UNIVERSAL MEASURES FOR CATHETER-RELATED BACTEREMIA IN DIALYSIS: 6-YEAR PROSPECTIVE STUDY

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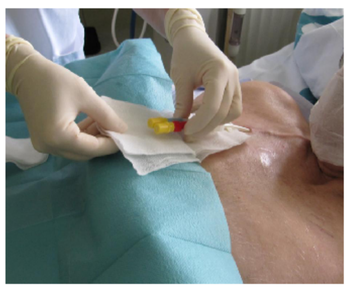
Introduction:

Catheter-related bacteremia (CRB) in tunneled catheters causes high morbidity and mortality in patients in chronic hemodialysis programs. After clinical trials, it has been suggested that catheter locks using antibiotics reduce the incidence of CRB. However, high rates of CRB are shown in the control group of these studies, leading to controversial results.

Objectives:

The aim of the current study is to prove the effectiveness of universal asepsis measures to obtain an optimum CRB rate in a long-term study in one center.



Judging CRB rates

< 1/1000 catheter days—Excellent
1–2/1000 catheter days—Good
3–5/1000 catheter days—Fair
6–7/1000 catheter days—Poor
> 7/1000 catheter days—Really bad

CRB, catheter-related bacteremia.

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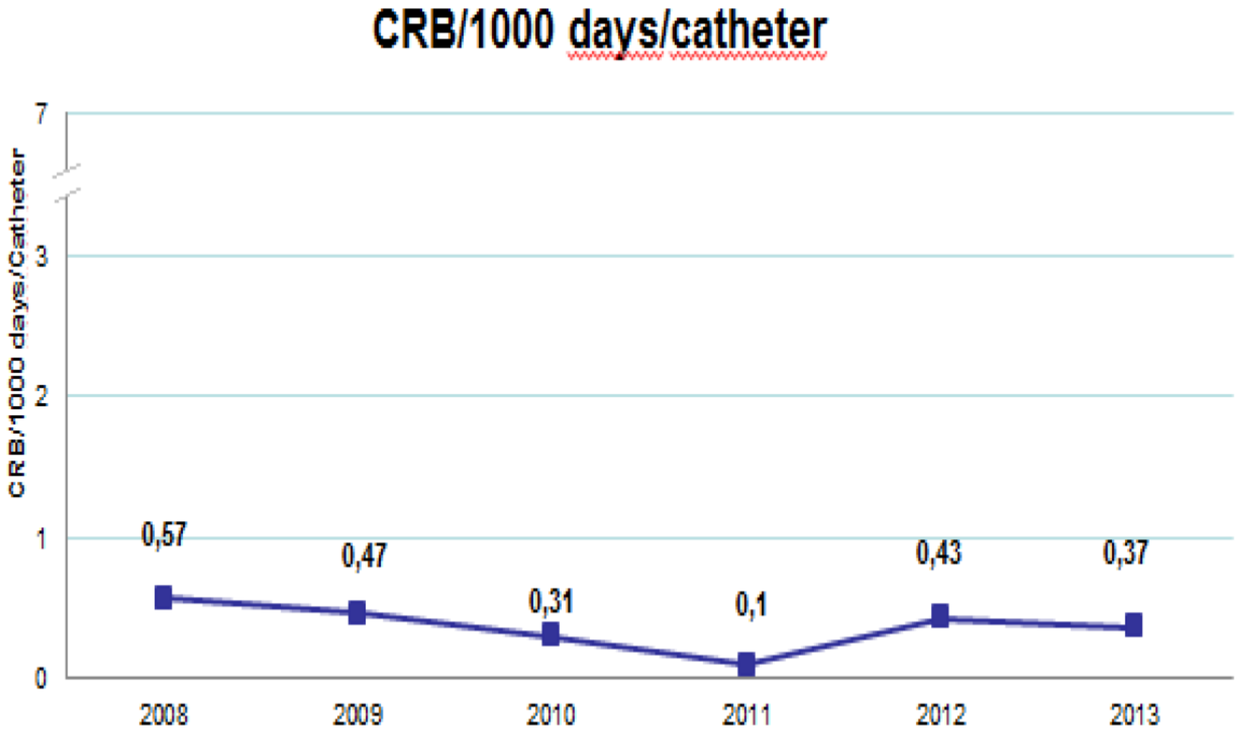
***Material and Methods*:**

- Design: Prospective cohorts study, single center
- Follow up time: 6 years (2008-2013)
- Tunneled catheters: Optiflow, Hemostar, Hemosplit, Equistream (Bard Access Systems, New Jersey, USA) and Palindrome (Covidien, Mansfield, Massachusets, USA)
- Analyzed catheter-days: 107,420
- Catheter placement: ultrasound and radioscopy by an interventional radiologist
- Follow up: Chronic hemodialysis hospital unit, nurses and nephrologists
- Prophylactic measures: Universal asepsis measures, heparin lock
- CRB is considered present: either when blood culture is positive and once another catheter-related focus has been ruled out, or when there is negative blood culture only related to the catheter. All available samples were analysed when bacteremia was discovered: blood, sputum, urine, faeces, pleural liquid, peritoneal liquid, cerebrospinal fluid, exudates, etc, and the results.
- BRC rate is assessed x 1000 days / catheter
- Database: NephroCloud ®

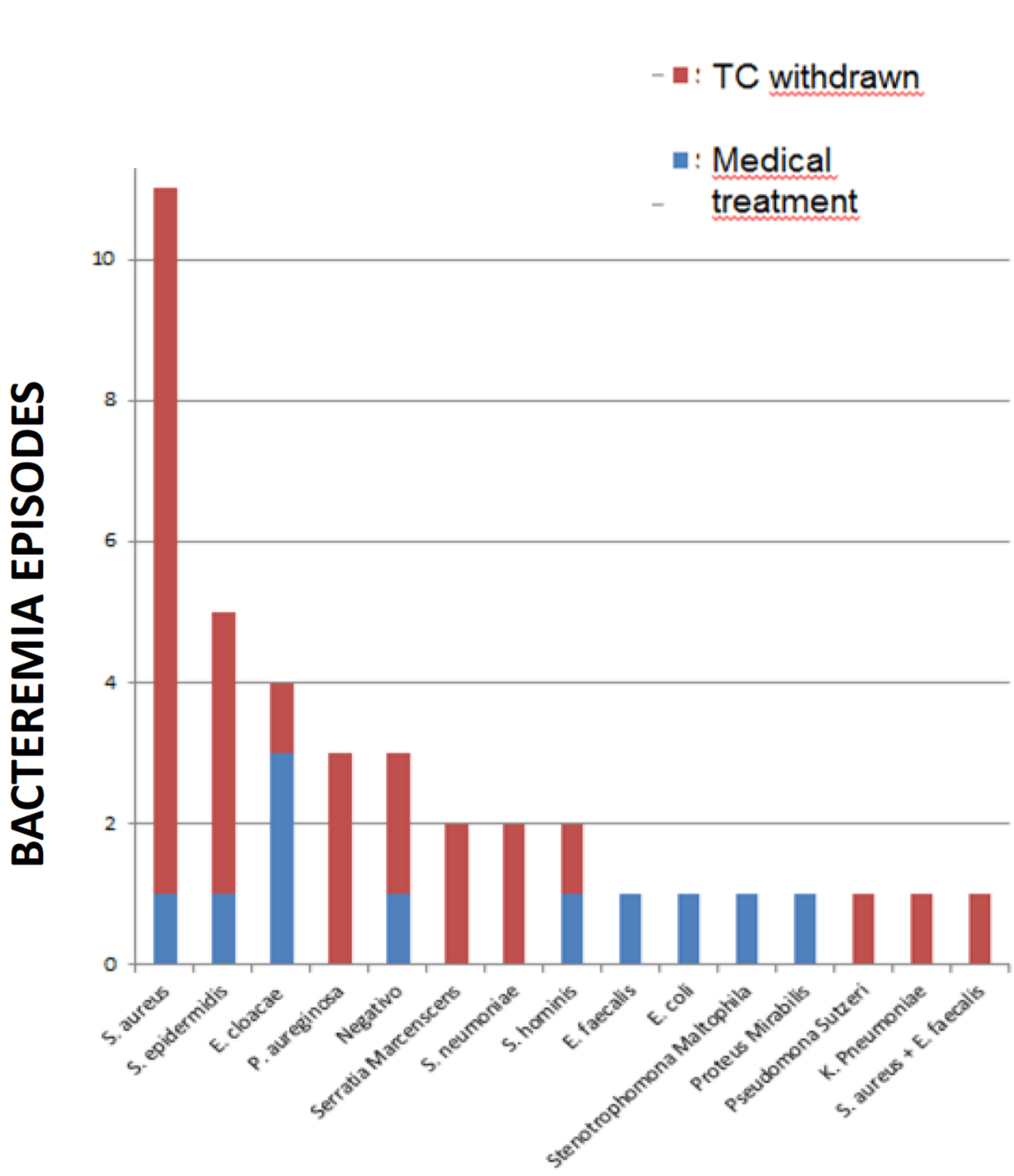
Results:

The catheters being assessed, the follow up days and catheter-related bacteremia were analyzed, the germ was classified and treatment given: medical vs catheter withdrawal.



Year	2008	2009	2010	2011	2012	2013
Num assessed caths	87	98	125	95	93	103
Placed in the year	50	46	62	48	46	56
placed previously	37	52	63	47	47	47
Total days of followup	15667	19129	22165	18379	16258	15822
Bacteriemias	9	9	7	2	7	6
BRC/1000 cath/days	0,57	0,47	0,31	0,1	0,43	0,37

Germ	Treatment	Germ	Treatment	Germ	Treatment	Germ	Treatment	Germ	Treatment	Germ	Treatment
Staf. Epidermidis	Antibiotic	Strp. Neumoniae	Antibiotic	Staf. Aureus	Antibiotic	Staf Aureus	withdrawal	Negativo	withdrawal	Pseudomona Sutzeri	withdrawal
Enterobacter. Cloacae	Antibiotic	Staf Epidermidis	Antibiotic	Staff. Epidermidis	withdrawal	Proteus Mirabilis	Antibiotic	Pseudomona Au.	Dead	Staf Hominis	Antibiotic
Pseudomona Au.	withdrawal	Enterococo fecales	Antibiotic	Pseudomona Au.	withdrawal			Staf Epidermidis	Dead	Negativo	Antibiotic
Serratia Marcenscens	withdrawal	Strp. Neumoniae	Antibiotic	Serratia	Withdrawal			Staf Aureus	withdrawal	Staf. Aureus	withdrawal
Staf. Aureus	withdrawal	Stenotrophomona Maltophila	Antibiotic	Staf Aureus + Enterococo fec.	Withdrawal			Enterobacter Cloacae	withdrawal	Staf. Aureus	withdrawal
Staf. Aureus	withdrawal	Staf. Aureus	withdrawal	Staf. Aureus	Withdrawal			Klebsiella Pneumoniae	withdrawal	Staf. Aureus	withdrawal
E. Coli	Antibiotic	Staf Hominis	withdrawal	Proteus Mirabilis	Withdrawal			Enterobacter Cloacae	Antibiotic		
Staf. Epidermidis	withdrawal	Staf. Aureus	Antibiotic								
Enterobacter Cloacae	Antibiotic	Negativo	withdrawal								



Conclusion:

- **Only universal measures, without using antibiotic lock or anticoagulants other than heparin, can achieve an optimum rate of catheter-related bacteremia. This is cost effective, prevents possible resistance to antibiotics and side effects of other anticoagulant drugs.**
- **We believe that antibiotic lock should be reserved for cases in which it is difficult to control CRB epidemiologically.**

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