Central vascular catheters for hemodialysis: a five years pediatric nephrology center experience.

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AdVANCHE

Introduction

Central vascular access is mandatory for extracorporeal dialytic treatments in children. Device selection is challenging in pediatric population: because dialysis requires large catheters in spite of the small veins' size of pediatric patients.

Aims

The authors report a retrospective analysis of implantation regarding the use of haemodialysis catheters occurred from 2012 to 2017 in a single pediatric nephrology center.

Materials and Methods

69 children (29 females and 40 males; aged 1 day to 13 years) undergoing haemodialysis were observed. Their body weight varied from 3.4 kg to 85.0 kg. The children were divided into two subgroups according to therapeutic needs (8 chronic haemodialysis; 61 acute haemodialysis). The veins chosen for the implant were: right internal jugular vein (49), right anonymous vein (15), femoral vein (5). Twenty long-term cuffed and tunneled catheters and 49 short-term catheters were implanted. All devices were two-way, sized from 5Fr to 11Fr. Functional duration and secondary complications were recorded.

Results

The devices were used for a total of 2810 days. Globally, secondary complications were 3.5 ‰ catheter-days: 1 ‰ for tunneled catheters, and 14 ‰ for non-tunneled catheters. In the latter group the rate of complication was respectively 30 ‰ catheter-days for femoral vein catheters, 9 ‰ for right internal jugular vein catheters and 5 ‰ for right anonima vein devices.

Tunnelled catheters	internal jugular v.	anonima v.	total
catheter's days	2104	113	2217
n° complications	3	0	3
n° complications ‰ cath./days	1.4	0	1,3

Untunnelled catheters	internal jugular v.	anonima v.	femoral v.	total
catheter's day	477	51	65	593
n° complications	5	0	2	7
n° complications ‰ cath./days	10,4	0	30,7	11,8

Total catheters	
catheter's days	2810
n° complications	10
n° complications ‰ cath./days	3.5

Conclusions

In children, implantation of tunneled central catheters for hemodialysis in the large veins of the cervico-thoracic district, preferentially on the right, has been effective in reducing the rate of secondary complications. Subcutaneous tunneling in the sub-clavear region has provided stability and efficiency of the catheter during the dialytic treatment. Non-tunneled catheters have shown a high rate of displacement, in particular when located in the femoral vein, whereas anonymous vein position has resulted as the most stable and secure.