Short and long term hemodialysis catheters in pediatric population: a single center experience

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Introduction:

Vascular access in pediatric population remains a big challenge for interventional nephrologists. In one hand we have the tiny weight and the small diameter of the veins and in the other hand, many of these procedures need general anesthesia where the local anesthesia is not possible.

Methods:

Between January 2014 and May 2017, 12 pediatric patients with end-stage renal disease (ESRD) were included in this study for hemodialysis catheters. 7 short term hemodialysis catheters (STHC) and 5 long term tunneled catheters (LTHC) were performed. All procedures were under general anesthesia except one case. All catheters were performed by ultrasound guided alone or with fluoroscopy and contrast injection. The mean age is 7.4 years (2.5 –14 years); the mean weight is 23.36 Kg (10 Kg- 40 Kg). The vein used was the right jugular vein (RJV) for 7 patients, the left jugular vein (LJV) for 3 patients and the right femoral vein (RFV) for one patient.

One of them presented nephronophthisis with dextrocardia and left superior vena cava (LSVC). The angiography at the left side of the chest has shown: a thrombosed jugular vein, a thrombosed subclavian vein and a thrombosed brachiocephalic vein followed by a free LSVC with a left azygos vein (fig:1). The angiography at the right side of the chest has shown: a free jugular vein and a free brachiocephalic vein (fig:2). A hydrophilic guide wire has been placed in the inferior vena cava through the left jugular vein by the right side of the neck guided by fluoroscopy. A 12 french double lumen tunneled catheter has been performed in the left jugular vein by the right side of the neck (fig:3).

Results:

The initial success rate was 100 %. 7 patients (58%) started hemodialysis with a STHC waiting for peritoneal dialysis; 5 patients (41%) have had LTHC after peritoneal dialysis failure. One LTHC (8.33%) presented a tip dysfunction after one month resolved by tip repositioning. One STHC (8.33%) presented infection and has been changed over the wire, and one LTHC (8.33%) presented a catheter related bacteremia after three months resolved by systemic antibiotics and tauroludine lock.

Conclusion:

Vascular access for children remains the corn stone for pediatric population in hemodialysis. Arteriovenous fistula is the gold standard access to perform hemodialysis session but a little number of surgeons can make it. Short and long term catheters can overcome this constraint waiting for kidney transplantation.

References:

M.A.Rahil : Short and long term catheters in pediatric population a single center experience; *Oral presenration* at the **10th congress of the Vascular Access Society Ljubljana (Slovenia) April 5–8, 2017.**
M.A.Rahil : Short and long term catheters in pediatric population a single center experience; *Oral presenration* **Société francaise d’abord vasculaire Bordeaux 2018**

Figure 1: represented the angiography at the left side of the chest and shows : a dextrocardia (+), a thrombosed jugular vein (1), a thrombosed brachiocephalic vein (2), a free left superior vena cava (3), and a left azygos vein (4).
Figure 2: represented the angiography at the right side of the chest and shows: a free jugular vein (5); and a free brachiocephalic vein (6) connected to the LSVC.
Figure 3: represented a 12 french double lumen tunneled catheter in the left jugular vein by the right side of the neck.