

Neurosurgical therapy of the Chiari type I malformation with syringomyelia

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Chiari malformation is in general a congenital condition characterized by an anatomic defect of the base of the skull, in which the cerebellum and brain stem herniate through the foramen magnum into the cervical spinal canal. The onset of Chiari malformation symptoms usually occurs in the second or third decade (age 25-45). The diagnosis of Chiari type I in patients with or without symptoms is established with neuroimaging techniques. The most effective therapy is surgical decompression of the foramen magnum, however there is non-surgical therapy to relieve neurophatic pain: pharmacological and non-pharmacological.

The aim of the study was to present neurosurgical methods for the treatment of the Chiari type I malformation with syringomyelia, postoperative improvement in symptoms and the most common postoperative complications.

The retrospective analysis of surgical protocols of the University Clinical Center Tuzla included the operational procedures of patients with Chiari type I malformation. The analysis includes the age and sex of patients, pre and post-operative representation of the symptoms associated with the disease and the occurrence of postoperative complications.

We analyzed 13 patients, eight men and five women. The youngest patient was 28 years, and the oldest was 59, the average age was 41 years. We analyzed the postoperative improvement of the most common symptoms such as headaches, neck pain, balance disorder, motor weakness, numbness, arm weakness, fine movement disorder, muscle atrophy, loss of reflexes. The highest postoperative improvement in symptoms was found in the decrease of the balance disorder (84%), motor weakness (80%) and the fine movement disorders (75%). The lowest symptoms improvements were headaches (28%) and neck pain (34%). The lowest level that cerebellar tonsils lied below the level of the foramen magnum was 7 mm, and the highest 4 mm (averaging at 5.6 mm). 11 operation were done with duroplasty and two without. Artificial dura was used in 8 cases, and the fascia lata in 3 cases. The most common postoperative complication were cerebrospinal (CSF) fluid leaks that occurred in 5 patients. The CSF leaks spontaneously stopped in two patients, and three patients required continuous CSF drainage. Our research showed the postoperative improvement of the most common symptoms such as headaches, neck pain, balance disorder, motor weakness, numbness, arm weakness, fine motor disorder, muscle atrophy, loss of reflexes. The highest postoperative symptom improvements were reduced motor weakness, balance disorder and fine motor disorder. This coincides with other studies that show a postoperative relief of symptoms in 83% of patients.

Keywords: Chiari type I malformation, syringomyelia

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