Ultrasound of arteries in the neck

Procedure: Us
Bodypart: Head
Patient Group: Female Male Child

Summary

Synonyms: Carotid sonography, ultrasound of the carotid artery

Ultrasound imaging of the carotid arteries is a procedure for assessing the large arteries of the neck, which provide most of the oxygenated blood supply to the brain. Ultrasound is a technique that uses high-frequency sound waves and involves no exposure to radiation. Sound waves are generated by a transducer, and transmitted into the tissues. Reflection of the sound waves in the tissues gives rise to a pattern that can be converted into an image of the internal structures of the body using a computer. With ultrasound, changes in the blood vessels of the neck - such as narrowing or blockage - can be visualised and classified well. Using the Doppler ultrasound technique, the speed of blood flow can also be shown. This method is often the first choice for planning further diagnostic steps or for monitoring the patient after treatment.

Technique

What it is

Ultrasound of the carotid arteries is a technique in which sound waves are sent into the tissues, and these are partly reflected back by the tissues like an echo. From the time sequence of these reflections, a computer can generate an image of the internal structures of the body. The procedure is pain-free and there is no exposure to X-rays. The procedure is usually carried out by a radiologist (or a qualified technical assistant), who will sit right next to you.
How it works

The patient lies on his/her back on an examination table, with his/her neck somewhat extended if possible. The ultrasound machine stands next to the examination table. It consists of a monitor, a computer, and a transducer, which is connected to the machine by a cable; the transducer generates the sound waves and picks up the sound reflected from the tissues.

The radiologist uses a special gel between the body and the transducer to improve the transmission of sound waves into the tissues.

The large arteries of the neck run next to the voice box on both sides, and this is where the transducer is placed.

Purpose

With ultrasound of the carotid arteries (large blood vessels in the neck that supply blood to the brain), changes and narrowing of these blood vessels can be investigated and identified in a fast and uncomplicated way. If the results are inconclusive, further investigations may be necessary such as computed tomography (CT scan) or magnetic resonance imaging (MRI).

Target Patient Group

Ultrasound of the carotid arteries is used to investigate various medical and neurological conditions. Examples are:

• Stroke
• Temporary neurological symptoms similar to a stroke
• Increased blood flow murmur from blood vessels in the neck
• Advanced age, diabetes, raised blood cholesterol level
• Family history of stroke
• Postoperative monitoring or other procedures in the neck region
• Certain heart diseases
• Suspected dissection of the carotid arteries, i.e. detachment and pouch formation of the vessel wall, which can lead to blockage of the artery.

Procedure

Persons

You will be looked after by an experienced team consisting of a medical radiology technician (MRT) and a radiologist. The procedure is carried out by the radiologist or a qualified technical assistant. The radiologist observes and assesses the arteries during the procedure and takes several pictures on both sides. If a Doppler procedure is carried out, you may hear a pulsating rushing noise from the machine's loudspeaker - this helps with the assessment, and there is no need to worry about it. After the procedure, all the pictures are re-assessed and compared with a preliminary examination if necessary. A written report of the results is then drawn up. This is either given to you or sent on to the doctor who referred you.

Preparation

1. You can eat normally before the procedure, although it is advisable not to eat a very heavy meal. You can drink as much water as you like.
2. You should take your usual daily medication with some liquid in the morning.
3. If you are a diabetic, please ask your doctor how you should take your medication on the day of the examination. If you think that your blood sugar levels are low, please inform the MRT immediately.

Precautions

No precautions are necessary.
Duration
The whole procedure takes about 10-15 minutes.

Process
For the procedure, your neck should be exposed down to the collarbone. It is best to undress your upper body as well, to stop your clothes from getting ultrasound gel on them. You will then be covered with a towel or something similar. It is advantageous if you can extend your neck somewhat during the procedure. Please let the staff know if this causes you any pain. You may also be asked to turn your head to one side. The ultrasound gel will then be applied to your skin, to improve the conduction of sound between the transducer and your tissues, and the procedure will start. Different cross-sectional images are produced, depending on how the radiologist moves the transducer over your neck. The radiologist will apply gentle pressure to your neck. If you experience pain or dizziness, please let them know. After the procedure, you will be given a towel to wipe off the remaining ultrasound gel.

After procedure
You will usually be able to go straight home after the procedure.

Consideration

Risks
Ultrasound is an extremely safe procedure. In rare cases, the pressure of the transducer may feel a little uncomfortable. The ultrasound waves are completely safe for the body. Pregnant patients and children can also be examined without safety concerns. No X-rays are used, so there is no exposure to radiation.

Alternatives
Ultrasound is the simplest way of assessing the blood vessels in the neck, and does not involve exposure to radiation. Alternative procedures are angiography, CT scanning and magnetic resonance imaging (MRI). These procedures make it possible to detect and assess very small changes, but they are not always available and should only be used for questions that cannot be answered with an ultrasound procedure.

FAQ

Do I have to be an in-patient at the hospital to have an ultrasound?
No, the procedure can be also be performed if you are an outpatient. You can go home again afterwards as long as there are no other medical reasons why you should not do so.

Which patients should not have an ultrasound?
In patients with an acute life-threatening condition, another technique will generally be used (usually CT scans or angiography). However, even in these circumstances, ultrasound can still provide useful information.

What do I need to bring with me?
You may need to bring the results and pictures from earlier procedures, so that your progress can be monitored.

How much radiation will I be exposed to?
Ultrasound is a mechanical sound wave with a very high frequency, and has no damaging effects on the body. No X-rays are used, so there is no exposure to radiation.

Citations

1 - Team General Hospital Vienna