

Vasovagal or Reflex Syncope

Syncope comes from the Greek that literally means to abruptly cut-off. Syncope is a transient loss of consciousness generally caused by reduced oxygen to the brain triggered by an abrupt and severe drop in blood pressure and sometimes in heart rate. Recovery usually occurs within a few seconds without leaving any permanent damage. There are multiple causes of syncope including rhythm disorders from the heart due to rapid or very slow heart rhythms. In the general population the most common cause of syncope or fainting is known as vasovagal or reflex syncope. Vasovagal syncope is mediated by a reflex that ultimately leads to a severe drop in blood pressure (hypotension) associated or not with marked slowing of the heart known as bradycardia. On occasion the heart can stop for a few seconds. There are many triggers for the vasovagal reaction; a very common trigger is when people experience extreme pain or fear or when giving a blood donation. The symptoms associated with a vasovagal syncopal episode may vary according to age but in general are very typical. Patients usually experience a sudden onset of nausea associated with dizziness or a feeling of severe lightheadedness that is rapidly followed by profuse sweating and feeling cold and clammy, tunnel vision and extreme weakness that precedes the loss of consciousness. These episodes usually occur in the standing position but not infrequently they can present in the sitting position. In some instances during the loss of consciousness jerking movements from the extremities can be observed and are frequently confused with a seizure but are simply due to low oxygen in the brain. Most patients do not have a specific trigger for these episodes and simply being in the standing position for prolonged periods of time can lead to vasovagal syncope. Vasovagal syncope usually presents in teenage women and in some instances

can be certainly disabling due to frequent episodes that occasionally can be associated with injuries during the falls. Typically these episodes present at the age of 13 – 16 yrs of age. Women are affected more frequently and the explanation for this remains debated. A history of fainting usually in the mother is observed in a significant proportion of subjects and some investigators have proposed that some inherited alteration may lead to the inappropriate reflex responses that leads to vasovagal syncope. Most patients fail to identify the symptoms that precede the syncopal episode and this prevents them from aborting the episodes due to lack of understanding of the symptoms. Vasovagal syncope is not necessarily a disease and is mostly explained by inadequate adaptation of reflex mechanisms that control heart rate and blood pressure.

How is vasovagal syncope diagnosed?

Usually a detailed history is sufficient to make the diagnosis and differentiate between a seizure disorder and vasovagal syncope. However frequently symptoms may be very short lived and patients tend to fail to identify their premonitory symptoms. The presence of a trigger such as pain, dehydration, standing for prolonged periods of time associated with no evidence of any heart disease usually points towards the diagnosis of vasovagal or reflex syncope. Vasovagal syncope may be more challenging to diagnose in older subjects due to several reasons that include no memory of the episode, and lack of premonitory symptoms. When the history does not reveal a typical presentation or to confirm the diagnosis of vasovagal syncope a tilt table test may be helpful to establish the diagnosis. It is important to recognize that a person may have vasovagal syncope and tilt table may still be normal in up to 30% of subjects. Tilt table test is a provocative test that is known to trigger vasovagal responses in a significant proportion of susceptible subjects.

The test consists of close monitoring of heart rate and blood pressure preferably with devices that can record beat-to-beat blood pressure and heart rate. Typically the subject has an intravenous line started for fluid infusion. The patient is placed on an electronically driven table in the supine position for 10 minutes and afterwards placed in the standing position at an angle between 60 to 80 degrees. The subject is left in the upright position for anywhere between 15 to 20 minutes. In about half the patients this maneuver alone will be able to trigger a vasovagal syncope response. In the other half after the 15-20 minute period in the upright tilt position no abnormal response, which is mainly to elicit a syncopal episode is observed and certain provocative measures can be used. In patients under 40 years of age an infusion with Isoproterenol, a drug that mimics adrenaline, may trigger the vasovagal syncope response. In patients older than 40 years either sublingual or spray nitroglycerine is used to provoke syncope. The test is useful to determine the susceptibility of patients and is also useful to educate patients about their premonitory symptoms. Appropriate and rapid identification of these symptoms is of paramount importance to prevent the development of syncope and helps prevent these episodes.

Is vasovagal syncope dangerous and is there treatment for this condition?

By in large vasovagal syncope is a benign condition in the sense that the people with vasovagal syncope have the same risks compared to subjects without vasovagal syncope. None the less in some instances vasovagal syncope can be markedly disabling to the point that some patients may have a severely impaired quality of life related with frequent episodes of vasovagal syncope that limit the subjects ability to work or function during daily activities.

Vasovagal syncope can be treated!

The first step is to recognize the premonitory symptoms once this is achieved simple measures can be recommended. Interestingly most subjects that suffer from frequent vasovagal syncope have low salt diets. One of the simplest measures is to increase salt intake simply by adding salt to most meals. Some patients do not tolerate the taste of salt so in these instances salt pills may be useful. The recommendation of increased salt intake should always be associated with the recommendation of increasing water intake. Water intake should be increase to 3 to 4 liters a day. Several studies have shown that these simple measures help prevent the recurrence of most vasovagal syncope episodes. Simple maneuvers that are known to increase blood pressure and help returning more rapidly the blood that is pooled in the legs back to the heart can be taught to most patients particularly younger ones. These maneuvers should typically be used immediately after the first symptoms that precede vasovagal syncope appear. Several maneuvers such as crossing the legs with contraction of the thighs and gluteus muscles have been demonstrated in clinical trials to be very effective in preventing and aborting these episodes. Similarly, hand grip and squatting may be equally effective. These maneuvers are not recommended in elderly patients due to the risks of falls. The above recommendations usually improve the recurrence of vasovagal syncope in most patients. However there is a group of individuals in which these maneuvers are not useful and therapy with medications is indicated. A number of compounds with very diverse mechanisms have been proposed for the management of recurrent vasovagal syncope. The most commonly used compounds include beta-blockers, florienef and midodrine. A detailed discussion on how or when to administer these medications is out of the scope of

this communication. Is a pacemaker needed for people with refractory vasovagal syncope? Initially some studies suggested that in some patients pacemakers were very effective however more recent studies failed to demonstrate that pacemakers prevented the recurrence of vasovagal syncope. In a very small group of patients in which an extremely slow heart rate associated with pauses greater than 6 seconds directly linked with the vasovagal syncope a pacemaker may prove to be useful. Several studies are currently being performed to answer this question and today pacemakers are rarely used in patients with vasovagal syncope.

In summary vasovagal syncope is the most common cause of syncope and frequent fainting spells, usually presents in younger patients with healthy hearts and is characterized by very typical triggers or premonitory symptoms that are easily recognizable. Older patients may manifest with a more atypical presentation such as frequent falls and no memory of having had a transient loss of consciousness. The diagnosis can be supported by a tilt table test and treatment is usually simple and guided to promote maneuvers that restore the reflex responses that control heart rate and blood pressure particularly in the standing position. Medications are also available and most patients usually respond well to treatment. It is of paramount importance to recognize this entity as in some instances it is confused with symptoms or other causes of syncope that delay proper treatment. By in large vasovagal syncope is a benign condition but frequent episodes can markedly impair individual's quality of life. There are many centers in North America that have expertise in diagnosing and managing this condition.

Carlos A Morillo, MD, FRCPC, FACC, FHRS, FESC, STARS Board of Trustee. Carole E. Smith, RN, From the Arrhythmia Service and Syncope and Autonomic Disorder Unit McMaster University, HHSC, Hamilton, Ontario, Canada