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Bacteremia in Cancer Patients. Comparison between Solid and Hematological Tumors and Impact on 30-day Mortality

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BACKGROUND

The characteristics and outcomes of bacteremia in cancer patients can be different depending if the underlying disease is a solid tumor (ST) or a hematological tumor (HT).

OBJECTIVES

To compare the characteristics and outcomes of episodes of bacteremia in these patients according to their underlying disease.

METHODS

Prospective, multicenter study. Episodes of bacteremia in adult patients with cancer were included in 10 centers in Argentina, from July 2014 to January 2016. The 30-day mortality was examined by the Kaplan-Meier method with the log-rank test and the Cox regression model was used to test statistical significance.

CLINICAL CHARACTERISTICS

370 episodes of bacteremia in 307 patients were included

SOLID TUMOR 79 (21.4%)

- Older patients (years) *(median)* (57 vs 52, *p=0.026*)
- Higher Charlson scores *(median):* (6 vs 2, *p=0.0001*)
- Higher PITT scores *(median):* (1 vs 0, *p=0.015*)
- More urinary tract infections (25.7 vs 3.9%, *p=0.0001*)
- More community-acquired infections (29.1 vs 6.2%, *p=0.0001*)

HEMATOLOGICAL TUMOR 291 (78.6%)

- More recently diagnosed tumors: (41.9 vs 26.6%, *p=0.013*)
- More frequently neutropenic: (68 vs 27.8%, *p=0.0001*)
- Only group that received FQ prophylaxis (17.9 vs 0%, *p=0.0001*)
- More catheter-related infections (33.5 vs 15.7%, *p=0.005*)
- More healthcare-associated infections (67.7 vs 38%, *p=0.0001*)

- Similar APACHE II scores *(median)* (13 vs 12, *p=0.59*)
- Similar frequency of abdominal infections (24.3 vs 28.6%, *p=0.49*)
- Similar frequency of respiratory infections (15.7 vs 8.9%, *p=0.11*)

MICROBIOLOGICAL CHARACTERISTICS

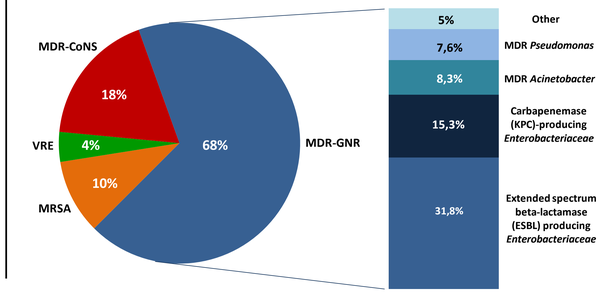
Gram Positive Cocci (GPC) : 137 (37%)

- *Staphylococcus aureus:* 11.4%
- Coagulase-negative *staphylococci* (CoNS): 10,8%
- *Streptoccocus viridans*: 4.3%
- *Streptoccocus pneumoniae*: 3.5%

Gram Negative Rods (GNR): 246 (66.5%)

- *Escherichia coli:* 21.4%
- *Klebsiella* spp.: 21.1%
- *Pseudomonas aeruginosa*: 8.4%
- *Enterobacter* spp.: 5.9%
- *Acinetobacter baumanii*: 4.9%

Multidrug Resistant Bacteria (MDRB) Bacteremia: **166 (44.9%)**



SOLID TUMOR

- More GPC bacteremia: (46.8 vs 34.4%, *p=0.04)*
- More polimicrobial bacteremia (11.4 vs 4.5%, *p=0.021*)

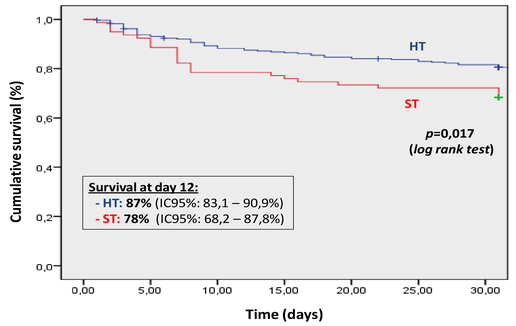
HEMATOLOGICAL TUMOR

- More MDRB bacteremia: (51.2 vs 21.5%, *p=0.001*)
- More ESBL-produc. *Enterobacteriaceae:* (15.5 vs 6.3%, *p=0.035*)
- More *Acinetobacter* bacteremia (6.2 vs 0%, *p=0.023*)
- More MDR-CoNS bacteremia (9.6 vs 2.5%, *p=0.04)*

TREATMENT AND OUTCOMES

Variable	ST	HT	*p*
Adequate empirical antibiotic treatment	65 (82.3%)	218 (74.9%)	*0.171*
Empirical carbapenem use	**15 (19%)**	**126 (43.3%)**	***0.0001***
Empirical colistin use	**5 (6.3%)**	**55 (18.9%)**	***0.007***
Combined antibiotic treatment	21 (26.6%)	79 (27.1%)	*0.92*
Breakthrough bacteremia	**0**	**37 (12.7%)**	***0,001***
Intensive care unit requirement	15 (19%)	63 (21.6%)	*0.607*
Shock	18 (22.8%)	63 (21.6%)	*0.829*
7-day mortality	**18 (22.8%)**	**39 (13.4%)**	***0.04***
30-day mortality	**25 (31.6%)**	**57 (19.6%)**	***0.02***

OUTCOMES – 30-day mortality



30-day mortality: risk factors

Risk factor	UNIVARIATE HR (IC95%)	*p*	MULTIVARIATE HR (IC95%)	*p*
Age (years)	0,99 (0,9-1,05)	*0,478*		
High Charlson score (>4)	**2 (1,2-3,2)**	***0,004***	**2,06 (1,04-4,1)**	***0,03***
Solid tumor	**1,76 (1,09-2,9)**	***0,019***	1,45 (0,76-2,75)	*0,254*
Recently diagnosed disease	1,37 (0,9-2,1)	*0,152*		
Disease in complete remission	**0,38 (0,14-1,05)**	***0,06***	0,47 (0,17-1,31)	*0,149*
Refractory / relapsed disease	1,04 (0,6-1,6)	*0,86*		
High APACHE II score (>24)	**3,9 (2,1-7,3)**	***0,0001***	**2,69 (1,37-5,27)**	***0,004***
High PITT score (>4)	**5 (2,8-9)**	***0,0001***	**4,25 (2,3-7,9)**	***0,001***
MDRB bacteremia	**1,9 (1,2-3)**	***0,004***	**2,15 (1,2-3,7)**	***0,006***
Neutropenia	1,2 (0,7-1,9)	*0,39*		
Bacteriemia with clinical source	1,2 (0,7-2)	*0,443*		
Breakthrough bacteriemia	1,6 (0,8-3)	*0,137*		
Adequate empirical treatment	**0,6 (0,4-1,06)**	***0,086***	1,05 (0,6-1,8)	*0,852*
Empirical carbapenem use	1,1 (0,7-1,7)	*0,545*		
Nosocomial infection	**1,57 (0,9-2,5)**	***0,06***	1,55 (0,9-2,67)	*0,113*

CONCLUSION

Patients with ST and bacteremia had a higher risk of death compared to HT, secondary to more comorbidites and more severe infections, even though HT patients had more MDRB bacteremia.

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