Obstruction of the Subclavian Vein due to Placement of a Hemodialysis Catheter in a Subject with Thoracic Outlet Syndrome

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Dear Sir,

Insertion of a catheter into the subclavian vein is frequently carried out to obtain a rapid vascular temporary access in hemodialysis. Yet, such a technique often presents complications [1, 2]. We report a patient with end-stage kidney failure and thoracic outlet syndrome who, after having been fitted with a 2-way catheter in the right subclavian vein, showed marked edema of the right superior limb.

A., a 65-year-old male, with advanced chronic renal failure secondary to nephroangiosclerosis with an early history of hypertension and after sudden and rapid impairment of his renal function had to be put on hemodialysis. Although an A-V fistula in the left forearm had already been made, it was not working, so we were obliged to insert a 2-way catheter into the right subclavian vein (Mahurkar catheter kit 11.5 Fr × 19.5 cm with vitacuff-Qwinton). After a few weeks, we needed a new A-V fistula into the right forearm, and it was possible to remove the catheter using the new vascular method. Yet, months later edema of the right arm was noted and a subclavian occlusive stenosis with extensive collateral circulation was seen on fistulography. Our study pointed out a reduction of the anatomical space housing the vascular bundle, from which the so-called thoracic outlet syndrome appeared.

Following an increase of the left arm edema, the patient was submitted to open surgery for placement of a venous bypass. The intervention was performed through a 2-way opening: (i)-subclavicular cut (12 cm

in length), parallel to the lower clavicular edge, and (ii)-longitudinal right cervicotomy between the two ends of the sternocleidomastoid muscle. After cutting the clavicular insertion of the pectoralis major, we prepared the axillary subclavicular vein and the outlet of the cephalic vein. In order to decompress the thoracic outlet, the forepart of the first rib was resected, together with the subclavian muscle. Through the cervicotomic cut, the internal jugular vein was prepared and mobilized along its entire length. After having resected its proximal end, at the outlet of the

cranium, the internal jugular vein was transposed below the clavicle and the stump was fixed terminolaterally on the axillary vein corres-

Fig. 1. Right upper limb fistulography after transposition of the internal jugula vein, cv=Cephalic vein; av=axillary vein; Sv=subclavian vein.

ponding to the confluence of the cephalic vein, thus providing a new route to aid outlet from the limb. The postoperative course was completely normal. In order to reduce the risk of intraoperative bleeding or possible postoperative bleeding with formation of hematomas, the patient underwent hemodialysis using a polyethylenecovinyalcohol (EVAL) filter with very low doses of heparin (500 UI) for 1 week. About a month later, edema was reduced by 50% and after 3 months the limb had almost a normal size in relation to the patient's age and feeding conditions. Fistulography confirmed a regular flow in the venous vessels (fig. 1). In our case, moreover, the presence of a thoracic outlet syndrome played a negative role [3].

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The intervention of transposition of the jugular vein on the subclavian vein carried out in our patient was described by Witte and Smith [4] in 1966 and recently taken up again by Sanders and Hang [5]. Of the jugular transposition or axillojugular prosthetic bridging carried out till now, only 5 resulted patent at the postoperative control. Claviclectomy was associated in 3 cases and proximal arteriovenous fistula in 4. The

intervention we carried out, in which the jugular vein transposition was associated to the resection of the first rib and of the subclavian muscle to decompress the vein, has not yet been reported in the literature. The good result of this intervention gives us hope of possibly solving many other cases of subclavian vein stenosis in the presence of a thoracic outlet syndrome using this method.

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