

FACTSHEET

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Arterio-venous malformation (AVM) of the brain

What is it?

An arterio-venous malformation (AVM) is a condition that develops during growth in the womb. It occurs in the small capillaries between an artery and a vein. Capillaries are small blood vessels that join arteries and veins. These capillaries become enlarged and form a collection of blood vessels that may look like a "bag of worms". The pressure in the enlarged blood vessels then pushes blood from artery to vein across the AVM instead of allowing it to flow through the artery away from the heart.

Arterio: relates to arteries. Arteries are tubes that carry blood with oxygen away from the heart and to the rest of the body.

Venous: relates to veins. Veins are tubes that carry oxygen depleted blood towards the heart.

Malformation: an abnormal formation.

Where does it occur?

AVMs can be found anywhere in the brain and may spread from the outer surface to the inner cavities of the brain (ventricles).

In the rare *Vein of Galen Malformation*, an AVM involves one of the large veins of the brain. The ordinary flow of the fluid in the brain ventricles (cerebro-spinal fluid) is interrupted. The pressure of this fluid is increased. This may cause enlargement of the ventricles

("hydrocephalus"). Occasionally brain and spinal cord AVMs may also be a result of skin lesions (angiomas).

What are the symptoms?

Even though an AVM occurs in the brain before birth, only a small number of children with AVM show symptoms straight away. Many never have any problems. An AVM is usually found when bleeding has occurred into or around the brain.

Symptoms may include:

- Severe headache
- Vomiting
- Neck stiffness
- Seizures (fitting) - sometimes epileptic fits may occur without any bleeding.

AVM and babies

When a large AVM is present in a newborn baby, the symptoms may cause heart problems. This is because the pressure in the AVM pushes blood from the arteries into the veins and causes an increase of blood flow in the veins. This puts an increased load on a baby's heart.

How is it diagnosed?

Your doctor may be able to hear the increased blood flow in the head or neck through a stethoscope. The noise is called a bruit (broo-ee).

An AVM is usually diagnosed only after symptoms have occurred (see above).

A CT scan (x-ray) or MRI scan is used to diagnose the AVM (see '[CT factsheet](#)' and '[MRI factsheet](#)' for more information).

Injecting dye into a blood vessel that feeds blood into the brain shows the AVM on x-rays (angiogram).

What is the treatment?

AVMs are quite complicated and there are a few different treatment options. Most AVMs will need surgery, radio surgery, or endovascular treatment or a combination of them all. Your doctor may recommend surgery, as the risk of repeated bleeding is high. However, this is not always the case. Ask your doctor about the choices of treatment for your child.

Remember:

AVM is usually diagnosed only after symptoms occur.
Ask your doctor about the choices for treatment.

For more information:

- The Brain Foundation
www.brainfoundation.org.au/medical-info/11-arteriovenous-malformation
- Great Ormond Street Hospital
<https://www.gosh.nhs.uk/conditions-and-treatments/conditions-we-treat/arteriovenous-malformations>