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Efficacy of antimicrobial-lock therapy in catheter-related bloodstream infection

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Introduction

160,000 totally implantable venous access ports (TIVAPs) and 8 000 tunneled catheter (TC) implanted each year in France.

CRBSI is a common and serious complication estimated at between 0.4 and 1.2 per 1000 catheter/days.

Efficacy of antimicrobial-lock therapy (ALT) remains uncertain with heterogeneous practices.

Objective

🎯 The main objective was to evaluate the effectiveness of antibiotic locks.

🎯 The secondary objective was to describe the prognostic factors of failure.

Methods

Single-centre retrospective observational study from January 2014 to January 2022

✔ Inclusion criteria:

Proven CRBSI : catheter and peripheral blood cultures positives

Probable CRBSI: catheter blood cultures positives, peripheral negatives and systemic signs

❌ **Exclusion criteria:** Sepsis or shock, *Staphylococcus aureus* or *Candida, spp.* infection, catheter thrombosis, local signs or other septic localization

➔ **Failure:** clinical or microbiological signs at day 4 of ALT, or at the end of ALT OR relapse at the same microorganism at 1 month OR catheter removal at 1 month for any reasons OR death related to CRBSI.

Results

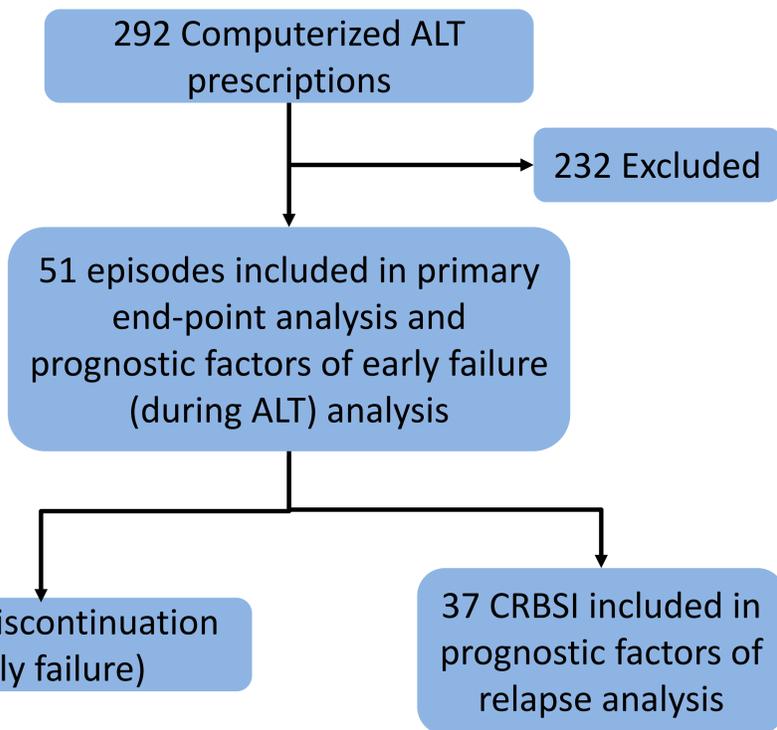


Table 1 : Clinical characteristics of 51 episodes of CRBSI treated with antimicrobial-lock therapy

Characteristics	Total (n = 51) N(%)
Age, mean (range)	63 (57-69)
Sex	
Male	29 (56%)
Female	22 (44%)
Underlying disease	
Solid tumour	45 (88%)
Other	4 (8%)
Haematologic cancer	2 (4%)
Palliative care	23 (45%)
Performans status >2	16 (31%)
Type of catheter	
Totally implantable	48 (92%)
Tunneled	4 (8%)
Use of catheter	
Chemotherapy (CT)	42 (82%)
CT and TPN	5 (10%)
Total parenteral nutrition	10 (20%)
Other use	3 (5%)
Venous ultrasound	
Negative	47 (92%)
Non performed	3 (8%)
Overall mortality at 1 month	14 (27%)
Microorganism	
Gram negative bacilli	24 (47%)
<i>Escherichia. coli</i>	8
<i>Enterobacter. cloacae</i>	4
<i>Klebsiella. spp</i>	3
<i>Pseudomonas. aeruginosa</i>	5
Other gram-negative bacilli	4
Coagulase-negative staphylococci	22 (43%)
Polymicrobial infection	5 (10%)

🎯 ALT Failure:

19 of 51 patients (37%)

➔ 12 ALT discontinuation :
1 sepsis, 9 bacteraemia persistence, 2 related-death
➔ 6 relapses :
5 bacteraemia, 1 septic thrombosis

🎯 Prognostic factors of early failure:

Palliative care (37%vs63%) $p = 0.026$

Solid tumour (0vs100%) $p = 0.037$

🎯 Prognostic factors of relapse:

ALT duration : 14 vs 9 days $p = 0.033$

Conclusion

ALT seems to be an effective strategy in a well-selected population
Palliative care and solid tumour are associated with high failure rate
Shorter ALT durations are associated with higher risk of relapse