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Salvaging AV Fistula inupper Limb Edema with Central Venous Thrombosis

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Abstract

This is a case report of left upper limb edema following left brachiocephalic fistula done for hemodialysis. Patient was detected to have proximal central venous stenosis as cause of upper limb edema. Usually such cases are managed with closure of arteriovenous(AV) Fistula to relieve limb edema which should not be done and AV fistula should be salvaged for future usage. In our case, patient responded well to conservative treatment anddistal AV fistula was salvaged for future purpose.

Keywords: Arteriovenous fistula, hemodialysis.

Introduction

The prevalence of ESRD (End Stage Renal Disease) is progressively increasing. The median age of onset is 58.8 years[1]. These patients require lifelong renal replacement therapy. Hemodialysis through arterio-venous fistula is the preferred modality of renal replacement therapy[2]. With the increased use of central venous venous catheter placement, the incidence of central venous obstruction is reported more frequently leading to massive upper limb edema following creation of arteriovenous (AV) fistula. In most of the cases distal AV Fistula is ligated to relieve the edema. Usually the cause of edema is not AV fistula but proximal blockage which should be relieved and AV Fistula should be salvaged[3].

Case Summary

We report a 62 year old male known case of hypertension and right hemiplegia for 7 years. He underwent hemiarthroplasty for right femur fracture 6 months back, when he was incidentally diagnosed to have chronic kidney disease (CKD). Patient was on regular hemodialysis twice a week since then using right internal jugular vein, left internal jugular and right subclavian vein for two months each. He underwent left radiocephalicarteriovenous fistula which failed. Later he underwent left brachiocephalic fistula. Two months later patient noticed progressively increasing swelling of the left upper limb. Thinking AV Fistula as cause of edema patient was referred to Plastic Surgeon for closure of AV Fistula. On examination left upper limb was grossly oedematous. There were no pre gangrenous changes with good thrill across the fistula. Patient was evaluated for cause of upper limb edema. Angiogram revealed gross stenosis of bilateral subclavian veins and internal jugular vein. Decision was taken not to ligate and salvage the fistula. Patient was managed conservatively with limb elevation, compression stocking, limb massage and physiotherapy. Patient responded well to conservative treatment and edemasubsided in two weeks. The arteriovenous fistula is patent with good thrill clinically. Now the patient is planned for transluminal balloon angioplasty, stenting or bypass procedure for stenosis of proximal blocked veins by team of vascular surgery as a definitive treatment for the occlusion.

Figure-1
At admission

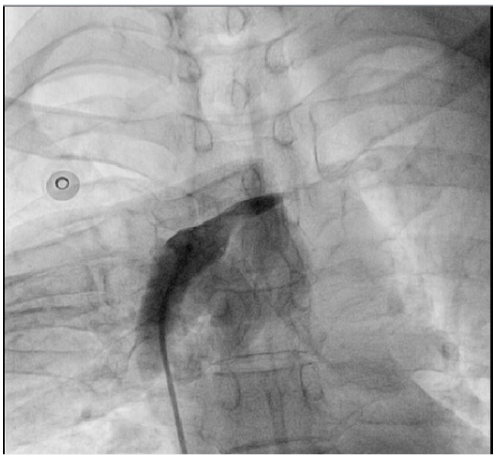

Figure-2
Angiogram demonstrating subclavian stenosis

Figure-3
Edema resolved following conservative treatment for 2 weeks

Discussion

The occurrence of central venous obstruction (20 – 50%) at the sites of central venous catheterisation is a known entity[3]. In ESRD patients, the use of central venous catheters for hemodialysis is still prevalent. In many cases the presence of central venous obstruction is clinically silent and usually diagnosed only after the creation of arteriovenous fistula distal to the obstruction. The best non- invasive methods to diagnose the presence of central venous obstruction is the use of magnetic resonance imaging and duplex ultrasonography. These patients usually present with features of venous hypertension like swelling of the limb, pain and paraesthesia or numbness. In severe cases even pre gangrenous changes of the limb have been reported. There are many reports of fistula closure as a therapeutic option for management of edema without ruling out block in the proximal venous system. This leads to loss of a working useful AV fistula which should have been salvaged & used in future. The non-surgical management include limb elevation, compression garment and physiotherapy. Many patients respond to this line of therapy[4]. In cases refractory to the conservative measures transluminal balloon angioplasty and stenting can be attempted. Other surgical options available are bypass of the obstruction by grafts. The final step should be reserved for ligation of the fistula after all measures fail.The occurrence of central venous obstruction is so frequent that there are recommendations for routine preoperative upper limb venography before arteriovenous fistula creation, especially in patients with multiple previous catheterisations[5,6].

In the event of development of limb complications due to unrecognised central venous stenosis, all efforts should be directed towards salvage of fistula with correction of venous hypertension symptoms with conservative or endovascular or surgical procedures.

Conclusion

One should not ligate distal AV Fistula without ruling out block proximally. AV Fistula should be salvaged for future purpose.

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