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Pelvic Venous Disease Screening in Patients with Cardiovascular Autonomic Dysfunction

BACKGROUND: Dysautonomias are a multi-system disease state resulting from various pathologies directly or indirectly affecting sympathetic and parasympathetic nerves. Cardiovascular autonomic dysfunction (CVAD) is a subset of dysautonomias that affect the cardiovascular system. This can manifest as postural orthostatic tachycardia syndrome (POTS), Chronic Fatigue Syndrome, Neurogenic Orthostatic Hypotension, as well as other manifestations (Rocha et al., 2021). Pelvic venous disease (PeVD) may be correlated with CVAD. This can occur through multiple mechanisms which include venous obstruction, stasis, pooling, and compression of the iliac vein that results in decreased venous return causing sympathetic hyperactivity, baroreceptor inactivation, and tachycardia (Spencer et al., 2026).

PURPOSE: This study investigates whether the presence of PeVD correlates with those suspected or confirmed to have CVAD, potentially uncovering a precursor in PeVD that can aid in increasing detection and diagnosis of CVAD.

METHODS: This is a retrospective, IRB approved, and HIPPA compliant study. So far, data collected from EPIC chart reviews from 194 patients who have undergone either screening for CVAD since 2015 or have undergone workup for PeVD by an Interventional Radiologist (IR) who specializes in venous and pelvic diseases were recorded in a RedCap database. From the database, 171 patients with high suspicion of or a diagnosis of CVAD had pelvic imaging screened for PeVD. Patients with a positive screen underwent a diagnostic venogram. A diagnosis of PeVD was determined as having primary pelvic venous insufficiency (PPVI) or compression of the left renal vein or left common iliac vein. 34 patients were excluded from the results as autonomic testing had not been completed.

RESULTS: Of the preliminary results from 137 patients, 75.91% had a positive screen and 24.09% had a negative screen. When comparing the autonomic test results of the 137 patients, the average Composite Autonomic Severity Score (CASS) of positively screened patients was 1.87 compared to negatively screened patients at 1.91. Of the 104 patients with a positive screen, 66 underwent a venogram for further evaluation of a PeVD diagnosis. Of those patients, 90.91% had a positive diagnosis of PeVD with 65.15% of patients having PPVI and 48.48% of patients having venous compression of either left renal vein compression (24.24%), left common iliac vein compression (37.88%), or both.

CONCLUSION: Based on the initial analysis, there is high prevalence of PeVD in patients with high suspicion of or a diagnosis of CVAD. These results indicate that screening for PeVD should be included in CVAD workup and vice versa, with a possibility that interventions aimed at correcting PeVD could ameliorate CVAD.

FUTURE DIRECTIONS: Further analysis is needed to identify how central venogram interventions that correct PeVD can potentially affect CVAD symptoms.