CENTRAL VENOUS CATHETER (CVC) MAINTENANCE USING GRIP-LOK® - SINGLE CENTRE EXPERIENCE

Bosiljka Devčić¹, Ivan Bubić¹, Božidar Vujičić¹, Lidija Orlić¹, Daniel Victor Šimac¹, Hrvojka Lijević¹, Željka Vidić¹, Sanjin Rački¹

¹Department of Nephrology, Dialysis and Transplantation, Clinic of Internal Medicine, Clinical Hospital Centre, Rijeka, Croatia
²Department of Haematology, Rheumatology and Clinical Immunology, Clinic of Internal Medicine, Clinical Hospital Centre, Rijeka, Croatia

Introduction
The central venous catheter (CVC) for haemodialysis can be described as a catheter placed in one of the central veins for the purpose of vascular access for haemodialysis (HD). The need for vascular access (via catheter) in patients with renal failure can be temporary or permanent. Patients on HD have a high risk of developing infection as a result of the immunosuppressive effect of chronic kidney disease itself, comorbidity, and malnutrition, and due to maintaining vascular access over a long period of time. The presence of a CVC is the main risk factor promoting the development of infection (6), often developing more serious forms: bacteremia and/or sepsis. Catheters used for dialysis must handle a large blood flow with minimal recirculation, and must have adequate biocompatibility, low thrombogenicity, and minimal blood vessel wall damage.

Patients and methods
This study included 40 patients with chronic kidney disease (CKD) treated by HD, with CVC vascular access. Inclusion criteria, besides vascular access, required over 30 years of age, and treatment by HD longer than 6 months. Patients were followed through six months. All patients received dialysis three times a week. Patients were divided into two groups of 20. For the first group, Grip-Lok® was used as an additional measure of securing CVC position, while the other group served as a control group where ordinary measures were used. Protocol saw changing of dressings and Grip-Lok® once a week.

Results

Table 1: Testing statistical difference between groups with regards to age and time on HD

T-tests; Grouping: Griplok®, Group 1: Yes Group 2: No							
	Mean Group I	Mean Group II	p-value	Valid N Yes	Valid N No	Std. Dev. Yes	Std. Dev. No
Age	74,35	64,15	0,024	20	20	11,90	15,37
Time spent on HD (months)	32,60	57,60	0,141	20	20	39,62	63,03

Table 2. Differences between two groups regarding primary renal disease, diabetes, cardiovascular comorbidity, catheter insertion place and other catheter related issues

Statistics Parameter x Grip-Lok®		
Parameter	Pearson Chi-square	p-value
Primary Disease	0,102	0,749
Diabetes	0,100	0,751
Cardiovascular	0,228	0,632
Subclavian	1,025	0,311
Jugular	2,105	0,146
Femoral	/	/
Nontunnel/Tunnel	0,902	0,342
Number of CVCs	1,904	0,167
Catheter related complications	1,025	0,311
Sutures	4,800	0,028
Additional Sutures	2,057	0,151

Discussion

In our analysis, average patient age falls within an older population, and using a CVC as vascular access for HD is a high risk factor. Infection frequency varies between 0.6 to 6.5 episodes per 1000 catheter days. Identifying risk factors for developing systemic infection is crucial for determining preventative guidelines in CVC care. For the last five years, we have been using a covering with a 2% chlorhexidine gluconate (CHG) gel pad (Tegaderm™) instead of classic sterile gauze, which has significantly reduced CVC insertion site infection. The next step in reducing the incidence of infections we investigated was in CVC position securement and avoiding suture use as a possible mechanism of local infection, and subsequent systemic infection. It is known that CVC position securement, or mobility, can consequently lead to possible systemic CVC-associated infection or CVC loss. Our study shows statistically significant less additional sutures in group 1 than in group 2 (p < 0.05) while using described protocols. Additional suturing was required in 1 (5 %) patient in group 1, and in 4 (20 %) patients in group 2.

Picture 1: CVC and Grip-Lok®

Picture 2: CVC, Grip-Lok® and Tegaderm™

CVC – central venous catheter

Conclusion

In our opinion insertion site care; use of **adequate, sterile, protective dressings** along with **antiseptic measures**; use of **dressings for securement**; **avoiding** use of **sutures**; use of **good clinical practice**, and **good clinical nurse practice**, can additionally reduce the rate of infection and complications in this group of patients.