Postural Orthostatic Tachycardia Syndrome

S. Carew, M. O’Connor, T. Sheehy, A. Costelloe, D. Lyons.

www.3bv.org
Bones, Brains & Blood Vessels
Introduction

• Postural Orthostatic Tachycardia Syndrome (POTS) is characterized by an excessive increase in heart rate when a person is in a prolonged upright position and presents with symptoms of orthostatic intolerance. \(^1\)
• Orthostatic intolerance has been increasingly analysed in recent years. Tilt table testing has become a widely accepted technique for providing direct diagnostic evidence of the conditions underlying orthostatic intolerance, such as orthostatic hypotension, vasovagal syncope and POTS.
• **POTS-most widely accepted definition**
  • persistent tachycardia
  • either an increase from baseline heart rate of $\geq 30$ beats per minute (bpm)
  • or an increase of heart rate to $\geq 120$ bpm)
  • within the first ten minutes of head up tilt \{2,3,4\}
  • associated with symptoms of orthostatic intolerance,
  • in the absence of significant hypotension. \{5\}

• Postural symptoms
  • dizziness, fatigue, sweating, nausea, tremor, headache, palpitations and exercise intolerance, which resolve in the
• **Inconsistency in the literature between published definitions.**

• Jacob 2000 described the following criteria for POTS: “an increase in the heart rate of at least 30bpm (without a concomitant decrease in systolic BP of more than 20 mmHg or in diastolic blood pressure of more than 10mmHg) within 5 mins after assuming a standing position on at least 3 separate occasions.” {6}
The standard definition does not require 3 separate readings for a diagnosis of POTS. Although most definitions agree that the persistent tachycardia should occur within 10 minutes, others suggest that it should be within 5 minutes of standing \{6,7\}. **Significant orthostatic hypotension excludes a diagnosis of POTS in some papers \{6,8\} with various levels of hypotension described (20 or 30 mmHg reduction of systolic blood pressure respectively). \{6, 8\}
• We suggest that a consensus statement would be useful in reaching a standard definition for POTS.
• We reviewed the prolonged tilt test results of all patients who fulfilled the heart rate criteria for POTS in our dedicated syncope unit, to address the inconsistency in defining POTS.
Methods

- This study is a retrospective observational review of all patients that attended the syncope laboratory over a six-year period. Data were compiled from a customised database (Filemaker Pro 7). All patients who fulfilled the heart rate criteria for POTS were identified. Results of the tilt tests were analysed.
- These results will then be compared to an age and sex matched control group for analysis.
Tilt testing is performed on patients with syncope, orthostatic intolerance or falls. Referrals are accepted directly from consultant physicians. General practitioner referrals are initially assessed at an outpatient syncope clinic. A motorized tilt table (The Plinth Company Ltd., UK) is used to transfer the patient from a lying to a semi erect position (70 degrees) in 15 seconds.
The TNO finometer (from TPD – Biomedical Instrumentation, Amsterdam) is used to measure phasic beat-to-beat blood pressure. It consists of a finger cuff containing an infrared photoplethysmograph. This measures changes in beat-to-beat blood pressure via a volume clamp technique.
pots
pots insufficient in 10 mins
Tachycardia and symps at 10 mins
?pots if NCS and OH
Discussion

• If a subject has OH is the tachycardia just a compensatory response to the fall in blood pressure?
• If the heart rate does not meet the criteria for POTS in the first 10 minutes - should that be POTS.
• What is an appropriate time to take an average heart rate to eliminate peaks and troughs.
References


