Case Report

Tesio catheters: findings in post-mortem examination

C. Grossi, S. Mangano, M. B. Zani, F. Tettamanzi and P. Scalia
Haemodialysis Unit, Galmarini Hospital, Tradate (VA), Italy

Introduction

Vascular access is still the 'Achilles heel' in the haemodialysis treatment. Access-related problems account for approximately 25% of hospitalizations in haemodialysis patients. In patients lacking a suitable vascular anatomy or presenting repeated a-v fistula thrombosis due to vascular problems and/or hypotension, a permanent central venous catheter can establish a reliable long-term vascular access for chronic haemodialysis.

Occlusion represents the major cause of catheter failure. Different type of catheters have been studied in order to obtain a low rate of short- and long-term complications.

Case report

A 47-year-old male patient on haemodialysis since 1985 for chronic glomerulonephritis suffered from an a-v fistula thrombosis in 1989 and subsequently, a subclavian catheter was placed.

Several interventions failed to provide a functioning vascular access and there were absolutely no indications for peritoneal dialysis; in January 1990, a double-lumen Permcath® catheter was placed in the left external jugular vein.

Repeated thrombolytic therapy (urokinase) failed and finally, irreversible thrombosis required catheter replacement.

In June 1992, two small-lumen silicon Tesio® catheters (inner diameter 2.3 mm, outer diameter 3.0 mm, length 35 cm) were inserted into the right internal jugular vein. These catheters slipped out because of the lack of a Dacron cuff in the anchorage system and were replaced by cuffed-type Tesio® catheters.

Angiographic examination (50 cc Iopamir® i.v.) was performed because of blood flow reduction during haemodialysis; no dislocation or intraluminal thromboses were demonstrated.

These catheters were used until the patient's death in June 1995 from cardiac-related complications.

Autopsy examination revealed enlarged ventricular cavities (heart weight was 900 g) and a considerably thinned left ventricular wall with thickened sclerotic and calcified aortic and mitral valves.

The neck vessels were patent and stiff; the tips of the catheters fixed to the superior vena cava and to the right atrium wall were enclosed in reactive tissue containing many calcifications. Two small (2-3 mm diameter) yellow, smooth and irregularly shaped bodies were found close to the catheter outlet into the atrium (Figure 1).

Histologically, the reactive tissue covering the catheters appeared to be a connective tissue containing macro cellular infiltrate and neoformed vessels near the vena cava.

The above-mentioned structure delimited a lumen covered by a layer of cells which appeared to be endothelial elements (Figure 2a and b).

Comment

Thrombosis is the most frequent complication of permanent central venous catheters; dislocation is...
observed far less often. The silicon small-lumen Tesio® catheters are expected to be less subject to these complications.

Nevertheless, in our experience, the catheter could not always provide an adequate blood flow during haemodialysis even if evidence of occlusion or thrombosis was not apparent with angiographic examination.

Fibrinolytic therapy (urokinase) was repeatedly ineffective in improving catheter performance. We hypothesize that the fibrous tissue fixing the catheters to the vessel wall may have been responsible for causing blood-flow problems during haemodialysis.

To our knowledge, similar cases have not been reported in the literature.

The connective reactive tissue growth may be due to a reaction of the endothelium to a foreign body left in situ for months and the development of an organized thrombus around the catheter may be secondary to the release of growth factors from activated platelets.

References


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