

**D.T. Abdulkadirova, U.T. Abdulkadirov, Sh.M. Kobilov**  
*Andijan State Medical Institute, Uzbekistan*  
*Department of Neurology*

### FEATURES OF THE CURRENT OF VASCULAR MYELOPATHY

To study the features of the clinical and neurological course of myelopathy of venous origin. The research comprised 55 patients with spastic para- or tetraparesis of obscure etiology, aged 25 to 72 years. The course of a comprehensive examination comprised of: diagnostic lumbar puncture, ultrasound examination of internal jugular veins. All patients were given MRI scans of all parts of the spine and spinal cord and brain. Conclusion, if there are signs of spastic movement disorder and without a clear etiological factor, as well as without convincing data of paraclinical methods of examination, patients should be sent to the study for a violation of venous circulation in the vertebral complex, caused by the defeat of large tributaries of the system of hollow veins.

**Keywords:** vascular myelopathy, spastic movement disorder, ultrasound examination of internal jugular veins

The pathogenesis of vascular changes does not always take into account venous circulatory disorders, the clinical manifestations of which are not yet sufficiently studied. At the same time, vascular disorders of venous genesis are more extensive than even in the case of arterial circulatory disorders. At present, a large factual material has accumulated, which proves the participation of the vertebral venous system (VVS) in the implementation of collateral circulation in case of impaired blood circulation in the system of upper or lower hollow veins. It is caused by their anatom-hemodynamic unity. The role of VVS in the outflow of blood from the skull cavity and from the lower limbs has been established, which undoubtedly has both anatomic and physiological value, as well as clinical-pathogenetic value. This important collateral function is conditioned by the features of the epidural venous plexus (EVP). It is presented as a continuous valveless vascular network with a reversible direction of blood flow. Therefore, in case of circulatory disorders in the main veins, the EVP develops, on the one hand, a difficult venous outflow and increased inflow - on the other hand, which over time leads to the formation of intrachannel venous hypertension.

#### **Purpose**

To study the features of the clinical and neurological course of myelopathy of venous origin.

#### **Research materials and methods of study**

The research comprised 55 patients with spastic para- or tetraparesis of obscure etiology, aged 25 to 72 years. In addition to carefully reviewing complaints and history and examining the neurological status of patients, the following paraclinical research methods were conducted; The MRI (Magnetic resonance imaging) study was conducted in diffusion-weighted tomographs on Magnetom Symphony and Magnetom Avanto, Siemens AG (Germany) with a magnetic induction of 1.5 T. Selective phlebography - performed to patients when enrolled in the standard technique on the device X-ray PERLOVE MEDICAL PLX7000B power: 5.0 kW. Frequency inverter: 60 kHz. Doppler ultrasonography - was performed to patients on the device digital ultrasound diagnostic system: ACUSON X300 version of Premium, "Siemens" (Germany)., «Lumbar puncture - performed to patients when enrolled in the standard method.

#### **Study results**

At the initial examination of all all patients clinical picture and paraclinical diagnostic methods did not provide clear understanding about the nature and localization of the pathological process, and despite the conservative therapy, the disease progressed. In addition to motor disorders, all patients had pelvic organ disorders.

The duration of the disease, i.e. the time of appearance of initial signs, ranged from 2 years to 17 years. The age of the disease - the first appeal for medical care - from 2 to 6 years. The average duration of the disease was 9.5 years, and the statute of age - 2.5 years.

The course of a comprehensive examination comprised of: diagnostic lumbar puncture, ultrasound examination of internal jugular veins. All patients were given MRI scans of all parts of the spine and spinal cord and brain.

Diagnostic lumbar puncture was carried out to determine liquor pressure - hypertension was detected in 19 patients;

To exclude another pathology of the vertebral complex, all patients performed an MRI, which revealed signs of herniated disc in 6 observations.

According to duplex scans of internal jugular veins, ultrasound signs of venous circulatory disorders were detected in 11 patients. The main phlebographic traits, such as atresia (64%), stenosis (42%) and compression (37%) are determined at the level of strategic places of narrowing of veins outside the spinal canal.

Modern data of phlebology show that the venous system is extremely labile to the effects of various pathogenic factors (1, 3). Anatomic-hemodynamic features of the structure of the vertebral venous system indicate that under the influence of external factors located outside the spinal canal, the direction of blood flow between the system of hollow veins and the valveless vertebral venous plexus (4, 5, 6).

#### **Features of anamnestic data**

A very important issue is a carefully collected history, which can help in differential diagnosis with other organic spinal cord diseases.

Since epidural venous plexus is drained into large tributaries of the system, both the upper and lower hollow veins, it is necessary to find out the presence of the concomitant pathology of the venous system of other organs. In our study, in the history of all patients with venous myelopathy, pathological conditions such as Paget-Schroetter syndrome (34%) and varicose veins of the lower extremities (30%) and portal hypertension (16%) and hemorrhoidal nodes (20%) were identified, which are also a manifestation of the pressure of venous circulation. The data served as the trigger for the occurrence of venous myelopathy.

It is necessary to pay attention to the complaints of patients: of the general brain symptoms, the most common was blunt, almost permanent, headaches (98%) without clear localization, which occurs in the afternoon, increasing in a horizontal position (100%) And at night they are poorly stopped by the use of conventional analgesics and spasmolytics, because the genesis of their occurrence is mainly venous.

#### **Features of neurological manifestations**

The early symptoms of the onset of disease included the appearance of lower back pain of a projection nature (89%), temperature paresthesia - a feeling of cold, chilliness and tingling in the feet (76%), and the resulting, gradually, rapid fatigue of the legs (100%). The cause of these sensations is not only irritation of the structures of the spinal cord and nerve roots, but also the fact that in the case of a violation of venous circulation in the system of hollow veins, in the collateral circulation include both the epidural venous system (1), as well as skin, subcutaneous and muscular venous vessels, which is easy when the external patient examines the strengthening of the vascular pattern.

Clinical symptoms always manifested with lower spastic paraparesis, and, as hypertension increased, turned into tetraparesis of varying severity. This has its explanation in Epidural Venous Plexus (EVP), as in the continuous valveless vascular network, regardless of the level and nature of the lesion, according to the canons of gravity, the pressure will first rise in the lower parts of formation of the spinal canal, gradually increasing by the ascending type (2, 3, 4). In the early stages of the disease, we observed the formation and disorders of the function of the pelvic organs according to the central type - imperative urges and difficulty urinating.

It is very important to identify the dependence of spastic manifestations on the position of the body and physical exertion. Spastic, involuntary cuts in the lower extremities grew some time after moving into a horizontal position and in the afternoon. Such inconveniences force patients to look for a lighter position and sleep in a semi-sitting position.

Given that in a horizontal position, drainage from the cranial cavity and from the lower extremities is carried out mainly through large tributaries of the vena cava system, then if there are obstacles in them, blood outflow will occur through EVP, which leads to an increase in venous hypertension (2,6)

The deterioration of the condition was provoked by physical exertion - gradually reduced distance, passed by patients without respite; there was weakness in the legs and uncertainty when walking. With the increase in physical efforts, along with an increase in arterial blood flow, increases and venous outflow, and in conditions of impaired blood flow through the main veins, the collateral pathways of circulation through EVP, leading to intra-channel venous hypertension (1). Against this background, there is weakness in the lower extremities, first in the distal departments ("start to cling to the irregularities on the soil"), gradually spreading in a proximal direction and gait acquires the features of sensitive ataxia ("stamping", looks at one's own feet). That is, spastic paraparesis is formed by the ascendant type (4,6).

The next feature in the manifestation of myelopathy of venous origin, is the originality in the change of position of the body. From the horizontal position to the vertical, patients move with great difficulty and in order to begin to move, they resort to various kinds of warm-up exercises - take a deep breath, strain the pectoral musculature and produce rotational movements of the torso around its axis. Such techniques, selected by patients arbitrarily, contribute to improving venous circulation on large tributaries of the hollow vein system and unloading of the spinal canal.

Root pain syndrome in the clinical picture of myelopathy of venous origin in its purest form is rare. But, with the accompanying background in the form of common osteochondrosis, and especially deforming spondylosis, (in our observation their number was 45%) in the intervertebral hole of the concomitant neuro-vascular structures, in such situations, compressed root veins make it difficult to outflow, and in large tributaries of the hollow vein system, inflow is exacerbated by intra-channel venous hypertension in large tributaries of the hollow veins system (5).

Symptoms of spinal cord damage manifested in pyramidal insufficiency with varying degrees of severity, which are often found as, at different kinds, organic lesions of the spinal cord and in spinal diseases. Therefore, in differential diagnosis, it is advisable to be guided by data of paraclinical research methods, and features of clinical manifestations of this disease.

Conclusion, if there are signs of spastic movement disorder and without a clear etiological factor, as well as without convincing data of paraclinical methods of examination, patients should be sent to the study for a violation of venous circulation in the vertebral complex, caused by the defeat of large tributaries of the system of hollow veins.

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**Д.Т. Абдукадилова, У.Т. Абдукадилов, Ш.М. Кобилев**

#### ХАРАКТЕРНЫЕ ЧЕРТЫ ТЕЧЕНИЯ СОСУДИСТОЙ МИЕЛОПАТИИ

**Резюме:** Изучить особенности клинко-неврологического течения миелопатии сосудистого происхождения. В исследование были включены 55 пациента со спастическим пара- или тетрапарезом неясной этиологии, в возрасте от 25 до 72 лет. В плане комплексного обследования были включены: диагностическая люмбальная пункция, ультразвуковое исследование внутренних яремных вен. Всем больным выполнялись МРТ всех отделов позвоночника и спинного и мозга. Вывод: при наличии признаков спастических расстройств движения и без четкого этиологического фактора, а также без убедительных

данных параклинических методов обследования, пациентов следует направить на исследование на предмет нарушения венозного кровообращения в позвоночном комплексе, вызванных поражением крупных притоков системы полых вен.

**Ключевые слова:** сосудистая миелопатия, спастические расстройства движения, ультразвуковое исследование внутренних яремных вен