CENTRAL VENOUS CATHETERS IN CHILDREN WITH HEMOPHILIA: A SINGLE CENTRE LONG-TERM EXPERIENCE

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Background

Among hemophiliac children, peripheral venous access sometimes may not be able to support regular prophylaxis or immune-tolerance regimen. An alternative way for administration of concentrates is required to overcome this barrier, such as central venous catheters (CVCs). CVC may be externally tunnelled (as Broviac catheter) or completely implantable (as Port catheter). Management of these devices requires a training period and is not free of possible complications. Main concerns related with these devices are infections, thrombosis and mechanical complications.

Aims

Aim of the study is to evaluate the efficacy of CVCs in our Hemophilia Centre and to compare the two types of device (figure 1a and figure 1b) in terms of complications during the long-term follow-up.

Methods

Hemophiliacs children who undergone implantation of CVCs from 2005 to 2014 at the Hemophilia Centre of Padua were retrospectively evaluated for collecting information, according to the two types of CVCs, on patients' baseline characteristics and complications during long term follow-up. All patients received anti-haemorrhagic coverage with FVIII concentrates or recombinant FVIIa during implantation and in the next week. Parents received training from specialized nurses for the proper use and maintenance of CVC.

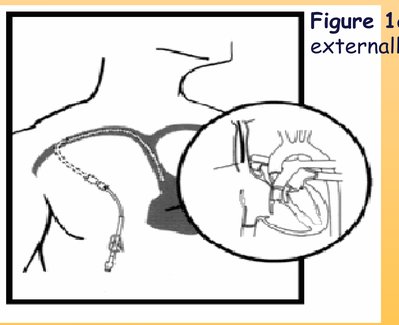

Figure 1a Broviac catheter, externally tunnelled

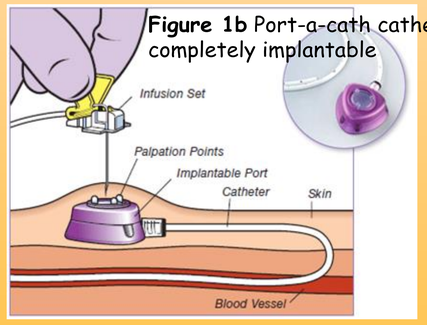

Figure 1b Port-a-cath catheter, completely implantable

	BROVIAC	PORT	P
Number of CVCs implanted	12	10	NS
Median number of CVCs implanted for patient (range)	1.5 (1-3)	1 (1-2)	NS
Mean age at CVC implant (months) (±standard deviation)	24.8 (18.1)	40.7 (26.6)	NS
Reason for implant			
ITI	2	5	NS
Prophylaxis	10	5	
Reason for removal of CVCs			
Infection	1	2	NS
Dislocation/mechanical issues	7	0	<0.001
Haematoma of the pocket	-	1	NS
End of use	2	1	NS
Other complications without removal of CVC			
Infection	0	1	NS
External rupture	4	0	0.04
Occlusion	1	1	NS
Mean period of observation in days (min-max)	761.8±459.4	541.3±435.7	NS

Table 1 Comparison between the two types of CVCs

Results

Twenty two CVCs were implanted in twelve children during the period of observation. Among them, 12 were Broviac and 10 Port. Median number of CVCs implanted per patient was 1.5 (range 1-3), for Broviac and 1 (1-2) for Port. Six patients required only one CVC (4 Port and 2 Broviac) while the other 6 patients required two or more. The reason for implantation was standard prophylaxis in 7 children and immune-tolerance in the other 5. Mean age (±standard deviation) for implantation was 24.8 months (±18.1) for Broviac and 40.7 (±26.6) for Port (p NS). Calculated medium time of observation was 761.8±459.4 days for Broviac and 541.3±435.7 for Port (p NS).

Using Broviac we had a total of 1.43 complications in 1000 CVC days and 0.83 complications/1000 led to the removal of the device (6 dislocation and 1 infection); using Port we had a total of 0.93 complications/1000 CVC and 0.55/1000 led to the removal of the device (2 infection and 1 haematoma of the pocket) . Complications handled conservatively were 4 external rupture for Broviac, one infection for Port and one occlusion in both groups treated with intra-catheter administration of urokinasis. No significant statistical differences were observed among the two types of CVCs considering the total of complications but the number of experimental sample was small. Mechanical complications were more frequent for Broviac (p<0.001).

Conclusions

Central venous catheter is indispensable tool in hemophilia treatment but adverse events are not rare. The choice between two types of CVCs should be based on a careful consideration of the reason for using CVC, age of child, preferences and ability in management of the device of the family.

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