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Dizziness as a sign of stroke

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Dizziness is a common medical complaint. It “is the third most common medical symptom reported in general medical clinics and accounts for about 3%–5% of visits across care settings. In the United States, this translates to 10 million ambulatory visits per year because of dizziness, with roughly 25% of these visits to emergency departments. Many patients have transient or episodic symptoms that last seconds, minutes or hours, but some have prolonged dizziness that persists continuously for days to weeks.”¹

In most instances, dizziness is *not* a sign that something serious is happening. Often, it simply means that the person has a virus or a problem that affects the inner ear. Dizziness due to a virus resolves when the viral illness ends. Another common cause of dizziness is a condition called *benign paroxysmal positional vertigo* (BPPV). BPPV is *benign*, meaning that it is not a sign of a more serious underlying neurologic illness. The diagnosis is based on the patient’s history and examination.

In a small percentage of people, dizziness can be a sign of something more serious. Dizziness could signal that a stroke is occurring. It is not easy for a doctor to know when the dizziness is serious. However, certain kinds of medical testing might help to make this determination. When a person sees his or her doctor (or goes to the emergency department) complaining of dizziness, what tests can be done to determine whether a stroke may have occurred?

In their article “Stroke risk stratification in acute dizziness presentations: A prospective imaging-based study,” Dr. Kerber et al. studied this question.

HOW WAS THE STUDY DONE? The study was performed at the University of Michigan. Between November 2009 and March 2013, Dr. Kerber et al.² assessed 272 people who complained of dizziness (people who had BPPV were excluded from the study). The doctors involved in the study were highly trained professionals. They used very specific tests to assess the person with dizziness. The doctors carefully recorded the person’s medical history and performed a detailed neurologic examination. The first thing they did was calculate an ABCD² score. This score is based on the patient’s Age, Blood pressure, Clinical features, Duration of complaints, and presence of Diabetes. In previous studies, a score of less than 4

meant a low risk of stroke. An ABCD² score higher than 4 predicted a high risk of stroke. Next, the doctors performed a combination of bedside tests that carefully measure eye movements. Together, these tests are called the HINTS test, which stands for Head Impulse, Nystagmus pattern, and Test of Skew.

All of the 272 people had an MRI. The MRI was done within 14 days of the onset of dizziness. An MRI provides a very detailed picture of the brain. It is often used to identify strokes. Dr. Kerber et al. used this as the “gold standard test.” In other words, they used the MRI to determine whether a stroke had occurred. They then compared the results of the bedside testing with the MRI to see how often the bedside testing predicted whether a stroke had occurred.

The doctors who performed the bedside testing did *not* know the results of the MRI. In other words, the doctors did *not* know whether the person had had a stroke when they performed the ABCD² or HINTS testing. This was important to prevent any biases from entering the study.

WHAT DID THE STUDY SHOW? Twenty-nine people (29/272 = 10.7%) who complained of dizziness had an MRI that showed that they had had a stroke. Both the ABCD² and HINTS test results helped to predict which people were more likely to have a stroke.

WHY IS THIS IMPORTANT? Dizziness is a common neurologic complaint. Although dizziness most often is not a serious problem, there are times when dizziness might be a sign of something more serious, like a stroke. Most people with dizziness are first evaluated by their primary care doctor. Some go to the emergency department and see an emergency medicine specialist. The tests used in this study, which can be done at the patient’s bedside, could help to identify people who are more likely to have had a stroke. Those that testing identified as high risk might then go on to have more specific testing of the brain, such as an MRI. In other words, this type of testing could help doctors to better assess people with dizziness.

As with all studies, there were several limitations. First, all of the doctors (and patients) were at the University of Michigan. Second, the doctors had been specially trained in administering and interpreting

these tests. The doctors were neurologists who had specialized training in stroke, neurologists who had specialized training in diseases that affect the inner ear, or doctors of emergency medicine who had specialized training in stroke. In the hands of these specialists, the results of testing were significant. It is not known whether a health care worker who did not have this training would be able to assess patients with the same accuracy.

More study is needed in this area. By better understanding bedside tests like these, doctors might be better able to quickly assess people with dizziness.

Those for whom testing identifies a high risk would then be more carefully studied. If a stroke was found, treatment could be started to improve the stroke or to prevent future strokes.

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2. Kerber KA, Meurer WJ, Brown DL, et al. Stroke risk stratification in acute dizziness presentations: a prospective imaging-based study. *Neurology* 2015;85:1869–1878.

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About stroke

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Adapted from: Leonard AD, Brey RL. Blood pressure control and stroke: An ounce of prevention is worth a pound of cure. Neurology 2002;59:E1–E2.

WHAT IS A STROKE? A stroke, or brain attack, is caused by the sudden loss of blood flow to the brain or bleeding inside the head (see below for more details). A stroke causes brain cells to die. This damage can cause paralysis, speech problems, loss of feeling, memory and reasoning problems, coma, and possibly death. Fortunately, there are effective ways to prevent stroke. If you have a stroke, seeking immediate medical attention can help reduce your chances of death and disability.

WHAT ARE THE WARNING SIGNS OF STROKE? The “Give Me 5” uses easy-to-remember words to help identify the 5 signs of stroke:

- Walk—is their balance off?
- Talk—is their speech slurred or face droopy?
- Reach—is one side weak or numb?
- See—is their vision all or partly lost?
- Feel—is their headache severe?

HOW COMMON IS STROKE? Every year, about 780,000 people in the United States suffer a stroke and about 160,000 die. Stroke is the nation’s number 3 killer after heart disease and cancer. Stroke is the number one cause of adult disability.

Stroke is an emergency. Call 911 immediately if you or someone you know experiences any of the above warning signs. Jot down the time the symptoms started. Sometimes these warning signs last for only a few minutes and then stop. But even if that happens or if you feel better, call 911 for help.

RISK FACTORS FOR STROKE THAT CAN BE TREATED OR CHANGED

- High blood pressure
- Atrial fibrillation (an irregular heart beat)
- Diabetes
- Cigarette smoking
- Hyperlipidemia (high fat level in the blood)
- Alcohol abuse
- Obesity
- Sickle cell disease

WHAT CAUSES A STROKE? There are 2 types of stroke or brain attack. Ischemic stroke is caused by an interruption of blood flow to the brain. Hemorrhagic stroke is caused by bleeding inside the brain.

About 85% of all strokes are ischemic. Ischemic stroke can be caused by narrowing of the large arteries to the brain, also known as atherosclerosis. If a clot forms in the neck vessels, pieces can break off and block a brain blood vessel. Clots may also form in the heart and travel by blood flow to the brain vessels, where they become lodged.

Hemorrhagic stroke is caused by the bursting of a blood vessel in the brain. It accounts for about 15% of strokes. Subarachnoid hemorrhage occurs when there are weak spots on brain arteries (aneurysms) that burst and cover the brain with blood. Blood vessels in the brain can also burst if they are weakened by high blood pressure, diabetes, and aging.

WHAT ARE THE TREATMENTS FOR STROKE?

Immediate medical care is critical for the person who is having a stroke or brain attack. New treatments work only if given within a few hours after the onset of a stroke. For example, a clot-busting drug must be given within 3 hours of stroke onset.

HOW IS STROKE PREVENTED? Some risk factors—age, sex, race, and a history of stroke in the family—cannot be changed. However, many others can be controlled. Most controllable risk factors relate to the health of the heart and blood vessels. The following can help prevent stroke:

- Having regular medical checkups
- Controlling high blood pressure
- Not smoking; stopping if you do
- Treating heart disease, especially an irregular heart beat called atrial fibrillation
- Improving diet: avoid excess fat, salt, and alcohol
- Exercising
- Controlling diabetes
- Seeking immediate medical attention for warning signs of stroke

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