Syncope

Introduction To most of us syncope means fainting. The medical name is a vasovagal attack. It is mostly a benign condition.

There are several important conditions which mimic a faint (or blackout), for instance seizures or a disturbed rhythm of the heart, two potentially serious problems that are managed completely differently; this patient handout will not discuss them. This handout will discuss only the concept of vasovagal syncope, also called neurocardiogenic syncope.

Mechanism To understand why some people faint, it is first necessary to describe the normal mechanisms that maintain blood pressure.

The heart is the pump and the blood vessels are the pipes that carry the blood throughout the body. To perfuse the various organs, the kidneys, the liver, and the brain, to name but three vital organs, there must be a certain amount of pressure in the blood vessels, otherwise, especially when standing, the blood will not reach the brain. When lying down, the heart and brain are about at the same horizontal level, so the heart and blood vessels don't have to work as hard to pump blood to the brain. When you stand up, however, your heart and blood vessels have to respond almost instantaneously to the body becoming vertical. The main reaction is by the heart, which beats more quickly, and to a lesser degree the blood vessels, which constrict (their diameter becomes smaller). These two responses maintain the so called "perfusion pressure," to the brain especially.

All of these responses occur without a person's awareness. There is
a subconscious nervous system, called the autonomic nervous system, that controls these responses. The autonomic nervous system is continuously monitoring the health of the heart, lungs, kidneys, stomach, intestine, and liver to ensure that oxygen and nutrition are delivered to these organs at the correct pressure. Receptors in the brain, heart, carotid artery in the neck, the airways in the lungs, and the stomach monitor the blood pressure, oxygen, and carbon dioxide and thus set up a reflex system that maintains the perfusion pressure by adjusting the heart rate and the diameter of the blood vessels.

If this internal and autonomic nervous system is too sensitive, it leads to syncope. Even healthy people can provoke a feeling of impending faint. Crouching down for a long time, a common situation is in the garden for example, then standing up quickly, will often provoke a feeling of unsettling light-headedness, but rarely will it progress to an actual faint. This postural-induced dizziness is very common and is 'almost fainting,' if you will. It can be exacerbated by drugs used to treat hypertension, especially in the elderly, which act by blocking the heart rate response, keeping the blood vessels more dilated than normal.

Syncope in younger people is usually benign and is a reflection of supersensitive pressure receptors in the heart and aorta and carotid arteries. In some the mechanism is more often related to emotional centers in the brain, leading to a larger than normal surge in hormones and chemical messengers that are released into the bloodstream. The end result in both situations is that the heart dramatically slows (bradycardia), the blood vessels dilate, and blood pressure drops dramatically. The brain is starved of oxygen and glucose; consequently there is loss of consciousness. Again, if you have understood the normal physiology outlined above, you will realize that by collapsing and falling to the ground, the brain and heart are at the same level, and so blood will passively flow back into the brain. Therefore, the fall to the ground is the start of
the recovery process in a simple vasovagal attack.

Diagnosis Syncope is a diagnosis of exclusion, it is vital that the more serious causes of a dramatic blackout are confidently excluded. The typical story of a young person fainting on a hot day, or in situations of emotional stress such as having blood drawn or being at the dentist, are straightforward. If there is doubt, often if there is not the typical preceding awareness of impending faint, then the person can be sent for a "tilt table test." What this does, as the name implies, is simulate the sudden changes in posture in a controlled situation. The patient is safely strapped onto a mobile table and wires attached to monitor the heart rate and blood pressure, then the table is quickly moved from the horizontal to the upright position, and the response of the heart is measured.

Treatment The first step is to confirm the diagnosis and then reassure the person that the problem is not serious. Learning to anticipate situations can help; for example, requesting to lie flat while when a blood sample is drawn, or to lie down as quickly as possible at the first feeling of faintness are two obvious recommendations. Compression stockings may help to massage the return of blood to the heart in some patients.

Cough and micturition syncope There are several unusual situations that may provoke a syncopal attack. The two most common are prolonged bouts of coughing and micturition (urination). In both, the mechanism is thought to be related to the increase in pressure and squeezing of the structures in the thorax (coughing) and the abdomen and bladder (micturition). These pressure receptors send impulses along the autonomic nervous system from the chest or bladder and pelvis, to the heart, and cause a reflex slowing of the heart and dilatation of the blood vessels.

Syncope from coughing is most likely to occur in people with pre-existing emphysema (chronic obstructive pulmonary disease).
Such patients have an increased resting pressure inside the chest wall to help them push the air out of their lungs against the increased resistance in their scarred and inflamed airways. The coughing that culminates in a faint is mostly prolonged, paroxysmal, and uncontrolled. This further increases the pressure inside the thorax and provokes the reflex slowing of the heart.

Micturition syncope is more likely to be seen in an older male. This is because (1) males stand when urinating, and (2) there may be an added element of prostatism, which requires more straining to pass urine and therefore increased pressure in the bladder wall and abdomen. The commonsense advice to men who faint when passing urine is to sit rather than stand, although this does not guarantee it will not happen.