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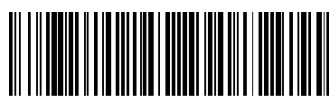
Nutritional Management of Postural Orthostatic Tachycardia Syndrome (POTS)

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ABSTRACT

Postural Orthostatic Tachycardia Syndrome (POTS) is a condition that causes a number of symptoms when you transit from lying down to standing up such as a fast heart rate, dizziness and fatigue. While there is no cure, several treatment and lifestyle changes can help manage the symptoms of POTS. This condition is a global health problem causing disabilities in millions of people. Therefore the aim of this review paper is to review, summarize studies made by numerous researchers on the nutritional management of POTS. The selection of food is very important to manage POTS. Dietary intake of phytochemicals especially fruits and vegetables including grains may promote increase in fluid content of body and giving health benefits, protecting against POTS. The consumption of phytochemicals and grains associates with decrease in risk of POTS due to electrolyte content in them. The nutritional and health value of fruits and vegetables is well recognized, because they play an important role in human health by way of providing antioxidants that are important in neutralizing free radicals seldom known to cause POTS. So to manage POTS avoid from consumption of food and beverage which has high fats, avoid alcohol, tobacco, cigarette consumption and eat fruits, and vegetables along with adequate salt and water intake, as well as regular physical activities are very important.



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INTRODUCTION:

Postural Orthostatic Tachycardia Syndrome (POTS), autonomic disturbance, characterized by the clinical symptoms of orthostatic intolerance, mainly light-headedness, fatigue, sweating, tremor, anxiety, palpitation, exercise intolerance and near syncope on upright posture.^[1] These are relieved on lying down. Patients also have a heart rate of more than 120 beats/min (bpm) on standing or increase their heart rate by 30 bpm from a resting heart rate after standing for 10 min. ^[2] The symptoms lead to the limitation of activities impacting a patient's life on a day-to-day basis for example, bathing, housework, and feeding. ^[1] The severity of symptoms is more pronounced compared to a condition like pure autonomic failure. ^[3] Patients with POTS may not have blood pressure changes and can have fluctuation of blood pressure in either direction. ^[4] Other conditions like chronic debilitating disorders, prolonged bed rest or medication that impair autonomic function have to be excluded. ^[2]

Each word of “Postural Orthostatic Tachycardia Syndrome” has a meaning:

- Postural: Related to the position of your body.
- Orthostatic: Related to standing upright.
- Tachycardia: A heart rate over 100 beats per minute.
- Syndrome: A group of symptoms that happen together. ^[2,4]

Normally, your body’s autonomic nervous system balances your heart rate and blood pressure to keep your blood flowing at a healthy pace, no matter what position your body is in. ^[5] If you have POTS, your body can’t coordinate the balancing act of blood vessel constriction (squeezing) and heart rate response. This means that your body can’t keep your blood pressure steady and stable. This causes a variety of symptoms. ^[3, 5]

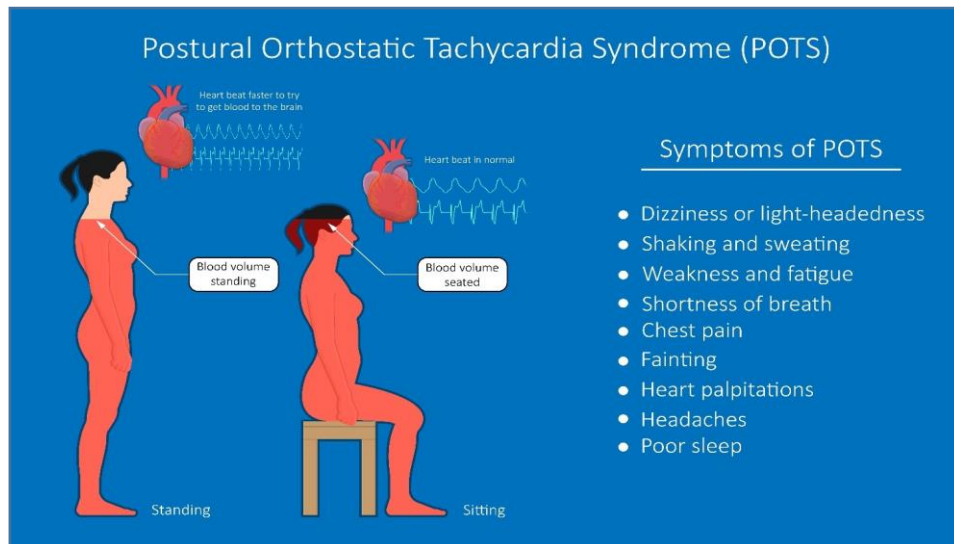


Fig. 1.1 Basic Understanding of Postural Orthostatic Tachycardia

History OF Postural Orthostatic Tachycardia Syndrome:

In 1871, physician Jacob Mendes Da Costa described a condition that resembled the modern concept of POTS. [6] He named it irritable heart syndrome. Cardiologist Thomas Lewis expanded on the description, coining the term soldier's heart because it was often found among military personnel. The condition came to be known as Da Costa's syndrome, which is now recognized as several distinct disorders, including POTS. [1, 4, 6]

POTS was first described 1940. Low *et al* from the Mayo Clinic did the pioneering work on this condition. [6] Robertson of the Vanderbilt autonomic laboratories stated it was one of the most common conditions in young females. Frolich *et al* reported patients who developed symptomatic postural tachycardia without any change in blood pressure. [7]

Postural tachycardia syndrome was coined in 1982 in a description of a patient who had postural tachycardia, but not orthostatic hypotension. Ronald Schondorf and Phillip A. Low of the Mayo Clinic first used the name postural orthostatic tachycardia syndrome, POTS, in 1993. [6-8]

Types of Postural Orthostatic Tachycardia Syndrome:

POTS can be classified as primary and secondary. Partial dysautonomia can be caused by various stresses and has an immune-mediated pathogenesis. [1] Serum autoantibodies to $\alpha 3$ acetylcholine receptors of the peripheral ganglia have been found. The partial dysautonomic form can also affect adolescents. [5] Symptoms initially worsen until the patient reaches 16 years of age and then gradually fade away. This is thought to be due to autonomic imbalance. [3]

In some primary cases, there is a hyperadrenergic state leading to increased norepinephrine, which could be due to impaired clearance or decreased uptake by the synaptic cleft. [2] These variants cause profuse sweating, anxiety and tremulousness and the diastolic pressure is high. This is thought to be a genetic disorder with the involvement of family members. [4] In these patients, symptoms will be gradual and progressive. They will have orthostatic tachycardia as well as associated hypertension. [1]

Symptoms of Postural Orthostatic Tachycardia Syndrome:

Symptoms happen immediately or a few minutes after sitting up or standing. Lying down may relieve some of the symptoms. POTS has several possible symptoms, and they vary from person to person. [4] Symptoms include:

- Dizziness or lightheadedness, especially when standing up, during prolonged standing in one position or on long walks.
- Fainting or near fainting.
- Forgetfulness and trouble focusing (brain fog).
- Heart palpitations or racing heart rate.
- Exhaustion/fatigue.
- Feeling nervous or anxious.
- Shakiness and excessive sweating.
- Shortness of breath (dyspnea).
- Chest pain.
- Headaches.
- Feeling sick.
- Bloating.
- A pale face and purple discoloration of your hands and feet if they're lower than the level of your heart.
- Disrupted sleep from chest pain, racing heart rate and excessive sweating during sleep. [1-5]

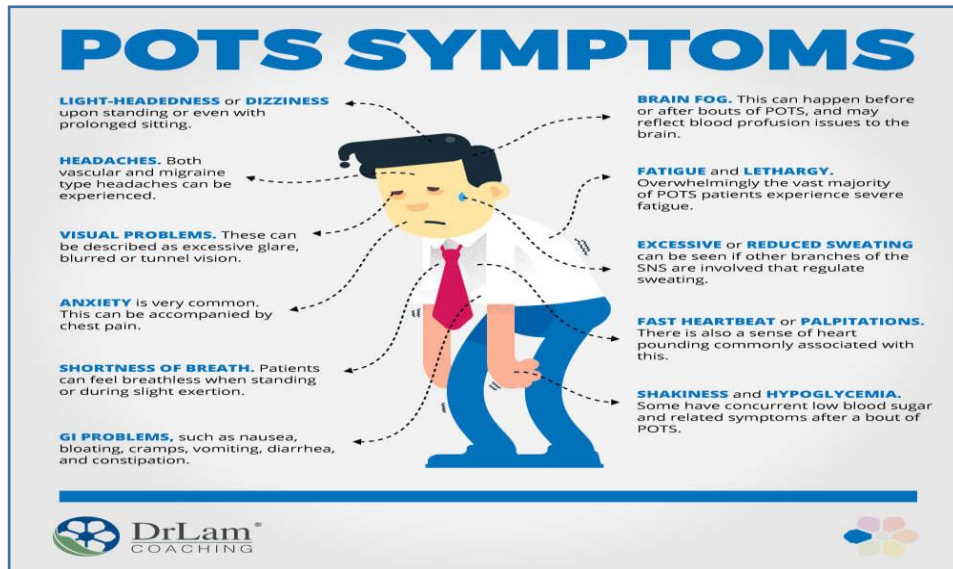


Fig. 1.2 Symptoms of Postural Orthostatic Tachycardia Syndrome

Diagnosis of Postural Orthostatic Tachycardia Syndrome:

Diagnosis of POTS will generally begin with the physician taking a medical history and performing a physical exam. [9] During the physical exam, the physician may perform a tilt table study to evaluate the heart and blood pressure when the body changes positions. Based on the tilt table test and the patient's symptoms, an accurate diagnosis can often be made. [1, 7]

In some instances, the physician may order additional tests to rule out other conditions. These diagnostic tests may examine the heart muscle, the blood flow through the heart, and any potential abnormal electrical impulses. [9] An electrocardiogram (EKG) is a painless procedure that provides a picture of the electrical activity of the heart and how the heart is working. [5]

Another diagnostic tool that could be used is an echocardiogram. This noninvasive procedure uses a machine called a transducer that transmits sound waves and bounces them off the heart and back into the transducer. These echoes are then translated into visual images. [7, 9]

Electrophysiology studies may also be used to look at the electrical system of the heart. [2]

POTS is most commonly diagnosed by a cardiologist (41%), cardiac electrophysiologist (15%), or neurologist (19%). The average number of physicians seen before receiving a diagnosis is seven, and the average delay before diagnosis is 4.7 years. [2, 8]

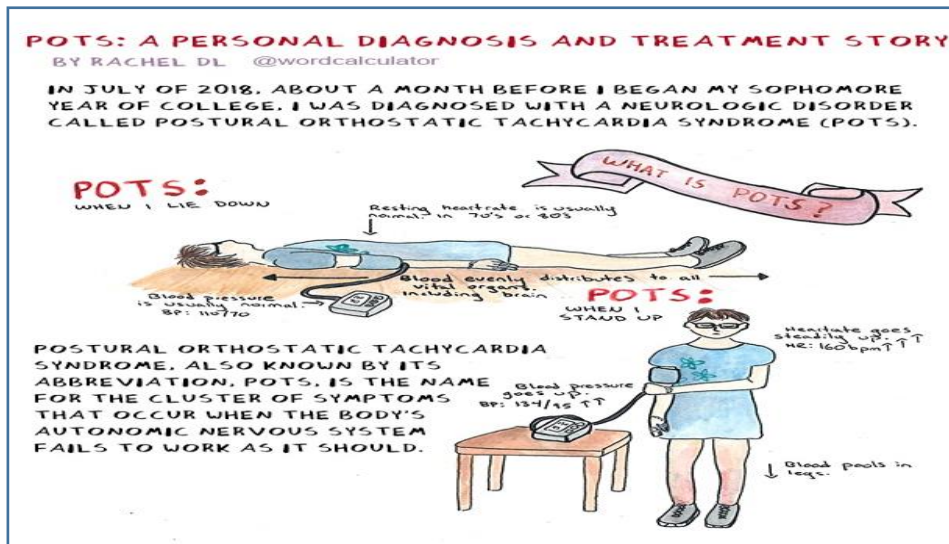


Fig. 1.3 Diagnosis of Postural Orthostatic Tachycardia Syndrome

1) Diagnostic criteria

A POTS diagnosis requires the following characteristics:

- For patients age 20 or older, increase in heart rate ≥ 30 bpm within ten minutes of upright from a supine position.
- For patients age 12–19, heart rate increase must be >40 bpm.
- Associated with related symptoms that are worse with upright posture and that improve with recumbence.
- Chronic symptoms that have lasted for longer than six months.
- In the absence of other disorders, medications, or functional states that are known to predispose to orthostatic tachycardia. [1, 3, 4, 7-9]

2) Orthostatic intolerance:

An increase in heart rate upon moving to an upright posture is known as orthostatic (upright) tachycardia (fast heart rate). [1] It occurs without any coinciding drop in blood pressure, as that would indicate orthostatic hypotension. Certain medications to treat POTS may cause orthostatic hypotension. It is accompanied by other features of orthostatic intolerance symptoms that develop in an upright position and are relieved by reclining. [5] These orthostatic symptoms include palpitations, light-headedness, chest discomfort, shortness of breath, nausea, weakness or "heaviness" in the lower legs, blurred vision, and cognitive difficulties. [2, 6]

3) Differential diagnoses:

A variety of autonomic tests are employed to exclude autonomic disorders that could underlie symptoms, while endocrine testing is used to exclude hyperthyroidism and rarer endocrine conditions. ^[10] Electrocardiography is normally performed on all patients to exclude other possible causes of tachycardia. In cases where a particular associated condition or complicating factor are suspected, other non-autonomic tests may be used: echocardiography to exclude mitral valve prolapse, and thermal threshold tests for small-fiber neuropathy. ^[7, 10]

Testing the cardiovascular response to prolonged head-up tilting, exercise, eating, and heat stress may help determine the best strategy for managing symptoms. ^[9] POTS has also been divided into several types, which may benefit from distinct treatments. People with neuropathic POTS show a loss of sweating in the feet during sweat tests, as well as impaired norepinephrine release in the leg, but not arm. ^[8] This is believed to reflect peripheral sympathetic denervation in the lower limbs. People with hyperadrenergic POTS show a marked increase of blood pressure and norepinephrine levels when standing, and are more likely to have from prominent palpitations, anxiety, and tachycardia. ^[4, 9, 10]

People with POTS can be misdiagnosed with inappropriate sinus tachycardia (IST) as they present similarly. ^[3] One distinguishing feature is those with POTS rarely exhibit >100 bpm while in a supine position, while patients with IST often have a resting heart rate >100 bpm. Additionally patients with POTS display a more pronounced change in heart rate in response to postural change. ^[5, 7, 10]

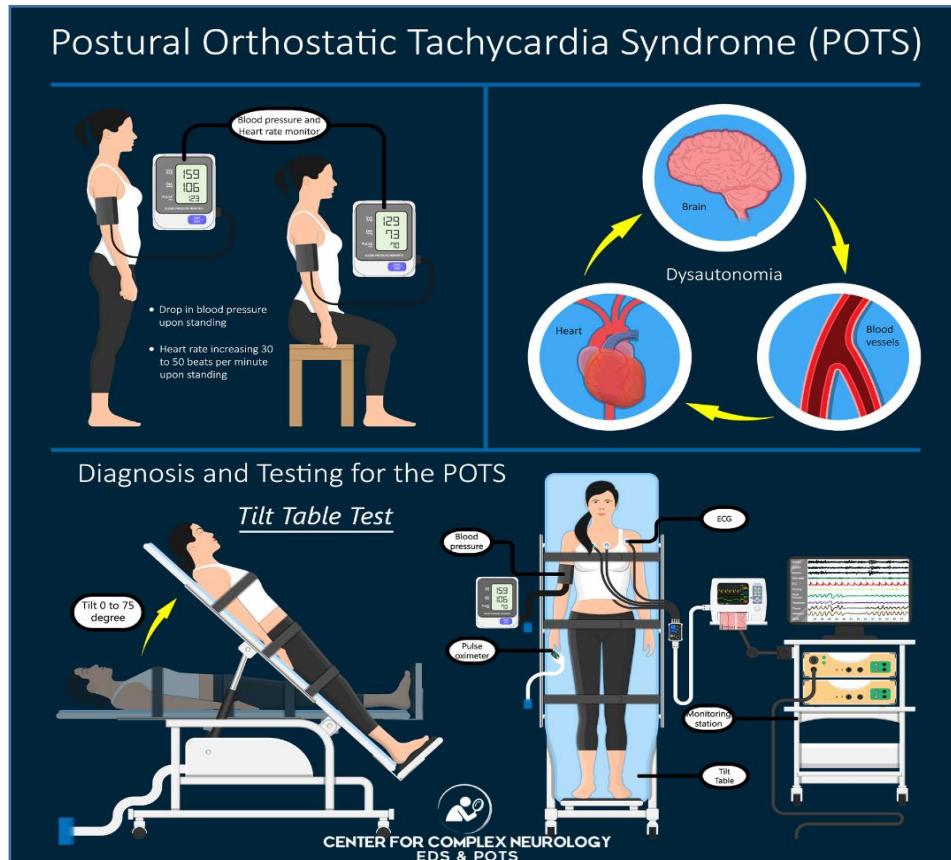


Fig. 1.4 Diagnosis and Testing of Postural Orthostatic Tachycardia

CAUSES & RISK FACTOR:

Researchers aren't sure yet what exactly causes POTS. Currently, they think there are multiple causes, which they've grouped into different subtypes of POTS, including:

- **Neuropathic POTS:** This happens when peripheral denervation (loss of nerve supply) leads to poor blood vessel muscles, especially in your legs and core (abdomen).
- **Hyperadrenergic POTS:** This happens when your sympathetic nervous system is overactive.
- **Hypovolemic POTS:** Reduced blood volume can lead to POTS. Low blood volume can cause similar symptoms that may overlap in neuropathic and hyperadrenergic POTS. [3, 4]

There's also growing evidence suggesting that POTS might be an autoimmune disease, meaning your immune system attacks healthy tissue for unknown reasons. [4]

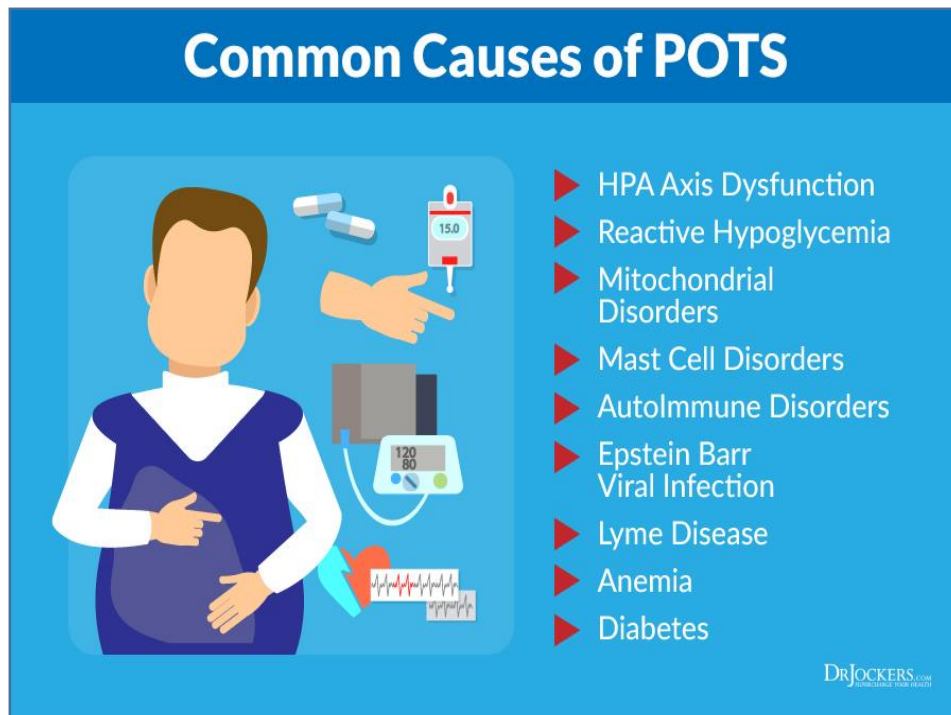


Fig. 1.5 Causes of Postural Orthostatic Tachycardia Syndrome

POTS can affect patients of all genders and age groups. However, women between the ages of 15 and 50 are most commonly diagnosed. [10] Some women experience an increase in POTS symptoms right before their menstrual periods. POTS often begins after a pregnancy, major surgery, trauma or a viral illness. [8, 9]

Patients with peripheral nerve damage or a family history of POTS may be at an increased risk of developing the condition. [8]

Patients with conditions or medical histories associated with secondary POTS may also be at an increased risk. These include:

- Chronic diabetes mellitus
- Amyloidosis
- Sarcoidosis
- Alcoholism
- Lupus
- Sjögren syndrome
- Chemotherapy
- Heavy metal poisoning [2, 7, 9, 10]

COMPLICATIONS IN POSTURAL ORTHOSTATIC TACHYCARDIA SYNDROME:

There are limited complications regarding a Postural Orthostatic Tachycardia Syndrome (POTS). There complications in daily life are quite significant. ^[11] the most complications arising in POTS is excessive increase in heart rate or other chronic health conditions from asthma to inflammatory bowel disease. It may also leads to shortness of breath, nausea, weakness, heaviness in lower legs, etc. POTS patients may also suffer from severe headache. Some of those patients experiences reddish-purple color legs. ^[12, 13]

There are several other complications regarding Postural Orthostatic Tachycardia Syndrome (POTS) such as:-

- Excessive sweating
- Lack of sweating
- Heart intolerance
- Digestive issues such as constipation, indigestion, diarrhoea, coat hanger pain.
- Syncope, i.e., decrease in blood flow to the brain typically from low blood pressure.
- Presyncope, i.e., Lightheadedness. ^[5, 11, 13]

The severe complication or it might be a symptom shown in a patients of POTS is 'Brain Fog'. The term brain fog is usually defined as 'difficulty in thinking' or 'difficulty in focusing'. ^[4, 7] The patient start to forget things and take a lot of time to recall. They may also get confused, lost. The main cause for brain fog is decrease in cerebral blood flow, mostly in upright position. To avoid such complications nutrition becomes an easy mode in patient's diet including hydration supports such as intravenous fluids, enteral nutrition, and parenteral nutrition necessary. ^[11, 14, 15]

PATHOPHYSIOLOGY OF POSTURAL ORTHOSTATIC TACHYCARDIA SYNDROME:

The pathophysiology underlying postural orthostatic tachycardia syndrome is heterogeneous, encompassing excess sympathetic tone, impaired peripheral autonomic function, volume dysregulation, cardiovascular deconditioning, and autoimmune dysfunction. ^[4, 5, 7, 11] In normal healthy subjects, a shift of the intravascular volume to the interstitial space reduces the total effective circulating blood volume, reflecting the gravity-dependent physiology seen in

orthostatic-related pathologies. As expected, a subsequent reduction in stroke volume results in a compensatory increased sympathetic drive augmenting cardiac contractility, heart rate, and systemic vascular resistance. POTS patients exhibit persistent decreased stroke volume despite an exaggerated sympathetic response with postural changes such as standing, culminating in a final common pathway of tachycardia in the presence of orthostatic intolerance on standing. [4, 7]

The mechanisms as mentioned earlier are not mutually exclusive but instead overlap in a complex interaction of cause and effect. Affected physiologic systems include neuropathic, cardiovascular, renal, immune, and hematologic; this widespread implication of complex systems has added a certain degree of difficulty in constructing a comprehensive framework in the understanding of POTS. Common symptoms include chronic fatigue, dizziness, sleep disturbance, headache, tremors, tachycardia, anxiety, depression, gastrointestinal disturbances, syncope, and vision changes. [1, 6, 13]

Basically, Postural Orthostatic Tachycardia Syndrome (POTS) is a syndrome not a disease. POTS consist of several different mechanisms one of the mechanisms is shown in the Figure 1.6.

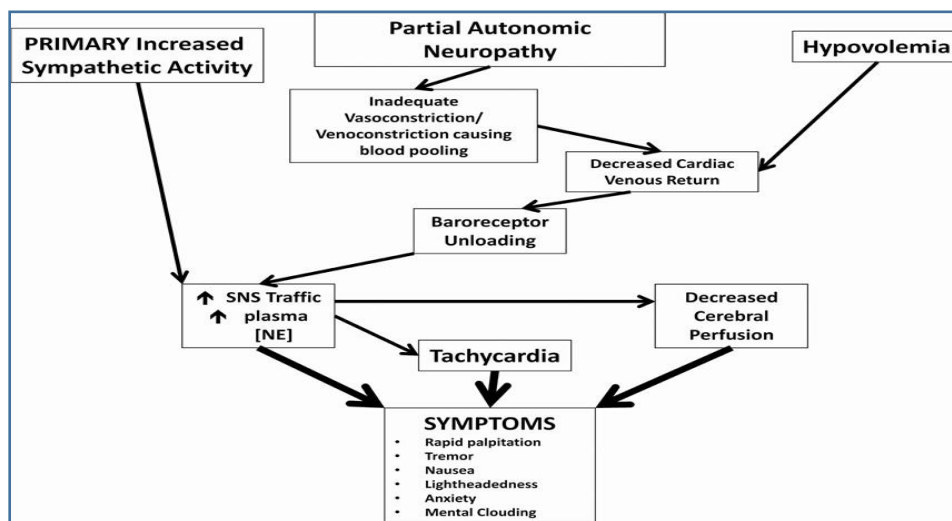


Fig. 1.6 General Physiology of Postural Orthostatic Tachycardia

In the above Figure 1.6, Neuropathic POTS is a condition with partial neuropathy where there is a preferential denervation in sympathetic nerves in lower limbs. Hypovolemia is a phenomena in which there is low blood and plasma volumes due to inappropriate low levels of renin and aldosterone. [15, 16] They contribute to the presyncopal symptoms of tachycardia which further leads to rapid papilation, tremor, nausea, anxiety, etc. Hypovolemia leads to decrease in cardiac

venous return. Though patients have elevated plasma norepinephrine secondary to partial autonomic neuropathy. [2, 10, 16]

Major pathophysiological mechanisms of POTS	Pathophysiology	Treatments	Mechanism of therapy
Partial autonomic neuropathy	Partial autonomic neuropathy in lower extremities	Midodrine (Jacob et al., 1997; Hoeldtke et al., 2006; Lai et al., 2009; Ross et al., 2014)	An alpha-1 agonist that increases peripheral vasoconstriction
	Abnormal splanchnic blood flow and pooling	Octreotide (Hoeldtke and Davis, 1991; Hoeldtke et al., 2006)	A somatostatin analog that decreases splanchnic blood flow
Perturbed renin-angiotensin aldosterone system and hypovolemia	Inappropriately low levels of renin and/or aldosterone	Exercise (Fu et al., 2011)	Precise mechanism unclear, but increases renin:aldosterone ratio
		Exercise (Fu et al., 2011)	Increases plasma volume
	Low blood and/or plasma volume	Fludrocortisone (Freitas et al., 2000)	A mineralocorticoid that increases sodium and water retention
		Erythropoietin (Hoeldtke et al., 1995; Kanjwal et al., 2012)	A hormone that increases blood volume
		Saline Infusions (Jacob et al., 1997)	Acutely increases plasma volume
Hyperadrenergic State	Increased secretion and clearance of norepinephrine	Propranolol (Raj et al., 2009; Fu et al., 2011);	A non-selective beta-blocker that impairs sympathetic activation
		Pyridostigmine (Raj et al., 2005b; Singer et al., 2006; Kanjwal et al., 2011)	An acetylcholinesterase inhibitor that increases parasympathetic activity and slows heart rate

Table 1.7 Pathophysiology of Postural Orthostatic Tachycardia

ALLOPATHIC REMEDIES:

Treatment for POTS can be tricky, even it is plan by a strict physician. The most effective treatment rather than those medications which causes adverse effects on health are following a proper diet, doing regular exercise, changing the daily routine, changing lifestyle, homeopathic or allopathic medications should take in consideration. Medications helpful in diagnosis of POTS are proven effective such as beta blockers, pyridostigmine, and midodrine. [14, 15, 17]

Depending upon the subtypes of POTS, medications helpful in treatment of syndrome are as follows:-

- **Fludrocortisone:** This drug is Corticosteroid in nature. This medication is helpful in treatment of hypovolemic POTS. Therapeutic action takes place in synthetic mineralocorticoid. Its goal is to increase blood volume.
- **Midodrine:** This drug is Alpha-1 adrenergic agonist in nature.

This medication is helpful in treatment of neuropathic POTS. Therapeutic action takes place in Alpha-1 adrenergic receptor agonist. Its goal is to constrict peripheral blood vessels aiding to venous return.

- Clonidine, Methyldopa: This drug is Alpha-2 adrenergic agonist in nature.

This medication is helpful in treatment of hyper adrenergic POTS. Therapeutic action takes place in Alpha-2 adrenergic receptor agonist. Its goal is to decrease blood pressure and sympathetic nerve traffic.

- Ephedrine and pseudoephedrine: These drug is sympathomimetic in nature.

This medication is helpful in treatment of other refractory POTS. Therapeutic action takes place in direct and indirect Alpha-1 adrenoreceptor agonist. Its goal is to increase blood flows. ^[10 - 17]

Other medications which are also helpful in diagnosis of Postural Orthostatic Tachycardia Syndrome (POTS) are Benzodiazepines, Desmopressin, Erythropoietin, Ivabradine, Octreotide and selective Serotonin uptake inhibitors (SSRI's) but excessive use of this drugs may leads to highly dependence, swelling, headache, level of blood cell may get high. Therefore, they should be used with extreme caution under a prescribed doctor. ^[18]

NUTRITIONAL MANAGEMENT:

When dealing with Postural Orthostatic Tachycardia Syndrome (POTS), several boundaries play a major role in maintaining and regulating the effects of the syndrome as it has no present cure for it. ^[19] Majorly three physiological parameters play role in subsiding the effects of the disorder. Exercise and Physical Activity, Diet and Nutrition and Medications. Physical activity playing a secondary role the diet pattern plays a primary role in regulating the after effects of the syndrome. ^[18] Change in one's regular diet can exponentially influence the lifestyle of living with the disorder. ^[16] The dietary changes help stabilize the blood pressure which in turn help in reducing the symptomatic effects. POTS is also known for its striking effect on the gastrointestinal system and nutritional status of the body. Thus, it becomes prominent to increase and enhance the diet plan to avoid any fatigue. ^[18-20]

In case of hypovolemic i.e. low blood volume form of POTS it is recommended to increase both fluid and ionic intake to maintain blood volume. Fluid Based on the diet intake the nutritional management can be classified as Positive and Negative intake or Healthy diet and Unhealthy diet. ^[21]

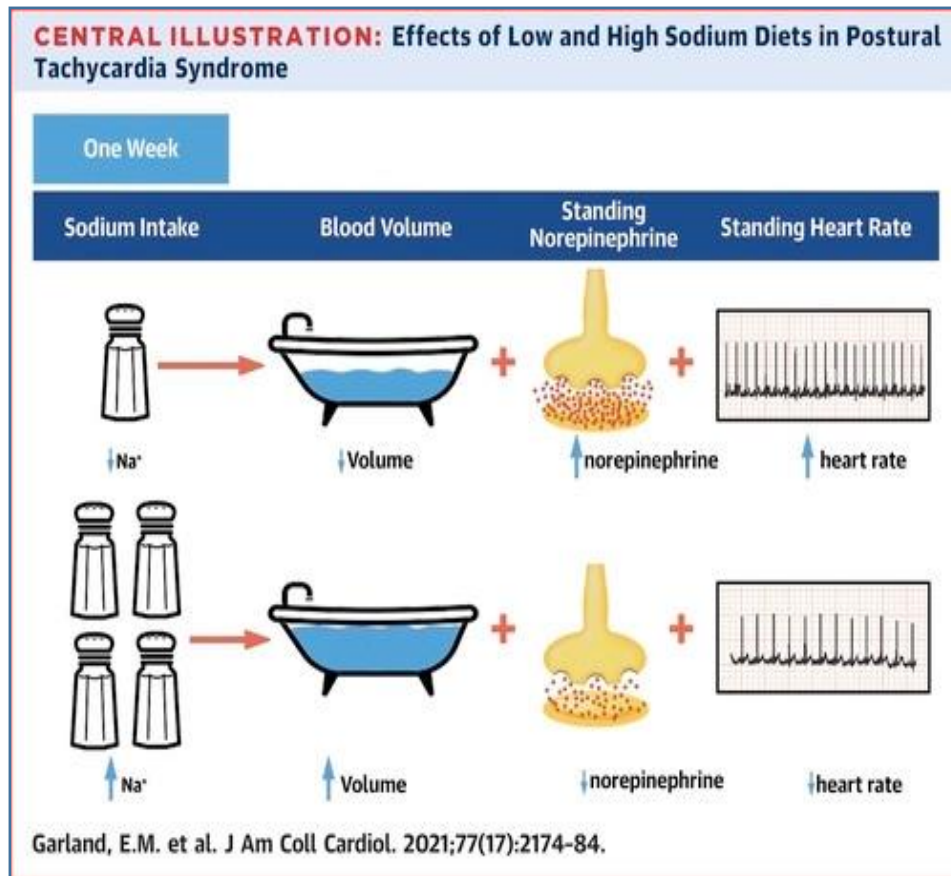


Fig. 1.8 Importance of adequate salt consumption in POTS

Healthy Diet / Positive Intake:

It includes every dietary component and supplement that aids in supplying essential nutritional factors to the body to avoid any deficiency or weakening caused by the POTS. The dietary factors that are needed to be administered on daily basis are mentioned below. [16, 19]

1. Fluid Intake:

- Hydration is a very essential factor that guides the effect of POTS as it helps in maintaining the blood pressure and heart rate by avoiding dehydration and body heat elevation.
- One of the major problems in POTS is inability to tolerate standing resulted due to blood pressure and heart rate fluctuations.
- Staying hydrated helps regular blood supply to brain to alleviate dizziness.
- Studies show that drinking 16 ounces or approx. 500ml of water can raise one's blood pressure by 30 mmHg within 5 minutes.
- It is suggested that 2.5 to 3 litres of water must be intake by an average person with POTS

- The intake may change owing to the age category, body size, daily activity level and environmental conditions of the patient.
- Except the water other fluid does the work including soups, ORS supplements, hydration supplements, fresh fruit juice etc.
- Study done in late 1999 by Jordan et al shows that water intake stimulated sympathetic nervous system in releasing high level of the stimulatory neurotransmitter norepinephrine in turn helping to maintain the blood pressure level. [18-21]

2. Salt Intake:

- Sodium plays a vital role in body for controlling the circulating volume i.e., greater the sodium level greater is the circulating volume.
- Salt helps in increasing the blood pressure thus increasing the tolerance of pressure fall while standing upright.
- Salt helps in retrieving the water from the blood vessels which in turn helps staying hydrated and maintaining the blood pressure.
- One teaspoon salt contains about 2300mg sodium and a person suffering from POTS needs additional 3000mg to 10,000mg of sodium per day which is 5 times more than an average person consumption.
- Salt can be administered through soups, nuts, salt on salads, cheese and through more salt in daily water and other food articles.
- There are exceptions of salt consumption by people suffering from either heart conditions or kidney diseases. [16, 18, 21]

3. Food Consumption Pattern:

- The major problem in POTS occurs with the blood concentration more on lower body and deficient for heart and brain which result in the sudden fall.
- The food should be taken in small batches over a course of time instead of a full meal at once to avoid the large amount of blood stress being diverted to the digestive system.
- Heavy food articles including complex foods, high spices, processed metabolites must be avoided in order to avoid any increase strength of metabolism.
- Rapid chewing and gulping should also be avoided as it brings stress to the muscles and might trigger the blood flow changes. [20, 21]

4. Intake of nutrients:

- POTS as usually accompanies with digestive and nutrients issues intake of different rich nutrients is necessary to avoid symptomatic spike.
- Probiotics like yogurt, kimchi (traditional Korean salted side dish) prove to be rich sources of good bacteria to flourish the gut ecosystem.
- Fibre rich diet like oat meals, flax seeds, peaches, and other grains helps in maintaining gut health and easy passage of articles through gut and intestine avoiding and stress to the blood flow.
- Vitamin B12 and B1 have proven to be essential in decreasing the POTS symptoms as the B12 helps in RBC development while B1 being rich in thiamine which is a water-soluble vitamin help in energy metabolism. [4, 6, 18]

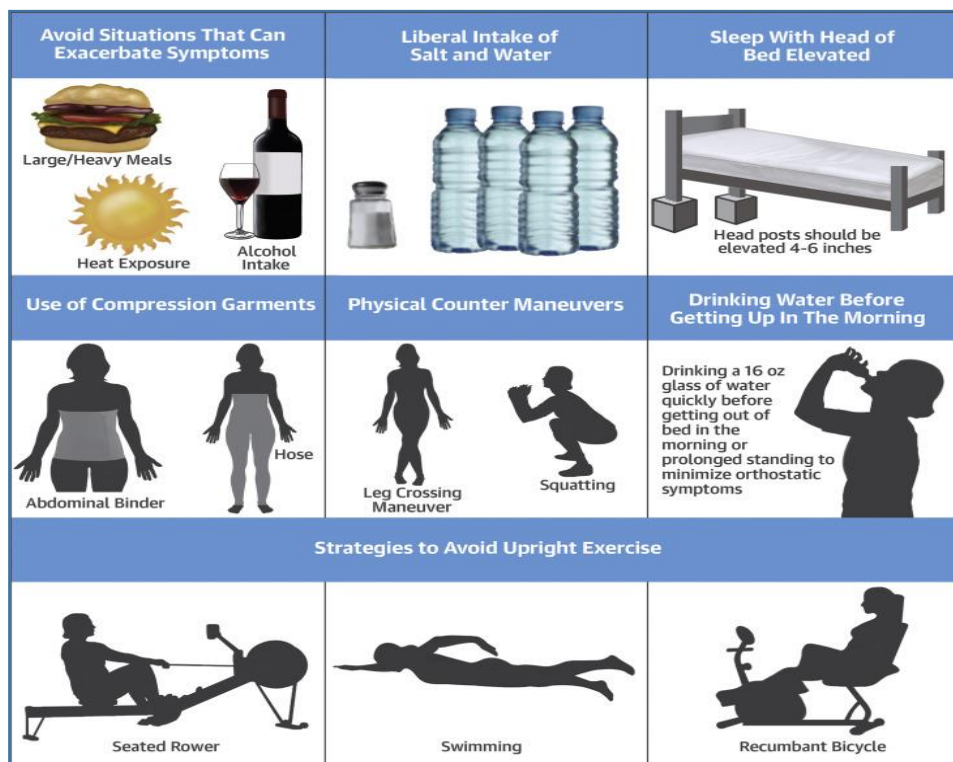


Fig. 1.9 Do's in Postural Orthostatic Tachycardia Syndrome

Unhealthy diet / Negative Intake:

1. Avoiding Carbohydrates:

- Carbohydrates prove to raise the symptomatic effects in the POTS as need high energy for digestion or catabolism to simpler molecules.

- The body utilizes more energy towards the gut in digesting the carbohydrates by increasing the blood supply which in turn cuts out the supply towards the brain and heart resulting in instability.
- The person suffering from POTS can switch to a ketogenic diet from a carbs diet as ketogenic diet uses low carbohydrates and more fat to utilize the body as a fuel source. [11, 13, 14, 21]

2. Avoiding Caffeine:

- The effect of caffeine on a person suffering from POTS is debatable and vary from person to person.
- The post effect of caffeine consumption includes elevated blood pressure which might help to some individuals but show reverse effects for few.
- The post effects of caffeine also include increase in energy metabolism in brain along with decrease in the cerebral blood flow inducing a relative brain hypoperfusion.
- Caffeine activated noradrenaline neurons that affect the local release of dopamine which in turn acts as a Vaso dilator on low doses.
- Thus, effect of caffeine may or may not lead to increase of POTS symptoms and is variable from person to person.
- Thus, it is recommended to avoid intake of caffeine in POTS or consult a specialist. [2, 6, 9, 11, 13, 14, 18]

3. Avoiding alcohol intake:

- Alcohol has reputation of impairing of the motor and cognitive function of human brain by restricting or lowering the blood pressure.
- Alcohol also impairs the neural transmitter action which leads to major obstructions to brain from coordinating with the organs.
- Alcohol use leads to Vaso dilation and later preventing any vascular contractions leading to fall in the blood pressure.
- Muscle contractions and delayed response are also noticed during alcohol use which worsens the orthostatic symptoms.
- Alcohol also being a diuretic lead to removal of water from the body leading to dehydration causing the increase in the symptomatic effects of the POTS. [1, 6, 9, 11, 18]

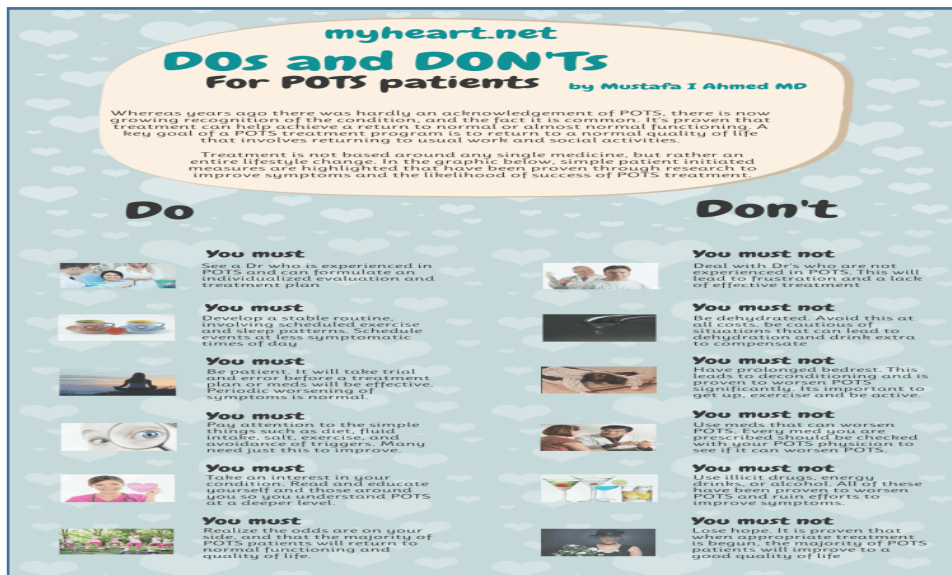


Fig. 1.10 Regulations in Postural Orthostatic Tachycardia Syndrome

CONCLUSION:

Unhealthy diets and rapidly increasing burden of Postural Orthostatic Tachycardia Syndrome is a key determinant of global public health. Postural Orthostatic Tachycardia Syndrome is the predominant global public health challenges. Postural Orthostatic Tachycardia Syndrome can be prevented with lifestyle changes. Lifestyle changes include healthier eating, increasing physical activity, and smoking cessation, avoid from drinking too much alcohol, high fat diets, high sugar, adequate intake of vitamin, salts and minerals, consumption of fruits and vegetables as well as grains. Phytochemical consumption is also associated with a decrease in risk of several types of Postural Orthostatic Tachycardia Syndrome due to in part to their antioxidant.

Generally Postural Orthostatic Tachycardia Syndrome can be managed by intake of vegetables and fruit as well as different grains and high daily intake of these foods promotes health. Therefore, the promotion of vegetable and fruit consumption by nutrition and health policies is a better to decrease the load of Postural Orthostatic Tachycardia Syndrome.

For a healthy diet including the following recommendations are very important:

- Eat a variety of foods and maintain desirable weight
- Avoid too much fat, saturated fat and cholesterol
- Avoid too much sugar and too much sodium

- Eat foods with adequate starch and fibre, drink alcoholic beverages, in moderation

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