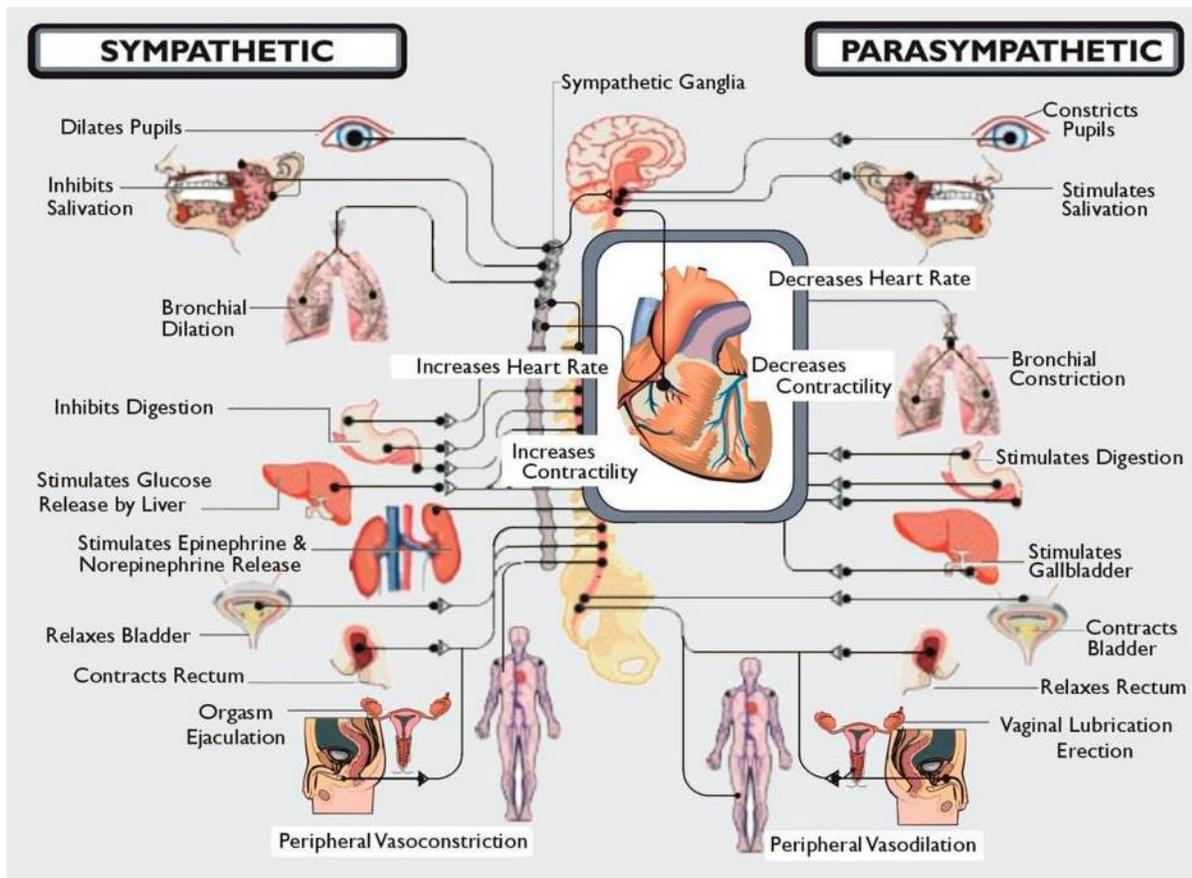


Dysautonomia disorder or Postural Orthostatic Tachycardia Syndrome "POTS"

In this disorder of dysautonomia, the usual antigraivty reflexes (Orthostatic intolerance) are somewhat inadequate to maintain preload and systemic blood pressure with prolonged or sudden standing. While the hallmark of POTS is an excessive heart rate increment upon standing (Orthostatic Tachycardia), patients often exhibit numerous symptoms of autonomic nervous system dysregulation.



Symptoms of POTS:

Patients with POTS often complain of extreme fatigue, exercise intolerance, tachycardia (rapid heartbeat), palpitations (pounding chest), chest discomfort, shortness of breath, dizziness, headaches and mental clouding "brain fog", blurred or tunnel vision, nausea and abdominal pain. The female: male ratio is 4:1.

POTS can sometimes arise as a constitutional trait, and in some situations there is a family history of this condition. There are some reports suggesting an association between joint hypermobility, irritable bowel syndrome and POTS. There is an overlap between POTS and Anxiety, depression and panic attacks and sometimes can be confused with these conditions.

Triggering Factors of POTS:

The symptoms can be precipitated by a viral illness, surgery, dehydration, external stressors or even hormonal changes “during puberty and menstrual cycles”, and that in such circumstances, we hypothesize that this reflects an autoimmune process. POTS may follow a relapsing-remitting course, in which symptoms come and go, for years. Symptoms of POTS may fluctuate and patients may have "good days" and "bad days", which can change periodically depending on the precipitating factors making the management sometimes very difficult but requires lots of patience from the patient and caregiver.

Management of POTS:

Therapies for POTS are targeted at relieving low blood volume or regulating circulatory problems that could be causing this condition. The mainstay therapy is volume expansion through voluntary intake of fluids and salt. Drinking 16 ounces of water (2 glassfuls) before getting up can also help raise blood pressure. Avoidance of aggravating factors such as dehydration and extreme heat exposure is also recommended.

Having a positive feeling and **positive biofeedback** appears to be very helpful in the management of this condition. Think of the glass “half full not half empty”. In most cases (approximately 80 percent), an individual with POTS improves and becomes functional, although some residual symptoms are common.

Recommendations for POTS:

- Increase fluid consumption- at least a gallon of water a day (2.5 L daily) -half of that should be with beverages that contain electrolytes (such as Pedialyte powder because of the high electrolyte content).
- Increase salt (~10 g daily of salt) and potassium rich diet intake- helps retain fluids, redistribute the volume and prevents cramping.
- Increase regular, aerobic exercise- to help mobilizing the circulation and enhancing vascular tone (i.e. Brisk walking and swimming, etc.).
- Establish exercises to strengthen lower limb and abdominal muscles so as to minimize lower limb and abdominal pooling of blood volume.
- Avoid prolong standing/sitting and change positions slowly.
- Avoid caffeinated beverages, over-the-counter cold/cough medications, energy drinks and home remedies.
- Elevation of the head of the bed 4-6 inches.
- Incorporate positive biofeedback into lifestyle.
- You may consider the use of compression and stockings and abdominal binder.
- While sitting and watching TV, elevate, flex and move feet.
- Consume extra salt while exercising (e.g. salty pretzels).
- When starting to feel dizzy or about to black out, lay on the ground and elevate your legs. This will increase blood flow to the brain which will prevent passing out/syncope.
- Practice breathing relaxation techniques (visit this website: www.Dawnbuse.com).

Medications used to treat POTS:

There is no universally effective medication to treat this condition. Sometimes it is necessary to try different medications at different dosages, sometimes in conjunction with each other in order to treat this condition. We discussed the importance of lifestyle measures in the treatment of this condition. From a pharmacologic standpoint, there are some of the medications, which can be used in POTS including but not limited to:

- **Fludrocortisone (Florinef)**; which helps volume expansion through enhanced sodium retention. Side effects may include hypokalemia, hypomagnesemia, worsening headaches, acne and fluid retention with edema.
- **Midodrine** (Alpha 1 agonist); which helps perfusion through its vasoconstrictive effect. It is a short-acting agent, thus given 3-4 times daily during waking hours. Should not be taken 3-4 hours before going to bed to avoid supine hypertension. It causes tingling sensation or “goosebumps”.
- **Beta blockers (Atenolol, Propranolol, Nadolol)** in low doses; which may help to slow heart rate by blunting the tachycardia associated with POTS and may provide symptomatic relief. Avoid higher dose, which may drop blood pressure.
- **Clonidine**; which in some situations can be helpful especially for associated sleep disturbances.
- **Pyridostigmine (Mestinon)**; which can be helpful in some patients to treat gastrointestinal symptoms and symptoms of fatigue.
- **Vasopressin (DDAVP)**; as a volume expanding agent to help in retention of free water but not sodium.
- Selective serotonin reuptake inhibitors (SSRIs)/Serotonin and norepinephrine reuptake inhibitors (SNRIs) medications (e.g. **Prozac, Zoloft, Paxil or Celexa**)

Prognosis/Outcome of POTS:

In some patients a cause for this condition is not apparent despite exhaustive diagnostic studies. Reassuringly, many if not most POTS patients (~80%) show improvement of their symptoms and become functional and back to normal or near normal. Therefore, recovery can take quite some time, up to several years.