Fainting

David G. Benditt and MaryAnn Goldstein

Circulation 2002;106;1048-1050
DOI: 10.1161/01.CIR.0000028398.85327.B4
Circulation is published by the American Heart Association. 7272 Greenville Avenue, Dallas, TX 72514
 Print ISSN: 0009-7322. Online ISSN: 1524-4539

CARDIOLOGY PATIENT PAGE

Fainting

David G. Benditt, MD; MaryAnn Goldstein, MD

The concept of fainting (also known as blacking-out, passing-out, or in former days, swooning) is generally well understood by the public. In fact, most people so readily accept fainting that fainters often seek medical attention only after several episodes have occurred. This apparent lack of concern possibly arises from the fact that about 30% of the population have survived a faint, whereas many others may have observed friends or associates recover spontaneously from faints. Nevertheless, few understand why fainting occurs, what the common causes are, and when and how faints should be evaluated.

The Faint

A faint (the medical term is syncope, derived from the Greek word meaning "to cut short") is a temporary loss of consciousness. Initially, the stricken individual often reports a feeling of lightheadedness or dizziness, along with the sense that hearing is fading and vision is darkening. Other warnings can include rapid or irregular heart rhythm, nausea, and sweating. However, some individuals, particularly older patients, may lose memory at the moment of the faint, and have no recall for warning symptoms.[1]

If standing, the fainter can fall down because of the loss of skeletal muscle control; if seated, he/she can slump over. Sometimes, after unconsciousness has set in, the arms and legs may jerk briefly. These movements often confuse witnesses, who then report that a seizure or fit has occurred. Although the distinction is difficult for the untrained eye, jerky movements during a faint are not the same as those with an epileptic seizure. Similarly, loss of bowel or bladder control commonly seen with seizures is rare during a faint. If a fall occurs during a faint (especially in older people), injuries such as bone fractures or bleeding within the skull cavity may result.

Causes of Faints

Faints occur if brain blood flow and/or oxygen delivery fall temporarily below minimum requirements for normal function. Most often, the trigger is a sudden drop in blood pressure. A number of conditions (some relatively innocent, others serious health conditions) may cause such drops in blood pressure.[1]

Classification of Causes of Faints*

Reflex faints
- Common or vasovagal
- Carotid sinus syncope
- Coughing or sneezing
- Swallowing or straining
- Fainting after emptying the bladder

Postural faints
- Drug induced
- Diabetic or other abnormalities of peripheral nerves

Heart-rhythm disturbances
- Too slow (bradycardia)
- Too fast (tachycardia)
- Special electrical disturbances of the heart

Heart or blood vessel disease
- Heart attack
- Heart valve disease
- Obstructive heart muscle disease

Conditions that mimic fainting†
- Anxiety attacks
- Hysterical reactions

*See text for further discussion.

†These are not true faints but may look like a faint.

Reflex Faints

Reflex faints are of several different types, but the best known is the common or vasovagal faint. This is the swoon made

From the Cardiac Arrhythmia Center, Department of Medicine, University of Minnesota Medical School (D.G.B.) and the Midwest Arrhythmia Research Foundation (D.G.B., M.G.), Edina, Minn.

Correspondence to David G. Benditt, MD, Mail Code 508, 420 Delaware St SE, Minneapolis, MN 55455. E-mail bendi001@umn.edu

(*Circulation*. 2002;106:1048-1050.)

***Circulation* is available at http://www.circulationaha.org**
DOI: 10.1161/01.CIR.0000028398.85327.B4

famous in movies (often triggered by a painful or emotionally upsetting happenstance) and is perhaps the most frequent of all faints. It can occur in healthy persons as well as in those with health problems and is not indicative of nervous system disease. The patient experiencing a vasovagal type of reflex faint is very likely to feel nauseated and sweaty before fainting, and often appears "white as a ghost" and feels "clammy." After the fact, the fainter often feels tired; this sensation may last hours or days, but why it occurs is not known. Other reflex faints include those associated with abrupt neck movement (called carotid sinus syncope and usually seen in older persons), emptying the bladder, or straining at the toilet. Surprisingly, coughing or laughing, or even forcibly blowing into a wind instrument (for example, a trumpet) may also trigger a reflex faint.

Postural Faints

Postural faints are also common, and occur when moving from lying or sitting to a standing position. Many healthy individuals experience a minor form of this faint when they briefly "gray-out," and need to support themselves momentarily when they stand up. However, the most dramatic postural faints occur in older frail individuals, those who have underlying medical problems (such as diabetes and/or certain nervous system diseases), or persons who are dehydrated from hot environments or inadequate fluid intake. Certain commonly prescribed medications, such as those that enhance urine flow (diuretics), reduce blood pressure, or dilate blood vessels (nitroglycerin), predispose to postural faints.

Heart-Rhythm Disorders

Heart-rhythm disorders may cause faints if the heart rate is too slow (usually less than 30 beats per minute) or too fast (greater than 180 beats per minute, but variable depending on overall heart function). Occasionally, heart-rhythm problems cause faints in otherwise healthy people, but individuals with underlying heart disease (such as a previous heart attack or heart valve disease) are at greater risk. In either case, the faint tends to occur at the onset of the rhythm problem, before the body's usual mechanisms for handling such stresses (for example, blood vessel constriction) have a chance to respond. Faints may also occur when a rapid abnormal rhythm stops suddenly, and a pause ensues before the normal heart rhythm takes over again. If this lasts for greater than 5 seconds in duration, the patient can experience lightheadedness or a faint.

Structural Disturbances

Structural disturbances of heart muscle, heart valves, or blood vessels are relatively infrequent causes of faints. The most common cause in this category is fainting associated with a heart attack; the faint in this case is primarily caused by an abnormal nervous system reaction similar to the reflex faints. In general, faints caused by structural disease of the heart or blood vessels are particularly important to recognize as they are warning signs of potentially life-threatening conditions.

Conditions That Mimic Faints

Conditions that mimic faints but that are often confused with true faints include seizures, sleep disturbances, accidental falls, and some psychiatric conditions (anxiety attacks, severe hyperventilation, and hysterical reactions). Inner ear problems causing dizziness (vertigo) are also frequently mislabeled as faints. Neurological and metabolic disturbances (such as diabetes) are rarely the cause of true fainting.

Establishing the Cause

An accurate diagnosis of the cause of fainting is essential for prevention of recurrences. Prompt medical assessment is crucial for fainters with known heart disease, those who have responsibility for public safety (for example, pilots, commercial drivers, police), those who may readily injure themselves (for example, machine operators or window washers), and those with known heart disease. The objective of testing is to obtain: (1) a confident assessment of the cause of the faint; (2) an estimate of the likelihood of recurrence; and (3) an understanding of the overall prognosis (including potential for injury and risk of death).

Obtaining a detailed medical history and physical examination, including information from bystanders, is the first step. Frequently this step alone provides a working diagnosis. Thereafter, certain basic tests (ECG, echocardiogram, chest x-ray) may be helpful. Tests should focus on determining whether there is evidence of underlying heart and/or blood vessel disease. Electroencephalograms and scans of the head (CT or MRI) are generally unhelpful.

As a rule, if heart disease is absent, studies of heart/nervous system interaction (particularly using tilt-table testing) are the best next step. If an abnormal finding such as heart disease is present, its potential impact on blood pressure and blood flow should be evaluated. Because heart-rhythm disturbances are a common cause of faints in individuals with heart disease, assessing susceptibility of the patient to excessively fast or slow heart rhythms may be needed. Electrocardiographic monitors worn during daily life, or similar small monitors implanted under the skin for extended periods of time, are valuable when trying to document a spontaneous faint. If necessary, the tendency of the heart to beat abnormally can be studied with the use of special wires called catheters that are inserted through the blood vessels (this is known as electrophysiology testing).

Treatment

The keys to proper immediate treatment of a faint are to protect the fainter from injury, and assure that the fainter is breathing and has a pulse. The pulse may be slow or weak, and is best checked by gently touching one of the neck arteries just below the back of the jaw. If breathing and pulses are not detected, or if the bystander is uncertain, emergency medical assistance should be called. If breathing and pulses are present, the bystander should let the fainter lie flat (or with legs slightly elevated), preferably on his/her side. Within a few moments (usually less than 1 minute, although it may seem much longer) the fainter may recover without need for urgent medical intervention. A common mistake is to try and raise a fainter upright. Attempting to give liquids to a less than fully alert individual is similarly ill-advised.

Reflex Faints

Reflex faints, and in particular the common faint, are best prevented in the long-term by educating fainters to recognize and avoid situations that are likely to cause a faint (for example, hot, crowded environments), to drink plenty of fluids, and if medically prudent, to increase salt intake (salt tablets or electrolyte-containing sport drinks). Occasionally, tilt training (increasing periods of still upright posture) may reduce susceptibility to fainting. Finally, drugs such as β-adrenergic blockers and blood vessel constrictors (midodrine) may help. Heart pacemakers are also useful in difficult-to-treat reflex fainters, and are essential in certain forms of reflex fainting (such as those caused by the carotid sinus syndrome).[2]

Postural Faints

Postural faints are often prevented by elimination and/or dose adjustment of drugs that may contribute to a drop in blood pressure with standing. Treatment may also include support stockings or sleeping with the head of the bed elevated. As in reflex fainters, using salt or electrolyte-containing beverages, and occasionally midodrine, may help. Physical rehabilitation and tilt-training are also recommended.

Heart-Rhythm Disorders

Heart-rhythm disorders that cause faints are usually readily treatable, but identifying the type of disorder is essential first. When slow heart rates are at fault, heart pacemaker implantation is very effective. When excessively fast heart rates cause fainting, drug treatment to control heart rate, or curative procedures such as radiofrequency ablation may be recommended. If the fast heart rhythm is life-threatening (such as in patients with previous severe heart attacks or individuals with inherited disturbances of the heart's electrical function), an implantable heart defibrillator may be needed.

Summary

Fainting is common in humans because the brain resides far above the source of its blood supply (the heart). Any abrupt drop in blood pressure can lead to a faint. Fortunately, the cause is often innocent, and recurrence is infrequent. However, a faint may warn of serious underlying heart disease. In many patients, the physician can distinguish between innocent and serious situations by taking a detailed medical history, carefully reviewing the circumstances of the faint(s), examining the fainter, and perhaps obtaining a heart tracing (ECG) and/or a painless heart imaging test (echocardiogram). On occasion, additional medical tests are needed. Overall, in 80% to 90% of fainters, a likely cause can be established and effective treatment initiated.

References

1. Brignole M, Alboni P, Benditt D, et al. Guidelines on management (diagnosis and treatment) of syncope. *Eur Heart J*. 2001;22:1256–1306.
2. Benditt DG, Fahy GJ, Lurie GF, et al. Pharmacotherapy of neurally mediated syncope. *Circulation*. 1999;100:1242–1248.