Thoracic Vertebral Artery

An Anomaly of the Vertebral Artery

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Summary. A case of bilateral thoracic vertebral arteries supplying blood to the upper thoracic vertebrae and the upper thoracic spinal cord is reported. Such an anomaly had been recorded anatomically, but no case was previously reported angiographically.

Key words: Thoracic vertebral artery – Anomaly – Spinal angiography – Intercostal artery – Vertebral artery

Since vertebral angiography has been performed, many angiographic cases of anatomical anomalies of the vertebrobasilar system have been reported. These cases have been concerned essentially with anomalies of origin of the vertebral artery, as abnormal origin from the carotid artery, or duplication of its origin. Other cases concern duplications of the vertebral artery through its cervical or intracranial course.

Anomalies of the extracranial branches of the vertebral artery are very rare and only one case of thoracic vertebral artery has been previously demonstrated by angiography.

Case Report

A caucasian male 40 years old, came to the hospital suffering from dysesthesia of the lower limbs and progressive weakness of the left leg with foot drop. These troubles appeared suddenly and remained unchanged. Examination revealed right hypesthesia below T5 and bilateraly increased reflexes in the lower limb. The CSF contained only a slight increase of proteins (0.60 g/l). Myelography disclosed only slight narrowing of the cervical spinal canal. Spinal angiography was performed to exclude an arteriovenous malformation.

Selective angiography of the intercostal arteries demonstrated a common trunk for the seventh, eighth and ninth right intercostal arteries arising from the anterior spinal artery from T6 to T12; on the left side there was a common trunk for the sixth, seventh, eighth and...
ninth intercostal arteries. It was impossible to catheterize any intercostal artery above. All the upper intercostal arteries came, by both common trunks, from the right and left vertebral arteries.

The anterior spinal artery arose from the right vertebral artery (Fig. 1) at C₇. A descending branch gave off the five upper intercostal arteries from which the anterior spinal artery for the upper thoracic spinal cord arose (Fig. 1). The left vertebral artery gave off a similar branch for the four upper intercostal arteries (Fig. 2).

The vascularization of the entire spinal cord was explored and no vascular malformation was found.

Discussion

During angiography of the spinal cord it is usual to catheterize commun trunks of two, or perhaps more, intercostal arteries.

These are more frequently encountered at the upper thoracic level and usually there are several in the same patient. But the failure of catheterization of some intercostal arteries is unfrequent. The case we report presents few common trunks for intercostal arteries, and the upper thoracic levels from T₁ to T₅ were vascularized by a branch arising from both cervical vertebral arteries.

Such an anomaly, called thoracic vertebral artery, has been previously reported anatomically [4]. Angiographically Newton showed a case of vertebral artery giving off the first and second intercostal arteries but this branch did not supply the spinal cord.

In this case the anomaly is bilateral and the right thoracic vertebral artery supplies the upper thoracic spinal cord. This anomaly could have been a source of failure in performing arteriography of the thoracic spinal cord.

A thoracic vertebral artery can arise equally from the subclavian artery or the cervical intercostal trunk [4].