The arteria radicularis magna is the largest of the anterior radicular arteries of the spinal cord. It originates as a branch from the aorta at varying levels; it most commonly arises from the left side, usually between the lower thoracic and upper lumbar regions. It travels through the intervertebral foramen with the corresponding ventral nerve roots to reach the spinal cord. Here it gives rise to spinal branches that anastomose with the anterior spinal artery located along the anterior median fissure of the spinal cord and with the posterior spinal artery, located, anterior to the dorsal spinal roots.

The arteria radicularis magna may serve as the main blood supply to the lower two-thirds of the spinal cord.