Bilateral brachiocephalic vein stenosis in a chronic hemodialysis patient with well-functioning arteriovenous fistula – A rare entity

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ABSTRACT:
Introduction: Central vein stenosis has been reported in patients of end stage renal disease with subclavian vein being more commonly affected than brachiocephalic vein.

Case report: We present a case of young female with bilateral brachiocephalic vein obstruction following arteriovenous fistula creation for hemodialysis.

KEYWORDS: arteriovenous fistula, central veins, hemodialysis

ABBREVIATIONS
CKD – Chronic Kidney Disease
CVS – Central Vein Stenosis

INTRODUCTION
Hemodialysis is frequently required in patients of stage V Chronic Kidney Disease (CKD) for which vascular access in the form of arteriovenous fistula or central vein catheterisation is created. Complications associated with vascular access include stenosis, thrombosis, infection, distal limb ischemia, heart failure, pseudoaneurysm and aneurysm. We report a case of a 17-year-old female with bilateral brachiocephalic vein stenosis following creation of left brachiobasilic fistula.

CASE REPORT
A 17-year-old female with stage V CKD with left brachiobasilic arteriovenous fistula presented to us with progressive left upper limb swelling and pain for three days. A Doppler study was done which showed increased flow of 1.1 litres across the fistula with reduction in flow in radial and ulnar arteries which improved on occlusion of the fistula and patent ipsilateral axillary and subclavian vessels. In view of these findings, the fistula was closed under local anethesia. However, the patient did not get relieved of the symptoms and in addition to left upper limb swelling and pain, also ipsilateral hemi facial swelling occurred on post-operative day one of fistula closure. Angiography was performed in suspicion of central vein obstruction/stenosis which revealed bilateral brachiocephalic vein stenosis (Fig. 1.). Bilateral balloon dilation and venoplasty were carried out and the patient got relieved of the symptoms.

DISCUSSION
Central Vein Stenosis (CVS) in patients on hemodialysis, although rare, is a known entity [1]. Subclavian vein stenosis has been reported in dialysis patients especially in those with a previous history of central vein cannulation. Brachiocephalic vein stenosis also has been reported but much less commonly than subclavian vein stenosis [2]. As the patient had a prior history of left central veincannulation it was assumed that she might be harbouring latent brachiocephalic vein stenosis which manifested due to a high flow following fistula creation. Endothelial injury being a result of central vein cannulation appears to be the most plausible explanation for CVS which got aggravated due to a high flow resulting from fistula creation [3]. Bommer et al. reported left
brachiocephalic kinking and stenosis in a patient who had all central catheters placed on the right side, suggesting that this may be explained by the tip of a right-sided catheter becoming displaced to the left causing local damage to a vessel wall resulting in stenosis [4]. This may be the possible explanation for complete block on the ipsilateral (left) side with stenosis of the contralateral brachiocephalic vein in our patient.

Therefore, in all CKD stage V patients requiring vascular access for hemodialysis, central veins (including the brachiocephalic veins) should be checked before creation of a fistula.

A high index of suspicion of central vein stenosis should be maintained when symptoms (pain and swelling) develop in a limb having an arteriovenous fistula.

REFERENCES