Comparison of Gastrointestinal Symptoms and Gastric Emptying Scintigraphy between Postural Orthostatic Tachycardia Patients with and without Small Fiber Neuropathy

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BACKGROUND

- Autonomic dysfunction involving the gastrointestinal system is very common in patients with postural orthostatic tachycardia syndrome (POTS)
- Various subtypes of POTS exist: autoimmune, hyperadrenergic, and neuropathic

AIMS

Our primary objectives were to compare gastrointestinal symptom presentation and gastric emptying scintigraphy (GES) between POTS patients with and without small fiber neuropathy (SFN)

METHODS

- Retrospective review of POTS patients who underwent autonomic testing between 2013 – 2021
- Patients were divided into those with SFN (abnormal QSART) and those without SFN (normal QSART)
- Demographics, comorbidities, and reported GI symptoms were extracted
- 4 hour GES results were also extracted

RESULTS

Table 1: Baseline Demographics

Variable	All (n=97)	POTS with SFN (n=53)	POTS w/o SFN (n=44)	p-value
Basic Demographics				
Age: Median (IQR)	36 (30-46)	37 (32-48)	35 (27-40)	0.12
Sex, n (%)				0.59
Female	83 (86)	45 (85)	39 (89)	
Male	14 (14)	8 (15)	5 (11)	
Race, n (%)				0.17
White	83 (86)	43 (81)	40 (91)	
Other	14 (14)	10 (19)	4 (9)	
Co-morbidities				
Hypermobile EDS	43 (44)	23 (43)	20 (45)	0.84
CSF Leak	19 (20)	13 (25)	6 (14)	0.18
Chronic Fatigue Syndrome	21 (22)	14 (26)	7 (16)	0.21
Fibromyalgia	15 (15)	9 (17)	6 (14)	0.27
Diabetes	2 (2)	1 (2)	1 (2)	0.89
Hypothyroidism	14 (14)	5 (9)	9 (20)	0.12
Chronic Narcotic Use	7 (7)	1 (2)	6 (14)	0.03
Gastrointestinal Symptoms				
Abdominal pain, n (%)	63 (65)	37 (70)	26 (59)	0.27
Bloating, n (%)	44 (45)	26 (49)	18 (41)	0.42
Nausea, n (%)	64 (66)	40 (75)	24 (55)	0.03
Vomiting, n (%)	28 (29)	19 (36)	9 (20)	0.10
Dyspepsia, n (%)	9 (9)	7 (13)	2 (5)	0.09
Constipation, n (%)	57 (59)	35 (66)	22 (50)	0.11
Diarrhea, n (%)	34 (35)	23 (43)	11 (25)	0.06
Early Satiety, n (%)	27 (28)	19 (36)	8 (18)	0.05
Dysphagia, n (%)	11 (11)	6 (11)	5 (11)	0.99
Weight Loss, n (%)	26 (27)	16 (30)	10 (23)	0.41
Poor oral intake, n (%)	21 (22)	17 (32)	4 (9)	0.01
Enteral nutrition dependence, n (%)	4 (4)	3 (6)	1 (2)	0.40
Parenteral nutrition dependence, n (%)	5 (5)	5 (9)	0 (0)	0.04

Table 2: Gastric Emptying Study Results

Variable	All (n=33)	POTS w/ SFN (n=20)	POTS w/o SFN (n=13)	p-value
Delayed Gastric Emptying, n (%)	12 (36)	9 (45)	3 (23)	0.21
Percentage Emptying at Various Durations				
60 minutes: Mean (SD)	32.1 (22.3)	28.9 (24.6)	37.0 (18.2)	0.35
120 minutes: Mean (SD)	57.3 (27.3)	53.3 (29.4)	62.5 (24.6)	0.37
180 minutes: Mean (SD)	74.3 (24.9)	68.7 (26.8)	83.3 (19.2)	0.15
240 minutes: Mean (SD)	85.8 (17.4)	84.1 (18.4)	88.2 (16.6)	0.55

SUMMARY

- POTS patients with SFN were more likely to have nausea (75% vs 55%, p=0.03), poor oral intake (32% vs 9%, p=0.01), parenteral nutrition dependence (9% vs 0%, p=0.01), and early satiety (36% vs 18%, p=0.05)
- No GI symptoms were significant as predictors for SFN
- Percentage of patients with delayed GES was numerically higher but not significant in POTS patients with SFN (45% vs 23%, p=0.21)

CONCLUSIONS

- High prevalence of GI symptoms occur in patients with POTS independent of SFN
- POTS patients with SFN were more likely to have upper GI symptoms of nausea, poor oral intake, and early satiety despite similarities in GES
- The presence of greater symptoms may suggest that etiology may be due to sensory rather than motor dysfunction

Abbreviations:
QSART: quantitative sudomotor axon reflex test, **CSF**: cerebral spinal fluid, **IQR**: interquartile range, **EDS**: Ehler's Danlos Syndrome, **SD**: standard deviation