

Transcranial doppler ultrasound investigation

i Information for patients
Neuro Day Care



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What is Transcranial Doppler (TCD) ultrasound?

A Doppler machine is similar to the ultrasound machines used during pregnancy. It detects the rate of blood flow in blood vessels. 'Transcranial' means it is used to look at the vessels inside the head that provide the brain with blood.

The test can be used to detect narrowing or contraction of brain vessels.

What is a 'bubble test'?

The bubble test is used to look for a 'hole in the heart'. A 'hole' in the wall between the two smaller chambers of the heart is part of the normal heart development and closes after birth. In about one in four people the closing process is incomplete and a remaining hole can be found (patent foramen ovale, PFO). In most people the remaining opening in the heart does not cause any problems. In people that suffer a stroke at a young age, particularly if no other explanation has been found, a hole in the heart might be of relevance.

The test involves the injection of a solution into your arm that contains very small air bubbles that will cause a distinct sound in the TCD recording. Normally the air bubbles will be filtered out in the lung and no bubbles should be detected in the TCD. If bubbles appear in the TCD recording it indicates a remaining hole in the heart.

What happens when I have a TCD scan?

The test usually takes about 30 minutes. The healthcare professional doing the procedure will explain exactly what is being done.

You will be awake and have the test lying on a bed or couch. Some gel will be applied to the Doppler probe that is then placed on both sides of the head above and just in front of the ear to detect the blood flow in the head. The scan itself is painless and carries no known risks. If you

have long hair you may need to tie your hair back for the test. Remaining gel at the end of the procedure will be removed with a paper towel but a small area with a wet appearance cannot be avoided.

For the bubble test a small plastic tube will be inserted into one of the veins in your arm to allow the injection of the bubble solution. The test consists of two parts. During the first part you do not have to do anything except lie still. In the second part you will be asked to take a deep breath and hold your breath for a few seconds while the bubble solution is injected. This changes the pressure in the heart chambers and increases the chance to find a hole in the heart.

You are going to get the result of the test on that day. The plastic tube will be removed once the test is completed. There is a chance of developing a bruise at the injection site, particularly if you take blood thinning medication such as Aspirin, Clopidogrel or Warfarin.

There are no limitations on driving that day due to this test being performed.

What happens afterwards?

If the scan is normal, there is likely to be no change in your management.

If the scan shows fast blood flow indicating possible blood vessel narrowing we might request further imaging to investigate the vessels in your brain such as CT or MR- angiography. This will be discussed with you before you leave. We will inform your treating physician and GP about this as well.

If the test has shown a hole in the heart (PFO) then this information will be reported back to your doctor. We will also inform your doctor about possible changes in your treatment if necessary. We might arrange for an additional ultrasound scan of your heart and we will discuss all

findings in the Heart-Brain Multidisciplinary Team meeting with cardiologists and neurologists present.

Are there any alternatives to a TCD test?

The TCD scan provides unique information about the flow of blood through the arteries supplying blood to the brain. It does not have any serious side effects and is less invasive than other tests that can be used to investigate some of the problems your doctor is looking for. Ultrasound of the heart from the oesophagus (when the camera is swallowed) is the gold standard to detect a hole in the heart (PFO) and this test might still be necessary if the TCD with bubble test is abnormal. MR, CT or catheter angiographies give information about the vessels in the head but cannot provide the information about the speed of blood flow detected with ultrasound.

Contact details

For further information please contact either:

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