

## POTS - An Unusual Case of Dysautonomia

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Postural orthostatic tachycardia syndrome is an unusual disorder of autonomic dysfunction. Healthy patients with long-standing unexplained symptoms, like presyncope, chronic fatigue and sinus tachycardia, are easily misdiagnosed and mistreated. We are discussing the case of a 38-year-old female patient posted for knee arthroscopy for medial meniscus tear, who was first suspected to have this unusual disorder of the autonomic nervous system inside the operation theatre. A cautious observation and evaluation can help in reducing the morbidity and mortality associated with autonomic disorders.

**Keywords:** Presyncope; Chronic Fatigue; Sinus Tachycardia; Postural Orthostatic Tachycardia Syndrome (POTS)**Background**

Postural orthostatic tachycardia syndrome (POTS) is a blood circulation autonomic disorder. Autonomic disorders are often misunderstood and mistreated. After taking informed consent for publication, we are presenting the case of a 38-year-old female patient posted for knee arthroscopy for medial meniscus tear, who was found to have an unusual disorder of the autonomic nervous system.

**Case Presentation**

The patient was posted for elective surgery under American Society of Anesthesiologist (ASA) 1 grade with no known comorbidities. Inside the operation theatre, the standard monitors were attached and baseline parameters were recorded as heart rate- 92 beats per minute, regular, Blood pressure - 126/66mm of Hg, oxygen saturation of 97% on room air. Patient was then prepared for spinal anesthesia in sitting posture. The painting and draping of back were done. Before, the spinal could be given, she started feeling dizzy and nauseous. This was within five minutes of changing from supine to sitting (for the procedure). Her electrocardiogram (ECG) started showing supraventricular tachycardia with heart

rate of 210 per minute and blood pressure of 84/38mm of Hg. Patient was immediately put in supine position and within few seconds, her heart rate resolved spontaneously to 108/ minute and Blood pressure to 108/58mm of Hg. She was observed within operation theatre and the surgery was deferred for complete cardiac evaluation after discussion with the surgeons. On questioning for any similar history in past, she gave history of palpitations on and off associated with standing upright and sitting from supine. However, no proper evaluation was done for the same. The post-operative echocardiography was normal.

**Discussion**

We believe this was a case of postural orthostatic tachycardia syndrome (POTS). This condition is associated with a positional intolerance causing a rise in heart rate of up to  $\geq 30$  beats per minute within a period of 10 minutes of standing or head-up tilt. This is usually in absence of orthostatic hypotension (fall in systolic blood pressure of  $\geq 20$  mm Hg and/or fall in diastolic Blood pressure of  $\geq 10$  mm Hg). This condition is more common in young pre-menopausal women. The usually symptoms and signs include palpitations, nausea, fatigue, diminished concentration, tremors, near syncope and syncope [1].

The exact aetiology of POTS is still poorly understood. The episodes often start after a major surgery, trauma, viral illness, pregnancy and may accentuate before a menstrual period. There is no clear inheritance of POTS, though some studies suggest an association. These causative factors include impaired innervation of vascular system, high plasma norepinephrine levels,  $\alpha$ - and  $\beta$ -receptor hypersensitivity and dysfunction at baroreceptor level. The disorder is essentially a peripheral autonomic neuropathy in which the peripheral vasculature fails to maintain an optimum vascular resistance in the advent of gravitational stress. Various secondary causes for POTS are chronic diabetes mellitus, alcoholism, lupus, Sjogren syndrome, amyloidosis, sarcoidosis and chemotherapy etc. The differential diagnosis for POTS is neurogenic orthostatic hypotension (NOH), which can be associated in conditions like multiple system atrophy, pure autonomic failure, Parkinson disease, autoimmune autonomic ganglionopathy and Lewy body dementia etc.

Another entity confused with POTS is Inappropriate sinus tachycardia (IST). The common reason for this is the fact that both these conditions are found in young women. However, an important difference is that IST is not dependent on change in body posture. The diagnosis of IST can be done by ambulatory monitoring. These patients demonstrate relative supine tachycardia during night, unlike in POTS [2].

A diagnosis of postural orthostatic tachycardia syndrome is often suspected based on characteristic clinical features. The physical examination involves blood pressure and heart rate measurement in lying, sitting and standing postures. A tilt table test is confirmatory, where the heart rate is greater than the normal control population in supine posture and with a 70° head uplift, a rise of more than 30 beats per minute occurs within 1-5 min [3].

Therapies for POTS are targeted at relieving low blood volume or regulating circulatory problems that could be causing the disorder. The conservative treatment for POTS includes physical reconditioning, salt intake and adequate hydration. Pharmacotherapeutic agents indicated in POTS are Clonidine, Fludrocortisone, Labetalol, Pyridostigmine and Duloxetine etc. The drugs fludrocortisone (for those on a high salt diet) and midodrine in low doses are often used to increase blood volume and narrow blood vessels [4].

## Conclusion

To conclude, an otherwise healthy patient with long-standing unexplained symptoms, like presyncope, chronic fatigue and sinus

tachycardia, is easily misdiagnosed and mistreated. This is mainly owing to the poorly understood aetiologies and pathophysiology of disorders of autonomic system. A cautious observation and evaluation can help in reducing the morbidity and mortality associated with autonomic disorders.

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