Accepted Manuscript

Title: Spinal venous hypertension secondary to pelvic extra-spinal arteriovenous fistula – A previously unreported cause of Congestive Myelopathy

Author: Aneesh Mohimen, Santhosh Kumar K, Jayadevan E R, Narendra Kumar Jain, Kapilamoorthy T R

PII: S1529-9430(15)01455-2
DOI: http://dx.doi.org/doi:10.1016/j.spinee.2015.09.045
Reference: SPINEE 56610

To appear in: *The Spine Journal*

Please cite this article as: Aneesh Mohimen, Santhosh Kumar K, Jayadevan E R, Narendra Kumar Jain, Kapilamoorthy T R, Spinal venous hypertension secondary to pelvic extra-spinal arteriovenous fistula – A previously unreported cause of Congestive Myelopathy, *The Spine Journal* (2015), http://dx.doi.org/doi:10.1016/j.spinee.2015.09.045.

Title:

Spinal venous hypertension secondary to pelvic extra-spinal arteriovenous fistula – A previously unreported cause of Congestive Myelopathy.

Authors:

Aneesh Mohimen

Santhosh Kumar K

Jayadevan E R

Narendra Kumar Jain

T R Kapilamoorthy

Keywords: Congestive Myelopathy; Spinal Dural Arterio-venous fistula (SDAVF); Iliac arterio-venous fistula (AVF); Spinal Angiography; Dorsal spinal flow voids.

A 65 year old male, presented with sub-acute onset of myelopathy with paraparesis and bladder involvement. Magnetic Resonance Imaging (MRI) revealed dorsal cord edema with multiple dorsal , extra-medullary flow voids (Fig 1A). With a provisional diagnosis of Spinal Dural Arterio-venous fistula (SDAVF), a spinal angiography was done which revealed normal inter-costal and lumber arteries. Right internal iliac angiogram revealed an ectatic internal iliac artery (IIA) with a fistulous communication with the internal iliac vein (IIV). There was

opacification of the spinal radicular veins across the fistula with reflux into spinal peri-medullary veins (Fig 1B-D, Fig 2).

The patient underwent coil embolization of the fistula with complete angiographic occlusion and partial clinical improvement.

SDAVF is the commonest cause of congestive myelopathy and presence flow voids in spinal subarachnoid space on MRI. Other spinal vascular malformations such as spinal arteriovenous malformations and epidural arteriovenous fistula can demonstrate flow voids on MRI (1). Spontaneous extra-spinal AVF between the pelvic internal iliac arteries and veins causing congestive myelopathy has never previously been reported in literature. We presume that venopathic changes secondary to long standing high flow shunt resulted in diversion of blood from the fistula into spinal peri-medullary veins. Progressive obliteration of radicular venous outlets might have resulted in venous congestion and progressive myelopathy (2). Early treatment of such conditions can potentially arrest and possibly reverse the changes of myelopathy.

References:

1. T. Krings, S. Geibprasert. Spinal Dural Arterio Venous fistulas. Am J Neuroradiol , 2009; 30:639–48.
2. Hurst RW, Kenyon LC, Lavi E, Raps EC, Marcotte P. Spinal dural arteriovenous fistula: The pathology of venous hypertensive myelopathy. Neurology 1995;45:1309.

Figure Legends :

Fig 1: T2 sagittal MRI (Fig 1A) shows flow voids in the posterior subarachnoid space (white arrow) and cord edema. Right internal iliac artery angiogram (Fig 1B) shows inferior gluteal artery with fistulous communication into inferior gluteal vein (long thick arrow) and opacification of sacral radicular vein (long thin arrow). Delayed image (Fig 1C) demonstrates fistulous drainage via dilated perimedullary veins (multiple short thin black arrows).

Fig 2 : Oblique sagittal reconstructed images of 3D rotational angiography of right IIA showing site of fistula (thick white arrow) with sacral venous reflux (A) and reflux (B) into perimedullary vein (thin white arrow). Post coiling angiogram (Fig 2C) shows complete obliteration of the fistula with absence of venous shunting and spinal peri-medullary venous reflux.