IMPLANTATION OF CENTRAL VENOUS CATHETERS FOR HEMODIALYSIS COMBINED WITH THE TRANSLUMINAL ANGIOPLASTY OF CENTRAL VEINS; THE SAFETY EVALUATION

Ilya Skornyakov, Nikolai Kiselev, Anna Rozhdestvenskaya, Alexei Stolyar.

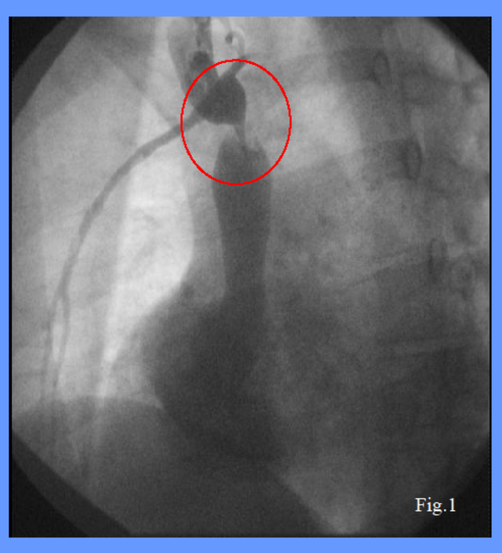
Sverdlovsk Regional Clinical Hospital 1, Dialysis department and Center of Interventional Radiology; Yekaterinburg, Russian Federation, 620102

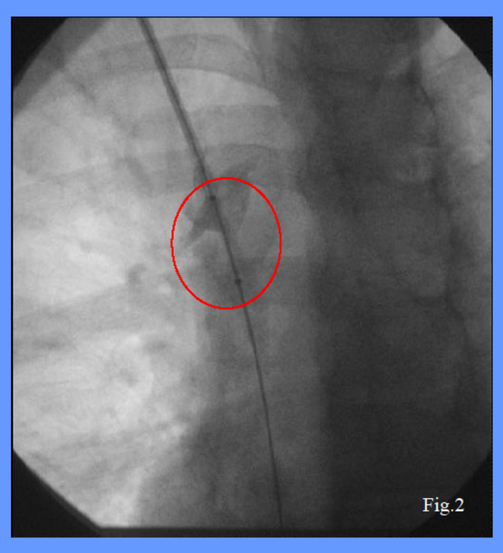
Objectives:

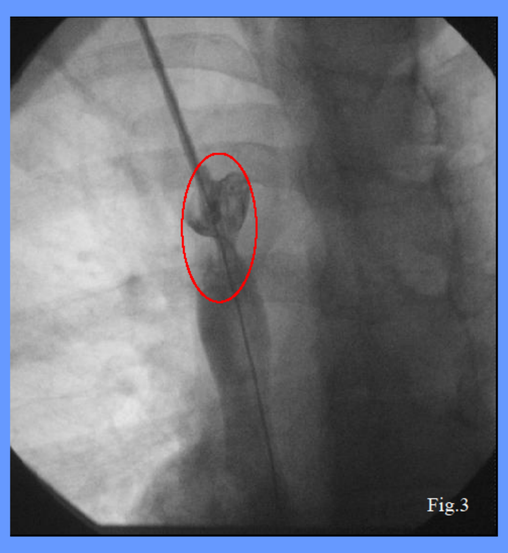
Creation of vascular access for hemodialysis is of utmost importance for effective treatment and remains a challenging task. Modern dialysis population is changing: the number of aged and/or diabetic patients usually burdened with concomitant pathologies is increasing. For a significant number of patients the creation of arteriovenous fistula is either impossible or takes extended time and, as a result, the implantation of central venous catheter (CVC) is required. Some patients undergo multiple implantations of CVC, which is a major risk factor of central venous stenosis development.
Objective: To evaluate the immediate outcomes and safety of CVC implantation combined with the percutaneous venous angioplasty in patients with central vein stenosis.

Methods:

119 implantations of tunneled CVC for hemodialysis performed in 2011-2012 were analyzed. All the implantations were performed in a specialized radiological surgery room. All the patients had stage 5 chronic kidney disease (CKD KDIGO) and required maintenance hemodialysis. The majority of patients had a history of arteriovenous fistulae thrombosis, previously implanted CVC and catheter associated infections. In 14 cases the CVC implantation was possible only after performing of the transluminal angioplasty of central vein. In all these cases broad spectrum antibiotics were administered and the prophylaxis of catheter related thrombosis was done with direct anticoagulants. The patients were monitored for 2 weeks on the inpatient basis, and later during their regular dialysis sessions.







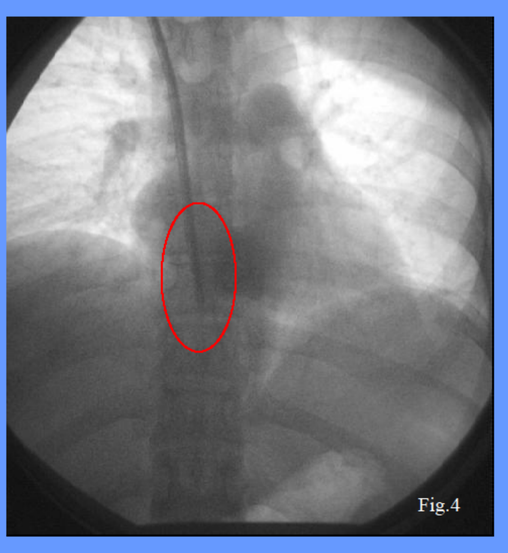


Fig. 1: Subtotal vena cava stenosis; Fig. 2: TPA of the stenosis area; Fig. 3: Residual vena cava stenosis (approx. 50%); Fig. 4: Catheter tip in the vena cava inferior

Results:

In 25 (21,0 %) cases from 119 manipulations, the central vein stenosis was visualized. Due to the absence of another vein, available for catheter implantation, in 14 cases (56,0%) from diagnosed with stenosis, the transluminal angioplasty of central vein stenosis was performed. The feasibility of venous dilation was assessed by the absence of acute vein thrombosis and the stable general condition. The dilation of jugular and brachiocephalic veins was performed in 7 cases (50,0%), of the iliac veins in 4 cases (28,6%), of the vena cava superior or inferior in 3 cases (21,4%). All the patients survived the procedure, no cases of embolism were observed. No episodes of internal bleeding due to possible vascular wall damage were signed. In 4 cases (28,6%) moderate venous insufficiency was observed in the post surgical period, which lessened with time. The removal of catheter was required in no cases. In all the cases were achieved satisfactory blood flow.

Conclusions:

In cases of chronic veins stenosis preventing catheter implantation the dilation of central vein is a viable option to provide the vascular access for hemodialysis.
The absence of severe complications, moderate intensity of venous insufficiency in the post operative period, could be attributable to the chronic character of vein stenosis. The age of stenosis and its compensation could be assessed by means of scrupulous history taking, physical examination and data from imaging techniques.

References:

1. European Best Practice Guidelines for Haemodialysis, 2007
2. NKF-KDOQI Clinical Practice Guidelines for Vascular Access, 2006
3. Handbook of dialysis, Lippincott Williams & Wilkins; 4th edition
4. Essentials of Percutaneous Dialysis Interventions, Springer

DOI: 10.3252/pso.eu.50era.2013