS WITH CANCER IN A LATINOAMERICAN COUNTRY, CLINICAL AND MOLECULAR DATA

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Introduction and objetive

Infections are common complications in patients with cancer. Data on antimicrobial resistance is important to guide empirical antimicrobial therapy. However, resistance rates varies among different regions and countries and, in general, is higher in Latin America. There are limited data from these patients in this region.

The aim of this work is to determine the frequency and antibiotic susceptibility profiles, as well as to identify the most frequent genes related to resistance, among microorganisms implicated in bacteremia in patients diagnosed with cancer

Methods

A cross-sectional multicenter study conducted in six hospitals in Colombia. An active laboratory search was carried out for adult patients with cancer and bacteremia. Data was obtained from the electronic medical records, and according to the resistance of the microorganisms, molecular tests were performed in a standardized way to identify genes related to methicillin-resistance, extended spectrum beta lactamases and carbapenemases.

In addition, an exploratory multivariate analysis was performed using a logistic regression method to predict mortality

Results

195 patients from 6 hospitals were included in the study. The clinical variables of the patients are described in Table 1.

Table 1

Clinical Characteristics	n= 195 n (%)
Age (years, mean)	51.65 (SD 17.35)
Female gender	109(55.8)
Tumor type	
Solid tumor	91 (46.7)
Hematologic tumor	104 (53.3)
Tumor stage	
Active	83 (42.5)
Palliative care	13 (6.6)
New tumor	41 (21)
Relapse	43 (22)
Remission	15 (7.7)
Tumor treatment	
Chemotherapy	105 (53.8)
Radiotherapy	23 (11.8)
Surgery	49 (25.1)
Hematopoitic transplant	6 (5.7)
Previous bacterian infection	52 (26.6)
Previous antibiotic therapy	70 (35.8)
History of diabetes mellitus	17 (8.7)
History of chronic kidney disease	16 (8.2)
Charlson index (median, IQR)	3 (2-3)
Systolic blood pressure mm Hg (mean (SD))	110 (21)
Dyastolic blood pressure mm Hg (mean (SD))	65 (13)
Heart rate (mean (SD))	102 (20)
Temperature °C (mean (SD))	37.5 (1.2)
Respiratory rate (mean(SD))	20 (2)
Neutropenia	63 (32.3)
Febril neutropenia	59 (30.2)
SIRS	119 (61)
Fever	78 (40)

Table 1. Clinical characteristics. IQR: interquartile range; SD: standard deviation; SIRS: systemic inflammatory response syndrome

Table 2

Bacteria (n)	Gen	n (%)
E. coli (67)	blaCTX-M	4 (5.9)
	blaCTX-M, blaTEM	7 (10.4)
	blaCTX-M, blaTEM, blaSHV	1 (1.5)
K. pneumoniae	blaTEM	1 (2.7)
(36)	blaSHV	1 (2.7)
	blaCTX-M, blaTEM	1 (2.7)
	blaCTX-M, blaTEM, blaSHV	1 (2.7)
	blaKPC	11 (30.5)
	blaVIM	1 (2.7)
P. aeruginosa	blaSHV	1 (4.7)
(21)	blaKPC	2 (9.5)
	blaVIM	1 (4.7)
S. aureus (25)	mecA	5 (20)
E. faecium (4)	VanA	2 (50)

Tabla 2. Resistance genes identified in cancer patients according to species.

Gram-negative bacteria were more common and their resistance rates were high. The genes found in the different resistant bacterial isolates are described in Table 2; the main sistance genes identified were blaCTX-M and blaKPC, generating ESLB-type beta-lactamases and carbapenemases, respectively. 30 day-mortality was 26%, which is similar to other studies. Multivariate analysis showed that adequate antibiotic treatment (OR: 0.26 (95%CI 0.1-0.63)) and higher number of platelets (per 10,000, OR: 0.97 (95%CI 0.94-0.99)) were associated with survival. Mortality was associated with atients in palliative care (OR 3.51 (95%CI 1.05-12.04))

Conclusion

Gram-negative bacilli are frequently found in patients with cancer and bacteremia. A high level of resistance was identified. The frequency of the genes identified varies from what has been described in other regions of the world. Appropriate and prompt treatment in these patient would improve the outcomes.