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### Does a Spasm of Vertebral Canal Exist?

Czy istnieje skurcz kanału kręgowego?

During myelographic examination the travel of a contrast medium through the vertebral canal can be observed when it is applied by the lumbar puncture. When the vertebral canal is totally obstructed the contrast medium stops at the verge of the closing forming sometimes (in case of tumours) concave meniscus. In case of incomplete block of the canal the contrast medium flows around the obstacle.

Results of myelographic examination do not leave much room for doubts as to the character of discovered disease process. They are very often confirmed during follow up computer tomography imaging of the suitable segment of the spinal column.

In some patients being under clinical observation in this Department of Neurology, however, it was difficult to arrive at a specific diagnosis on the basis of the examination of their vertebral canal by means of the contrast medium in spite of the abnormalities observed repeatedly and the concomitant severe progressive lesions of their spinal cords.

#### CASE I

Man, aged 63, pensioner, was taken ill at the age of 26. With paraparesis gradually intensifying up to the paralysis of lower extremities he stopped walking at the age of 38. There were not found any functional disturbances of sphincters. During intensification of the paresis, the patient was hospitalized in the Teaching Hospital of Neurosurgery in Cracow. There, a myelographic examination of his vertebral canal was carried out. The examination showed only a temporary contrast stop at the height of Th1. Earlier the patient was hospitalized many times because of hypertensive disease, chronic incompetence of coronary vessels, and inferior myocardial infarction.

The patient examined for variation from regular standard, was found to suffer from severe spastic paresis of lower limbs, diminished pain sensitivity and touch sensibility from the level Th4 downwards, and abdominal areflexia. The results of laboratory examinations were normal. Both roentgenography of

chest and ultrasonography of abdominal cavity did not show any pathological changes.

Roentgenography of the vertebral column was almost normal, showing only some minor degenerative changes and deformations. Cerebrospinal fluid obtained by lumbar puncture had normal composition. In the preparation no plasmacytes were found, and the Lange test was normal.

During myelographic investigation it turned out that the contrast column in the lumbar and thoracic segment filled freely the fluid space. At the height Th1 and Th2 a spasm was visible along with a temporary stop of the contrast. After a while the contrast moved higher. At the cervical segment the flow of the contrast was unhampered. Computer tomography of the vertebral column showed that the vertebral bodies from C7 to Th3 were not changed within the osseous structure, vertebral canal, and spinal cord. The vertebral canal was wide and symmetrical.

## CASE 2

Man, aged 54, a manual worker. Three months before the hospitalization in our Teaching Hospital of Neurology the patient started to complain about right shoulder pain and brachialgia. Later, he noticed muscular weakness increasing gradually in his extremities. Neurologic examination showed the existence of quadriparesis in lower extremities — spastic in character, the lesion of the central motor neuron, the increase of deep reflexes, and the presence of pathologic reflexes as well as some features of peripheral nervous system lesion manifesting itself by muscular atrophy of shoulder girdle. It was also found that all kinds of superficial sensitivity were considerably reduced from the level Th4 downwards. Deep sensibility however was unchanged.

Radiographic examination of cervicithoracic segment of spinal column showed only the existence of minor degenerative changes. Results of laboratory examinations as well as radiographic examination of the chest were normal. During ascending myelography carried out by lumbar puncture the stoppage of contrast passage was observed at the level Th4.

Computer tomography of the area between Th2 and Th6 performed on the same day did not reveal a presence of any obstacle in the vertebral canal and the contrast medium was distributed regularly in subarachnoid space.

Rachialbuminometry showed an increased level of proteine content reaching 70 mg% without other abnormalities. A few days later a descending contrast myelography was carried out by suboccipital puncture. Radiologic image obtained this way also showed a stoppage of contrast medium at the level C3. Computer tomography of the cervicithoracic segment of vertebral canal, however, revealed its complete patency.

## DISCUSSION

Both cases described above present false positive results of myelographic examination indicating the presence of a stoppage in the travel of contrast medium inside vertebral canal directly after its application. Computer tomography carried out several hours later did not show any obstacle in the canal, its patency was normal, and the contrast medium distributed regularly in the subarachnoid space.

It is interesting to note that the myelographic examinations were carried out twice in the first patient within about twenty years and each time the radiologic image indicating the temporary obstruction of the vertebral canal was the same.

The spinal cord is characterized by the presence of thickenings and enlargements in its cervical and lumbar segment, but they never reach the size that could block free travel of the contrast medium along the canal during myelographic examinations (1, 2). Also the computer tomography never showed any narrowing of subarachnoid space in the examined segment of spinal canal. We cannot, however, exclude the existence of transitory oedema of spinal cord changed structurally leading to transient blockade of spinal canal. Its swift regression would justify the lack of these symptoms during tomographic examination carried out several hours later.

Spinal dura matter consists mainly of procerus collagen fibres while its inner layer is built of elastic fibres arranged transversely. It is not, however, the sufficient basis to take into consideration their possibility of shrinkage as a cause of the discussed phenomenon. Venous plexa contained in epidural space changing their volume could also influence the magnitude of subarachnoid space in the spinal canal.

This phenomenon of transient blockage of spinal canal seems to be very interesting both from theoretical and practical point of view, however there is no satisfactory explanation of the mechanism of its origination.

## REFERENCES

1. Chrzanowski R.: Principles of Neuroradiology. PZWL, Warszawa 1970.
2. Trojanowski T. et al.: Selected Problems of Neurosurgery. State University of Lublin School of Medicine, Lublin 1990.

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## STRESZCZENIE

Przedstawiono sytuację 2 chorych hospitalizowanych w Klinice Neurologii, u których wykazano zjawisko powtarzalnej przemijającej blokady kanału kręgowego przy postępującym, ciężkim uszkodzeniu rdzenia kręgowego, bez możliwości ostatecznego ustalenia rozpoznania.

