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DAMAGE TO THE SPINE AND SPINAL CORD AND THEIR TREATMENT

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Relevance of the study. Injuries to the spine and spinal cord are due to the high frequency of damage, the severity of the clinical course and the difficulty of treating this category of patients. In addition, the presence of a higher percentage of disabilities affects the labor force and causes great economic damage to the national economy. (T.E. Ungbaev 1986, A.B. Bolgaev 2000,2010,2023). Relevance of the study. Injuries to the spine and spinal cord are due to the high frequency of damage, the severity of the clinical course and the difficulty of treating this category of patients. In addition, the presence of a higher percentage of disabilities affects the labor force and causes great economic damage to the national economy. (T.E. Ungbaev 1986, A.B. Bolgaev 2000,2010,2023).

Materials and methods. We observed 86 patients with injuries to the lower thoracic and lumbar vertebrae and the spinal cord. Depending on the severity of neurological disorders, we identified complete (in 60 patients), partial (in 20 patients), and segmental-radicular (in 6 patients) dysfunction of the spinal cord. For patients under our supervision, we used ozone therapy as part of a complex of intensive conservative treatments.

The main factor in the complex of treatment measures for patients with complicated fractures of the lower thoracic and lumbar vertebrae is surgical treatment. The surgical treatment methods we performed are divided into two groups:

1. Surgical procedures, which included endolumbar insufflation of oxygen and ozone.

2. Surgical interventions on the spine and spinal cord.

The indication for endolumbar insufflation of oxygen and ozone is one or another degree of disruption of the patency of the subarachnoid space of the spinal cord, as well as in the postoperative period to prevent adhesions and scar processes in the spinal canal and subarachnoid space of the spinal cord. Ozone was obtained according to our method (1977) by adapting an apparatus for endolumbar gas administration. A spark-discharge high-frequency D'Arsonval apparatus is used as an ozonizer, the vacuum electrode of which is enclosed in a glass cylinder. The latter receives oxygen from the reservoir through tubes; under the action of high-frequency spark discharges, the incoming oxygen (O2) is converted into ozone (O3), which is drawn into a syringe through sterile tubes and sent through a triangle with equipped valves into the lumen of the spinal needle located in the spinal canal. The scheme for introducing ozone is shown in pic 1.

The amount of ozone administered is easily determined using a syringe through which the ozone enters the spinal canal. To test the formation of ozone, an iodine-starch strip of filter paper has been proposed, which turns blue at concentrations above 1%. The presence of ozone can be determined by its peculiar odor even without an indicator - litmus. For endolumbar administration of ozone, a lumbar puncture is performed between L3-4 according to the generally accepted technique in a lateral decubitus position. The cerebrospinal fluid pressure is measured, after checking the cerebrospinal fluid dynamic samples, 10-15 ml of cerebrospinal fluid are removed and 20-30 cm3, on average 25 cm3, of ozone is introduced. The patient is placed on his back, while gas fills the anterior chamber of the spinal canal. With fractures of the lumbar vertebrae, the patient's foot end is elevated and ozone mainly accumulates in the caudal part of the spinal canal. Endolumbar insufflation was used in 36 patients with complicated trauma of the lower thoracic and lumbar vertebrae. Most patients experienced complete damage to spinal cord function. The course of ozone treatment consisted of 4-5 sessions of 25 cm3 with an interval of 10 days. Endolumbar ozone insufflation was carried out in combination with other therapeutic measures, especially in the postoperative period for the prevention of adhesive-scarring processes in the spinal canal (rational proposal No. 229 of UzNIITO).

Scheme of endolumbar ozone administration

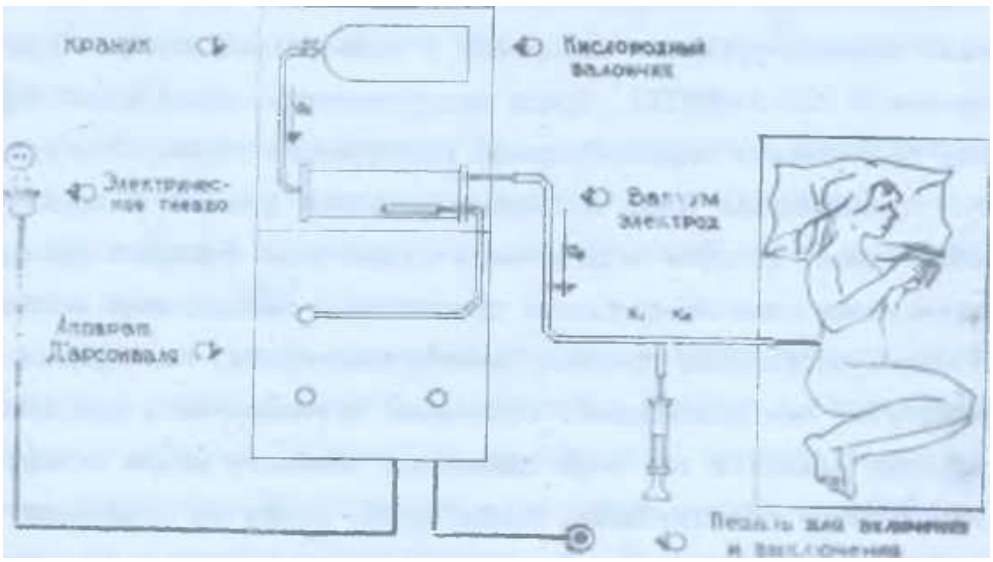

Fig. - 1 Scheme of endolumbar ozone administration.

Among surgical procedures, endolumbar ozone insufflation plays an important role. This is justified by our experimental data and the nature of the disease, which in the late and long-term periods leads to the occurrence of adhesive-scarring processes in the spinal canal. This technique is quite simple, low-traumatic, and, as a rule, carried out without complications. The main indications for surgical treatment are all types of spinal cord compression and impaired spinal stability. In addition, one of the indications in the late period may be severe pain; a relative indication is the presence of severe trophic disorders (bedsores, ulcers) that are difficult to treat. In our observations, the access to the spinal canal and its contents is laminectomy. We performed surgical intervention in 66 out of 86 patients. In 30 out of 86 patients, surgery was performed within the first 24 hours after the injury and admission of the patients. In other cases, patients were admitted in the late period of injury and were operated on after appropriate clinical and diagnostic examinations. The surgical intervention consisted of laminectomy with complete decompression, i.e. reduction of the dislocation and removal of the wedge. Removed, with

careful meningomyeloradiculolysis, followed by fixation of the damaged part of the spine. In the surgical treatment of patients with complicated trauma of the lower thoracic and lumbar vertebrae, we distinguished three methods of surgical treatment:

1. Surgical treatment (laminectomy) without fixation and ozone administration (20 patients).

2. Surgical treatment with complete decompression and fixation of the spine without meningomyeloradiculolysis and ozone administration (patient 20).

3. Surgical intervention with complete decompression of the spinal cord, meningomyeloradiculolysis and spinal fission followed by endolumbar ozone insufflation in the postoperative period (25 patients).

The identification of such individual methods and groups of patients was carried out in order to compare the results of treatment in the immediate and long-term periods. In the process of complex treatment of patients with complicated spinal trauma, the treatment of bedsores and urological complications is of great importance. At the present stage of ideas about traumatic disease of the spinal cord, it should be rightfully recognized that bedsores are a consequence of poor patient care. When necrosis of the skin and underlying tissues developed, we resorted to excision of necrotic masses (to the line of demacration) and applied suction dressings 2-3 times a day. The wound was washed with disinfectant solutions, followed by spraying with an antiseptic complex solution. During the period of wound granulation, especially with large bedsores, ointment dressings were applied; the force of tissue granulation was obtained by applying Kolonchoe ointment. Simultaneously with the granulation force, Kolonchoe ointment promoted epithelization and rapid healing of the wound. In addition to local treatment, patients were prescribed antibiotics; in case of severe intoxication and loss of protein, detoxification treatment with hemodez, rheopolyglucin; aminopeptide and plasma were transfused from protein preparations at a single-group level. As a rule, after injury to the spine and spinal cord, urinary retention occurs. In a distended bladder, blood circulation and trophism are disrupted, which creates favorable conditions for the development of infection. Difficulty in the outflow of urine from the ureters contributes to urine retention in the upper urinary tract and the development of hydronephrosis. Congestion in the kidneys and renal tract and renal pelvis is favorable for the development of an ascending infection, which can result in pyelonephritis, which is the most common cause of death in patients with spinal cord and spinal cord injuries. A permanent stay of the catheter in the urethra is permissible for up to 5 days, subject to periodic (2-3 times a day) rinsing of the bladder with a warm disinfectant solution. When uroinfection developed, broad-spectrum antibiotics and Nevigramon capsules were prescribed, and the patients were mobilized. When using activation, fixation of the spine played an important role, since the danger of secondary displacement of the broken vertebra was eliminated. Thus, the treatment of complicated fractures has shown that surgical treatment should provide complete decompression and fixation of the spine with appropriate manipulations of the spinal cord.

The results of treatment were studied in 66 patients with complicated fractures of the lower thoracic and lumbar vertebrae. We used the following assessment of treatment outcomes for patients with injuries of the spine and spinal cord: 1) good result; 2) significant improvement; 3) improvement; 4) no change.

Of all 66 patients with complicated fractures, the following results were obtained at the time of discharge from the hospital: good result in 14 patients, significant improvement in 35 patients,

improvement in 40, no changes in 27 patients. Consequently, 103 patients (79.3%) had a positive result. The method of surgical treatment used in these patients was different, which makes it possible to compare the effectiveness of one or another method of surgical treatment using the results of surgical treatment. The first group consisted of patients who underwent decompressive laminectomy without fixation and ozone administration during the surgical period; the second group consisted of patients with decompression and fixation of the spine without the introduction of ozone in the postoperative period, and the third group included patients who, in the acute and early periods, used the endolumbar insufflation of ozone developed by us after surgery on the spinal cord and spine. Thus, of the 26 patients who received ozone in the postoperative period, 11 (40.8%) had complete dysfunction of the spinal cord and 13 (48.1%) had partial dysfunction, and the remaining 2 (11.1%) had segmental dysfunction with various fractures of the lower thoracic and lumbar vertebrae. Endolumbar ozone insufflation has proven effective in cases of complete dysfunction of the spinal cord. This is explained by the fact that with complete damage to the spinal cord due to destruction of the medulla and hemorrhage, redox processes in the spinal canal are disrupted. Endolumbar insufflation of ozone, enhancing oxidative processes, helps reduce under-oxidized and toxic decay products, thereby creating favorable conditions for restoring impaired spinal cord functions. It is well known that ozone (O3) is a biologically active unstable gas, quickly freeing itself from active atomic oxygen, it turns into molecular oxygen (O2). This process is accompanied by the release of a certain amount of energy. The released energy enhances oxidative processes in the affected part of the spinal cord. In addition, the release of active atomic oxygen is accompanied by certain discharges, which have a beneficial effect on the state of parabiosis after injury. Finally, as emphasized above, the introduction of ozone, as it were, blows through the subarachnoid space, separates the adhesions that form, improves liquor circulation, and has a beneficial effect on the blood circulation of the affected segment of the spinal cord and spine.

Thus, the results of our observations indicate the feasibility of endolumbar administration of ozone as a therapeutic agent in the complex treatment of patients with complicated fractures of the lower thoracic and lumbar vertebrae.

References:

1. Т.Э.Унгбаев. Переломы позвоночника и их лечение. В книге; Материалы Республиканской конференции Ташкент 1986 год.
2. Болгаев.А.Б Автореферат докторской диссертации Киев (1990 год, 40 стр).
3. Болгаев.А.Б Лечение осложненных переломов позвоночника. Материалы международный конференции. Туркестан 2010 год.
4. Болгаев.А.Б. Фазность клинического течения и лечения повреждений позвоночника 2023 год