What is the mechanism of vasovagal syncope?

A vasovagal syncope is a condition that causes fainting in some individuals. It is also known as neurocardiogenic syncope or reflex syncope. Vasovagal reflex syncope is the most common cause of transient loss of consciousness and is usually not harmful nor a sign of a more serious problem because the episodes are self-limiting.

It is a syndrome of cardiac slowing with hypotension (low blood pressure) that occurs in some individuals who experience intense emotional disturbances. It can also occur after prolonged upright posture that results in pooling of blood in the lower extremities (legs) and diminished intracardiac blood volume that cause loss of consciousness.

The vasovagal reaction consists of vasodilatation and bradycardia.

During a prolonged standing period, the vasovagal reaction is triggered by a reduction of the central blood volume because of pooling in the lower body veins. In some instances, it is combined with other provocative factors.

The muscle vasodilator system may become activated, and at the same time, the vagal cardioinhibitory center transmits strong signals to the heart to slow the heart rate markedly.

The arterial pressure falls rapidly, which reduces blood flow to the brain and causes the person to lose consciousness. This phenomenon is exaggerated if combined with dehydration.

The resultant arterial hypotension is sensed in the carotid sinus baroreceptors, and afferent fibers from these receptors trigger autonomic signals that increase cardiac rate and contractility.

However, pressure receptors in the wall of the left ventricle respond by sending signals that trigger paradoxical bradycardia and decreased contractility, resulting in suddenly marked hypotension.

Episodes of vasovagal syncope are typically recurrent and usually occur when the predisposed person is exposed to a specific trigger.

Before an individual loses consciousness, he/she experiences early warning signs such as lightheadedness, sweating, tinnitus, nausea, an uncomfortable feeling in the heart, confusion, mild stuttering. They may also experience weakness and visual disturbances.

What are the triggers of vasovagal syncope

Typical triggers of vasovagal syncope include:

- Prolonged standing
- Sight of blood
- Emotional stress
- Pain
- Time-varying magnetic field.

The symptoms may become more intense over several seconds to several minutes before the loss of consciousness (if it is lost). Onset usually occurs when a person is sitting up or standing.

The nucleus tractus solitarii of the brainstem is activated directly or indirectly by the triggering stimulus, resulting in simultaneous enhancement of the parasympathetic nervous system (vagal) tone and withdrawal of sympathetic nervous system tone.