Results of the implementation of a protocol for early detection of colonization of tunneled venous catheters in hemodialysis patients

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Introduction

- The tunneled venous catheter (TVC) is a valid alternative vascular access for patients on hemodialysis (HD) who are ineligible for arteriovenous fistula.
- The most common complication is catheter-related bacteremia (CRB).
- A protocol for early detection of colonization of TVC which allows an immediate local treatment can prevent the progression to bacteremia.

Objective

The aim of the study was to analyze the impact on rates of colonization and catheter-related bacteremia after implementing a protocol for early detection and treatment of colonization of tunneled central venous catheter.

Material and Methods

- A 10 years prospective study was performed in HD unit of Clínica Universidad de Navarra from January 2003 to December 2013
- The protocol for early detection and treatment of colonization of tunneled central venous catheter was the following:

1) Monthly, on first dialysis session of the week, 2 ml of intracatheter blood (arterial and venous branch) for quantitative blood culture (HCQ) were extracted.

2) If negative HCQ or catheter colonization not significant (<100 CFU/ml): monthly microbiological control was continued.

3) If HCQ > 100 CFU/ml: On next session simultaneous TVC and peripheral blood (PB) cultures were extracted.

a. If TVC + and PB - (SCC): Vancomycin lock was started*

b. If TVC + and PB + (BRC): we initiate Vancomycin lock + Vancomycin iv*

*Adjusting according to antibiogram and clinical response. SCC: Significant colonization of catheter.

The study was conducted in 3 successive periods after implantation of screening protocol:

(A)01/01/03 - 01/16/06 Days of use TVC: 18.756

(B) 01/17/06 - 12/31/09 Days of use TVC: 36.657

(C) 01/01/10 - 12/31/13 Days of use TVC: 21.396

2072 samples of 98 HD patients were processed. Colonization rates and CRB were compared in the 3 periods.

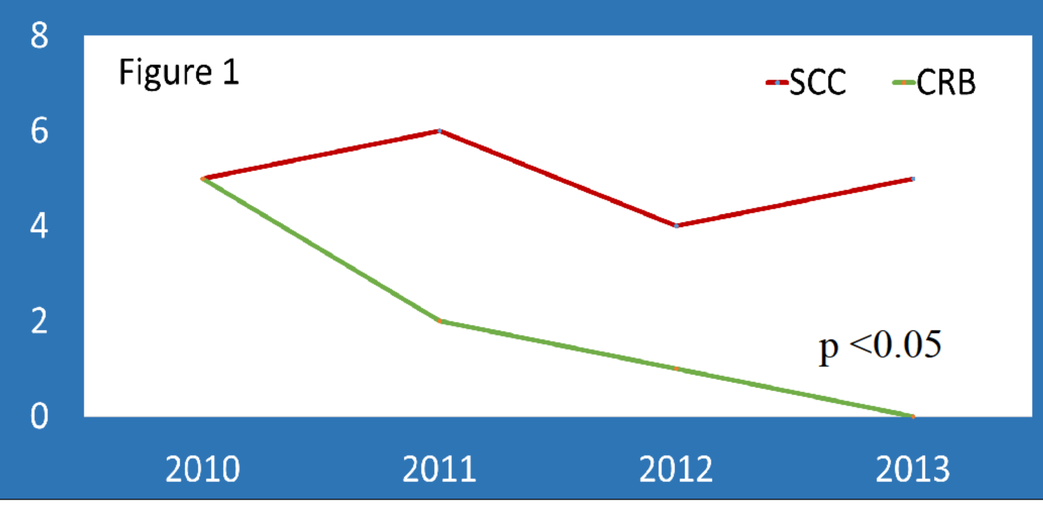
Results

Table 1 shows colonization rates (CR) and CRB during the follow up.

Figure 1 shows a decline in total number of episodes of CRB, reaching on last period the target of zero CRB episodes.

Table 1	Period A	Period B (p<0,05)	Period C (ns)
SCC rates (Episodes/1000 days of use)	1.50	0.71	0.93
CRB rates (Episodes/1000 days of use)	0.95	0.27	0.37

ns: no statistical significance between period B and C



Conclusions

- The microbiological surveillance of intracatheter blood samples in HD patients allows early detection and treatment of the catheter colonization.
- This protocol is effective to decrease the risk of catheter-related bacteremia and may decrease the development of microbiological resistance due to indiscriminate use of antibiotics.

SP-591

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52 ERA 591--SP
L4) Dialysis. Vascular access.
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DOI: 10.3252/pso.eu.52era.2015
ePosters supported by F. Hoffmann- La Roche Ltd.