

Imaging diagnosis

Case 376

5. Adamkiewicz occlusion due to aortic dissection

【Progress】

He was transported to stem hospital where a cardio-surgeon could serve this patient with the occlusion of Adamkiewicz artery due to aortic dissection.

【Discussion】

Lower motor palsy arises from spinal cord itself, vertebral disease, and artery ischemia. As spinal cord diseases, spinal tumor, neuromyelitis optica spectrum disease, multiple sclerosis, syphilis, tuberculosis and sarcoidosis. As vertebral diseases, metastatic vertebral tumor, disk hernia, spinal canal stenosis and vertebral spondylitis are listed. As artery ischemia, aortic dissection, embolism due to sepsis or cardiac atrium fibrillation, Surfer's myelopathy and iatrogenic stent graft placement, are listed.

Of acute spinal ischemia, the involvement of Adamkiewicz artery is well known. Anterior spinal artery is formed by merges from bilateral branch arteries from right and left vertebral arteries at C1 level. The radial branch arteries are distributed to anterior spinal artery every 3 vertebrae since only blood flow from vertebral artery is too far to supply blood to peripheral vertebrae (1, 2). The blood flow to most peripheral spinal cord is distributed by anterior spinal artery merged by Adamkiewicz artery which branched from Th9 to L1 radial artery via intercostal arteries (3, 4).

Anterior spinal artery is distributed to the frontal part of spinal cord which is responsible for motor function. The occlusion of Adamkiewicz artery occurs by dissection of aortic dissection, embolism, thrombosis of aortic aneurysm. It induces ischemia of anterior spinal artery, leading ischemia of the front part of spinal cord, leading motor paresis associated with urinary and stool incontinence. The occlusion of Adamkiewicz artery must be taken care of in case of aortic surgery or stent graft placement.

It is reported that spinal cord ischemia occurs in case of elevation of intra-spinal pressure which interrupts perfusion of arterial blood supply (4). Intraspinal pressure is composed of spinal cord itself, cerebrospinal fluid and arterial blood supply. Then, to protect ischemia of spinal cord, prophylactic spinal cerebral fluid drainage is attempted to prevent from spinal cord ischemia (4).

In our case, no spinal cord lesion was depicted on MRI. Instead, the localized swollen thoracoabdominal aorta at TH10 level, was visualized. Its mural was shown as high signal intensity on T1WI and low signal intensity on T2WI indicative of mural thrombosis of aorta, probably due to aortic dissection which could occlude Adamkiewicz artery.

Surfer's myelopathy is reported to be caused by spine extra-extension of spine against sea wave (5, 6). It causes narrowing and torsion of spinal artery ischemia due to extension of vertebra, inducing paraplegia of lower extremities associated with urine and stool incontinence.

【Summary】

We presented an eighty-four-year-old male with motor paresis of lower extremities associated with urine and stool incontinence. Lumbar MRI depicted localized swollen aortic mural as high signal intensity on T1WI and low signal intensity on T2WI, indicative of hematoma of atheromatous plaque of aortic dissection on aortic thrombosis. It is borne in mind that lower extremity paresis arises from spinal cord itself, vertebral disease and anterior spinal artery ischemia including occlusion of Adamkiewicz artery which branches from intercostal artery or lumbar artery at Th10-L1 level.

【References】

1. Lazorthes, Guy et al. "Arterial vascularization of the spinal cord". *Journal of Neurosurgery*. 1971; 35 (3): 253–62.
2. Lopez, January, et al. "Bronchial Artery Embolization for Treatment of Life-Threatening Hemoptysis". *Seminars in Interventional Radiology*. 2006; 23 (3): 223–229
3. Melissinos, G. et al. "Demonstration of the Adamkiewicz Artery by Multidetector Computed Tomography Angiography Analysed with the Open-Source Software OsiriX". *European Journal of Vascular and Endovascular Surgery*. 2009; 37 (4): 395–400.
4. Wan, Innes Y. et al. "Prevention of spinal cord ischaemia during descending thoracic and thoracoabdominal aortic surgery". *European Journal of Cardio-Thoracic Surgery*. 2001; 19 (2): 203–13
5. Chang CW, et al. "Surfers' myelopathy: a case series of 19 novice surfers with nontraumatic myelopathy". *Neurology*. 2012; 79 (22): 2171–6.
6. Rode, Matt (2016-07-25). "Beginner Surfer Left Paralysed after Suffering Rare Surfer's Myelopathy". *magicseaweed.com*. Archived from the original on 2019-04-28. Retrieved 2019-07-24.

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