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Head CT scan

A head computed tomography (CT) scan uses many x-rays to create pictures of the head, including the skull, brain, eye sockets, and sinuses.

How the Test is Performed

Head CT is done in the hospital or radiology center.

You lie on a narrow table that slides into the center of the CT scanner.

While inside the scanner, the machine's x-ray beam rotates around you.

A computer creates separate images of the body area, called slices. These images can be:

- Stored
- Viewed on a monitor
- Printed on film
- Saved to a disk

Three-dimensional models of the head area can be created by stacking the slices together.

You must be still during the exam, because movement causes blurred images. You may be told to hold your breath for short periods.

A complete scan usually takes only 30 seconds to a few minutes.

How to Prepare for the Test

Certain CT exams require a special dye, called contrast material. It is delivered into the body before the test starts. Contrast helps certain areas show up better on x-rays.

- Contrast can be given through a vein (IV) in your hand or forearm. If contrast is used, you may also be asked not to eat or drink anything for 4 to 6 hours before the test.
- Let your health care provider know if you have ever had a reaction to contrast. You may need to take medicines before the test in order to safely receive it.
- Before receiving the contrast, tell your provider if you take the diabetes medicine metformin (Glucophage). You may need to take extra precautions. Also let your provider know if you have any kidney function problems

as the IV contrast can worsen this problem.

If you weigh more than 300 pounds (136 kilograms), find out if the CT machine has a weight limit. Some machines do.

You will be asked to remove jewelry and may need to wear a hospital gown during the study.

How the Test will Feel

The x-rays produced by the CT scan are painless. Some people may have discomfort from lying on the hard table.

Contrast material given through a vein may cause a:

- Slight burning feeling
- Metallic taste in the mouth
- Warm flushing of the body

This is normal and usually goes away within a few seconds.

Why the Test is Performed

A head CT scan is recommended to help diagnose or monitor the following conditions:

- Birth (congenital) defect of the head or brain
- Brain infection
- Brain tumor
- Buildup of fluid inside the skull (hydrocephalus)
- Injury (trauma) to the brain, head, or face
- Stroke
- Bleeding in or around the brain

It may also be done to look for the cause of:

- Abnormal head size in children
- Changes in thinking or behavior
- Fainting
- Headache, when you have certain other signs or symptoms
- Hearing loss (in some people)
- Symptoms of damage to part of the brain, such as vision problems, muscle weakness, numbness and tingling, hearing loss, speaking difficulties, or swallowing problems

What Abnormal Results Mean

Abnormal results may be due to:

- Abnormal blood vessels (arteriovenous malformation)

- Bulging blood vessel in the brain (aneurysm)
- Bleeding (for example, subdural hematoma, epidural hematoma, or bleeding in the brain tissue)
- Bone infection
- Brain abscess or infection
- Brain damage due to injury
- Brain tissue swelling or injury
- Brain tumor or other growth (mass)
- Loss of brain tissue (cerebral atrophy)
- Hydrocephalus
- Problems with the hearing nerve
- Stroke or transient ischemic attack (TIA)

Risks

Risks of CT scans include:

- Being exposed to radiation
- Allergic reaction to contrast dye
- Kidney damage from the contrast dye

CT scans use more radiation than regular x-rays. Having many x-rays or CT scans over time may increase your risk for cancer. However, the risk from any one scan is small. You and your provider should weigh this risk against the benefits of getting a correct diagnosis for a medical problem.

Some people have allergies to contrast dye. Let your provider know if you have ever had an allergic reaction to injected contrast dye.

- The most common type of contrast given into a vein contains iodine. If a person with an iodine allergy is given this type of contrast, nausea or vomiting, sneezing, itching, or hives may occur.
- If you absolutely must be given such contrast, your provider may give you antihistamines (such as Benadryl) or steroids before the test to prevent an allergic reaction.
- The kidneys help remove iodine from the body. Those with kidney disease or diabetes may need to receive extra fluids after the test to help flush the iodine out of the body.

In rare cases, the dye may cause a life-threatening allergic response called anaphylaxis. If you have any trouble breathing during the test, tell the scanner operator right away. Scanners come with an intercom and speakers, so someone can hear you at all times.

Considerations

A CT scan can reduce or avoid the need for invasive procedures to diagnose problems in the skull. This is one of the safest ways to study the head and neck.

Other tests that may be done instead of a head CT scan include:

- MRI of the head

- Positron emission tomography (PET) scan of the head

Alternative Names

Brain CT; Cranial CT; CT scan - skull; CT scan - head; CT scan - orbits; CT scan - sinuses; Computed tomography - cranial; CAT scan - brain

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