

Nutcracker Syndrome of Left Renal Vein in Postural Orthostatic Tachycardia Syndrome (POTS)

Hemanshi Mistry*, MD, Sowmika Rao, MD, Amna Butt, MD, Stacy Hamid, MD, Stanely Eziukwu, MD, Amer Suleman, MD, FHRS, FSCAI, Adjunct professor, UT Dallas & The Heartbeat clinic, Jonathan Bard, MD, Neuroradiology & diagnostic radiology, TX, USA

Background: POTS is a form of dysautonomia characterized by dizziness, syncope, palpitation, abdominal pain, nausea/vomiting, and chest pain. Nutcracker syndrome of the renal vein is the compression of left renal vein between aorta and superior mesenteric artery (SMA) causing symptoms including minimal hematuria, pelvic congestion, varicocele and varicose veins due to the disturbance of blood inflow from the inferior vena cava to the left renal vein.

Objective: We aim to study Nutcracker syndrome of the renal vein as a possible cause of pelvic congestion and leg pains in POTS patients.

Method: We did a retrospective study of 374 POTS patients referred to our clinic from June 2014 to April 2016. A celiac artery doppler, lower extremity venous doppler, CT angiogram of abdomen with and without contrast was done on the patients suffering from chronic lower abdominal pain, nausea, vomiting, bloating and leg pain & cramps.

Results: Out of 374 patients, 325 patients are female (age=32.88±11.31) and 46 patients are males (age=30.26±12.50). Our findings showed that 72 patients out of 374 patients are suffering from lower abdominal pain and leg pain & cramps (19.25%) and audible celiac artery bruit in 7 patients. Celiac artery doppler was done to check flow velocities of celiac artery, SMA, hepatic and splenic artery which showed 55 out of 374 had increased celiac artery velocity (14.7%, Velocity= 327±12.11). CT angiogram abdomen showed average 50±13.56 % stenosis of celiac axis in 33 patients along with compression and narrowing of left renal vein by aorta and SMA diagnosed with nutcracker syndrome of renal vein. (8.82%). 11 patients out of 33 patients showed gonadal venous congestion (33.33%).

Conclusion: Our study is the first to show that Nutcracker syndrome of left renal vein can be a possible pathology associated with POTS and needs to be studied further.