Key Points

1. Drop attacks refer to a sudden loss of consciousness, or passing out
2. A small percentage of Chiari patients suffer from drop attacks
3. However, there is some controversy over whether Chiari can actually cause drop attacks
4. Researchers reviewed records of over 250 chiari patients and found 10 with drop attacks who had had tilt table testing
5. Surgery improved the drop attacks 70% of the time, but the tilt table testing was not useful diagnostically

Definitions

autonomic nervous system - part of the nervous system that controls vital, unconscious actions, such as breathing and heartrate

drop attack - term commonly used to refer to episodes of passing out in Chiari patients

dysautonomia - any problem with the autonomic nervous system

EKG - electrocardiogram; test which measures the electrical activity of the heart in graphical form

orthostatic intolerance - condition where people get light headed from standing up too quickly due to low blood pressure

syncope - fainting, passing out

tilt table - a motorized table which can change a person's position from prone to standing to test for lightheadedness, dizziness, and syncope

cerebellar tonsils - portion of the cerebellum located at the bottom, so named because of their shape

cerebellum - part of the brain located at the bottom of the skull, near the opening to the spinal

Chiari Drop Attacks

January 31st, 2010 -- A small but noticeable percentage of Chiari patients suffer from what have come to be known as drop attacks. The medical term for a drop attack is syncope, but basically it means that the person passes out or temporarily loses consciousness. As with many.htmlects of Chiari, historically there has been controversy regarding drop attacks. Specifically, some physicians and researchers do not believe there is a connection between Chiari and drop attacks.

A recent study out of the University of Chicago, and published in Pediatric Neurosurgery, brought both good and bad news to bear on the subject. The good news is that the research presents fairly strong evidence that Chiari can cause syncope and that decompression surgery can alleviate the problem in a majority of cases. The bad news is that there is no good test available which can say beforehand whether decompression surgery will help with drop attacks.

The autonomic nervous system is what controls many critical bodily functions, such as breathing and heartrate. A problem with the autonomic nervous system is referred to as dysautonomia, and one manifestation of dysautonomia is syncope, or passing out. Since Chiari can put pressure on the hindbrain and brainstem, it does not seem to be a stretch that it could cause problems such as syncope, but the reality is that the specifics of how Chiari may be linked to drop attacks is not at all clear.

More commonly, syncope is related to heart problems, and heart testing, such as an EKG, is common. However, when nothing can be found wrong with the heart, some patients undergo what is called tilt table testing. In a tilt table test, a person is strapped to a motorized table which can change their position from prone to upright. Blood pressure and other vital signs are monitored during these position changes to look for indications of a problem. Although tilt table testing is not uncommon, its usefulness is limited by a lack of testing standards and variations in the interpretation of results.

To examine the subject of Chiari drop attacks, the Chicago group reviewed the records of more than 250 Chiari patients, looking for people who suffered from drop attacks, had no indications of heart problems, and had undergone tilt table testing before surgery. Using this criteria, the researchers identified 10 patients, 7 female and 3 male, ranging in age from 8 to 27 years. In addition to the drop attacks, 8 of the 10 suffered from headaches. Other symptoms for the group included double vision, blurred vision, ringing in the ear, dizziness, neck pain, and pain in the arms and legs.

Interestingly, the tilt table test results were split right down the middle, with 5 of the group having a positive result and 5 having a negative result. Each patient underwent decompression surgery, which resulted in the complete resolution of the drop attacks in 4 cases. In 3 cases, the symptom improved, and in the last 3 cases there was no change.

The researchers believe that the surgical results, with 70% improving in terms of drop attacks, is a pretty strong indication that Chiari can indeed cause drop attacks, even if the exact underlying mechanism is not currently known. However, when the scientists looked at the specifics of the tilt table test results versus surgical outcome (Table 1), they didn't really find anything. In fact, the tilt table accurately predicted surgical improvement only 40% of the time (meaning a positive tilt table result would lead to a positive surgical outcome). This is obviously way too low to be at all useful.

Therefore, while Chiari patients with drop attacks may get relief from decompression surgery, pre-surgical testing with a tilt table is not a useful approach.

Table 1: Tilt Table Testing Results vs Surgical Outcome (10 Patients)

Tilt Table Results	Surgical Outcome		
	Improved	No Change	Total
Positive	3	2	5
Negative	4	1	5
Total	7	3	10

area; important for muscle control, movement, and balance

cerebrospinal fluid (CSF) - clear liquid in the brain and spinal cord, acts as a shock absorber

Chiari malformation I - condition where the cerebellar tonsils are displaced out of the skull area into the spinal area, causing compression of brain tissue and disruption of CSF flow

decompression surgery - general term used for any of several surgical techniques employed to create more space around a Chiari malformation and to relieve compression

syringomyelia - condition where a fluid filled cyst forms in the spinal cord

Source

Chiari drop attacks: surgical decompression and the role of tilt table testing. Straus D, Foster K, Zimmerman F, Frim D. Pediatr Neurosurg. 2009;45(5):384-9.

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