Shared decision-making helps patients and their health care providers make treatment choices together. Health care decisions should consider the evidence and the patient’s goals and priorities. This guide will help you and your health care provider talk about when imaging may or may not be appropriate for your headaches.

KEY POINTS

- Most people with headache do not need an imaging study
- Situations which require imaging are detailed
- Different imaging types are needed for different types of problems

INTRODUCTION

Concern that headache pain is due to something wrong is one of the most common reasons why headache sufferers visit a health care provider. These worries often include concerns about serious problems like brain tumors, aneurysms, blood clots, or infections. Fortunately, rarely are headaches caused by dangerous medical problems. Headaches that might be risky are usually very new in onset. Most people who see a health care provider for their headaches actually have a migraine.

Migraine pain results from a complicated interaction between the brain and blood vessels in the face and head. Imaging studies do not show these changes taking place in the brain. So, for most people, an imaging test will not show anything related to the cause. The test will look like the scan of someone who does not have headache. However, there are situations when it is important to make sure that dangerous problems are not causing the headaches.

SOME REASONS WHY YOUR HEALTH CARE PROVIDER WOULD ORDER AN IMAGING TEST

- Sudden worst headache of your life
- Sudden headache pattern change
- New headache over age 50
- Position-related headache; present when sitting or standing; much better when lying flat
- Seizure with headache
- Headache started with an illness and/or fever is present
- “Whooshing” or pulsating sound is heard with headache
- Recent head injury with headache
- Headache with exercise, sex, coughing, sneezing, or going to the bathroom
- Symptoms with headache like altered consciousness or speech, confusion, weakness, numbness, or coordination problems
- Medical problems like cancer or HIV
- Headaches are not responding to proper types and amounts of medications
- You are overwhelmed with worry or fear about your headaches
IMAGING TESTS USED TO EXAMINE HEADACHE

Two basic patient care related test types are available to image the brain. They both have their reasons to be used. Several more methods are available for research.

A brain CT, or CAT scan, stands for computerized axial tomography. CT uses x-rays to take pictures of your brain and skull. It takes only a few minutes to complete. Fear of small spaces or of no escape (claustrophobia) is not a problem with CT. It is good at looking at very solid objects like bone or clotted blood. Health care providers often look for a broken bone or blood in the brain with CT. Although CT does give a good picture of the brain, it is not very detailed. CT scans do expose people to radiation, but it’s only a little bit more than a chest x-ray. If you are pregnant, you should not have a CT. Rarely, your provider may consider the test absolutely necessary, and then shielding of the abdomen from the x-rays is necessary.

An MRI, or magnetic resonance imaging, uses magnets and radio waves to create very detailed pictures of the brain. A lot more information is provided than with CT. MRI takes much longer than a CT scan; sometimes even an hour or more to complete all images. The machine is very noisy; you may desire ear plugs. Consider instead your favorite music CD and have the MRI technician play it for you. You have to lay still in a narrow tunnel for the entire test. If a tight space might be difficult for you, tell your doctor. Fear of small spaces or of no escape is a frequent problem with MRI. A sedative drug(s) may help. If used, your means of transport will be affected; i.e. a driver will be necessary. Another option is an “open-sided” MRI. Many health care providers consider open-sided MRI to be inferior to standard MRI for details of the brain. Since the test quality is not as good, open-sided MRI is typically avoided. People with pacemakers, metal heart valve, or certain brain clips cannot currently have an MRI.

An injection, known as contrast, is typically given during a basic brain MRI. The contrast is injected through a vein in the arm. This contrast image will give even more information about your brain—like if there is a tumor, an infection, or a leak of fluid surrounding the brain. Your health care provider can discuss this procedure in more detail.

Health care providers order one of several types of MRI images based on the medical concern. In some situations, it’s helpful to look at the blood vessels in the brain. There are two types of blood vessels, arteries and veins. Arteries bring blood into the brain and veins remove it. Both CTs and MRIs can examine these blood vessels. The exam for arteries is an angiogram (A). A venogram (V) examines veins. These studies are abbreviated as CTA/CTV and MRA/MRV. Angiograms are useful for looking for things like aneurysms or narrowing of arteries. Venograms help identify blood clots which can cause a backup of blood flow in the brain. CTA/CTV exposes you to significantly more radiation than does brain CT.

CTA’s and MRAs can be very useful, but cannot see things smaller than 2-3 mm (about the thickness of two dimes). In cases when doctors are very worried about an aneurysm or other blood vessel problem, they can order a conventional angiogram. This involves giving an injection of contrast through the groin on the right side or through an artery in your arm. The contrast moves through the brain and an x-ray fluoroscope is used to see the vessels. There are some risks to doing this procedure. Strokes may occur during the exam, but this is very rare without significant other stroke risk factors. If your doctor recommends this study, you should talk about the need for and risks of doing the test. Sometimes this test can even trigger a migraine or other headache.

ARE THERE REASONS TO NOT GET A TEST?

• Imaging tests rarely show the reason for migraines.
• With an accurate headache history and exam, a diagnosis and successful treatment plan can be expected for most without an imaging test.
• CTs or MRIs typically do not help manage migraine or other symptoms of headache. Nor are they likely to change treatment.
• For a stable headache pattern of months or years, imaging is very unlikely to help.
• If headaches are well controlled by medications, then imaging is not usually indicated.
• Imaging tests are expensive. If you do not have insurance or your insurance will not cover all of the cost, you will be responsible.
• Medical cascading may occur. A medical cascade is the flow or surge of one test due to the prior test. One test leads to another test. This may be due to “shadows” or uncertainty of their significance. This leads to another test and so on. All of this may end with a significant number of tests, other medical opinions, additional costs, and no change in diagnosis or treatment.

Imaging tests are helpful at diagnosing serious headache problems. These are known as secondary headaches. Fortunately, dangerous conditions are uncommon. While there are a lot of different ways to get pictures of the brain, imaging tests are usually unnecessary for most people and should be discussed with a health care professional.

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