Mega-fistula

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A 34-year-old man, on maintenance hemodialysis for the last 2 years, presented with a swollen left brachiocephalic arteriovenous fistula (AVF) secured a year before the initiation of hemodialysis. Examination revealed blood pressure of 140/90 mmHg and left upper limb showed aneurysm of AVF and hypertrophy of the limb [Figure 1]. Doppler of AVF showed a draining vein of left brachiocephalic fistula measuring 9 mm located at 3 mm depth from skin surface showing flow volume of 2200 mL/min. The Nicoladoni-Branham sign was positive. It was elicited by manual compression of the fistula at the arterial anastomosis for 60 s. There was decrease in pulse rate from 98 bpm to 76 bpm and increase in blood pressure to 150/100 mmHg. This is due to instantaneous normalization of circulating blood flow by occluding the fistula shunt. After the release of compression, the pulse rate increased in about 30 s. This sign suggested that AVF was producing cardiac overload.[1] Echocardiography revealed left ventricular hypertrophy with a cardiac output of 6.4 L/min. The suggested criteria for the definition of mega-fistula are blood flow across AVF >2.2 L/min, cardiopulmonary recirculation >20%, hypertrophied feeding artery, high output heart failure with cardiac output >4–8 L/min, and cardiac index >3 (ratio of cardiac output to body surface area).[2,3] Another definition suggested is the presence of several dilated access segment greater than twice the adjacent vein diameter, usually with flows greater 2000 ml/min and increased intra-access pressures (personal communication from Dr. Dirk M. Hentshel). The patient underwent fistula closure and was initiated on peritoneal dialysis.

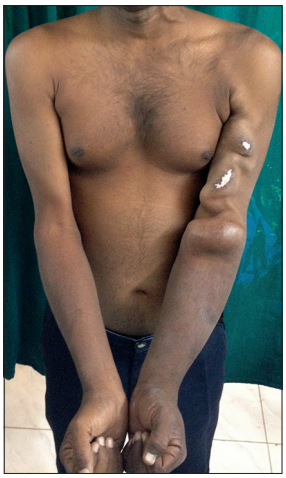

Figure 1: Mega-fistula

Aneurysmal dilation of AVF is due to the complex interplay between biologic factors like needle injury that induce outward wall remodeling, and physical factors such as wall tension that is directly proportional to intraaccess pressures. In a series of patients who underwent minimally invasive limited ligation endoluminal-assisted revision banding, pressure within the mid-fistula was reduced by 60–80% and aneurysm growth was arrested.[4]

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Conflicts of interest
There are no conflicts of interest.

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