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Abstract (poster session)

**Comparison of bacterial colonisation of central venous haemodialysis catheters with needlefree connection device TEGO® and conventional closing cap system**

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Introduction: Catheter related blood stream infection (CRBSI) is a major problem in patients with long-term central venous catheter (CVC) for chronic hemodialysis. The closed needlefree connection device system TEGO® was developed to protect long-term CVC from tip and hub colonization and showed a 50% decrease of CRBSI in children with a hemodialysis catheter in one study (McAfee et al. 2008). The goal of our study was to determine the colonization rate of central venous catheters used for hemodialysis with the TEGO® connection device in comparison to conventional closing cap (CCC) Discofix® in the dialysis centre of the University Hospital in Basel, Switzerland - a university affiliated tertiary care center. Methods: All consecutive patients receiving hemodialysis using a permanent or transient CVC with the TEGO® connection device system and 0,9% sodium chloride as catheter branch lock solution in June 2010 were included. In July 2010, the TEGO® system was replaced by conventional closing caps Discofix® using 46,7%- or 30% citrate lock solution respectively. Lock solution from the arterial and the venous branch of the CVC of all patients were cultivated in aerobic blood culture bottles (BacT/ALERT®) at a given time during the study period from 26 June 2010 until 7 June 2011 (Table 1). Results: In the TEGO® group, 16 of 33 patients (48,5%) had bacterial growth of at least one microorganism from the 0,9%-sodium chloride lock solution. Bacterial colonization in the CCC-group with citrate lock solution was found in only 7 of 56 tested patients (10.8%), thus significantly less frequent than in the TEGO®-group ($p<0.001$). Coagulase-negative staphylococci were the most common pathogens detected in both groups. Discussion: In contrary to other reports, we found a significant higher colonization rate of the TEGO®-sodium lock solution compared to conventional closing caps with citrate-lock solution. The ease of use of closed needlefree connection devices without antimicrobial active lock solutions (as e.g. citrate) in hemodialysis CVC should be balanced with the infectious risk, since colonization preceeds infection.

Table 1: Results and baseline characteristics of the TEGO® and the CCC-Discofix®-group

| | TEGO® | Discofix® |
|---|---|---|
| Number of patients | 33 | 56 |
| Patients with culture positive lock solution | 16 (48,5%) | 7 (10,8%)* |
| Total isolated bacteria | 21 | 9 |
| CNS | 16 (76,2%) | 5 (55,5%) |
| *Streptococcus sanguinis* | 1 | |
| *Micrococcus sp* | 1 | |
| *Aerococcus viridans* | 1 | |
| *Bacillus non-anthracis* | 1 | |
| *Enterococcus faecalis* | | 2 |
| *Enterobacter cloacae* | | 1 |
| *Pseudomonas aeruginosa* | | 1 |
| Gram-pos. cocci** | 1 | |
| Time connection device in use | 15 August 2008 - 5 July 2010 | 6 July 2010- on going |
| Culture date of lock solution | 26 June -5 July 2010 | 9-10 August 2010 and 6-7 June 2011 |
| Lock solution | 0,9% sodium chlorid | 46,7% or 30%- citrate |
| Disinfection of device/hub | Ethanol 80% | Octenidiendihydrochlorid (Octenisept®) or Octenidindihydrochlorid-propanolol (Octeniderm®) |
| Exchange of connection device | once weekly | 3 times weekly |
| Mean age in years (range) | 67,3 (28,7-86,9) | 67,5 (48,5-89,5) |
| Gender: female patients | 23 (69,7%) | 38 (67,9%) |

*OR 6.59 (95% CI 2.08-21.58), p=0.00018

CNS=coagulase-negative staphylococci (*S. epidermidis, hominis, warneri, capris, vitulinus, simulans*), ** not more differentiated