

Overview

What are the vertebral arteries?

The vertebral arteries in the neck supply blood to the brain and spine. The name vertebral refers to the arteries' location along the vertebrae, the bones of the spine.

You have a left vertebral artery and a right vertebral artery that run through the spinal column. The two vertebral arteries join together at the base of the skull to form the basilar artery and together are called the vertebrobasilar system.

Function

What is the purpose of the vertebral arteries?

The vertebral arteries are part of the circulatory system. They carry blood to the brain and spinal cord, which are part of the nervous system. The vertebral artery provides 20% of blood flow to your brain (the carotid artery supplies the other 80%).

The vertebral arteries have many small branches. The largest branch — the posterior inferior cerebellar artery — is one of three main arteries that provide the cerebellum with blood. Part of the brain, the cerebellum plays a key role in balance, movement, speech and vision.

Anatomy

Where are the vertebral arteries?

The two vertebral arteries start at the subclavian arteries. The subclavian arteries sit below the collarbone (clavicle). They arise from the aorta, the body's largest blood vessel, which carries blood from the heart. Specifically, the right subclavian arises from the brachiocephalic artery, which arises from the aorta. The left subclavian arises directly from the aorta.

The vertebral arteries run separately inside the left and right sides of the spinal column in the neck. The suboccipital muscles at the base of the skull cover the vertebral arteries. This area is the suboccipital triangle.

What are the vertebral artery segments?

The vertebral arteries divide into four segments based on where they are within the spinal column:

V1 (pre-foraminal) arises from the subclavian artery. It runs behind the carotid artery, which is also in the neck.

V2 (foraminal) travels alongside vertebral veins and nerves. The vertebral artery enters a space within the vertebrae called the transverse foramen at C6 and exits this space at the C2 cervical vertebra, the second-highest vertebra at the top of your spine, just below the skull.

V3 (extradural or extraspinal) curves and twists across the top of the C1 vertebra (the atlas) until it enters the skull.

V4 (intradural or intracranial) enters the skull. The right and left vertebral arteries then join together to form the basilar artery.

Conditions and Disorders

What conditions and disorders affect the vertebral arteries?

Fat and cholesterol deposits (plaque) can build up in the vertebral arteries. This buildup can narrow the arteries, causing atherosclerosis. If there's too much plaque, blockages may occur.

When atherosclerosis develops in the vertebral arteries, you have vertebral artery stenosis. This can lead to:

Blood clots.

Transient ischemic attack (TIA or ministroke) and stroke.

Vertebrobasilar insufficiency.

Other conditions can also effect the vertebral arteries:

Cervical (carotid or vertebral) artery dissection (tear in an artery wall), which can occur due to trauma or due to underlying connective tissue disorders that cause fragile blood vessels (for example fibromuscular dysplasia).

Rotational vertebral artery stenosis is a rare condition usually caused when a bony growth compresses a vertebral artery, restricting blood flow to the brain. The condition is also called bowhunter's syndrome.

Care