SURGICAL CORRECTION OF THE SCOLIOSIS COMPlicated BY THE MYELOSYRINGOSIS (CASE FROM THE PRACTICE)

The paper suggests a case of radical correction scoliosis complicated with syringomyelia. They were expounded stages operative treatment of spine without using neurosurgical methods of CNS decompression. The study concludes that at absence of pronounced disturbances of the motor sphere in the initial neurologic status of the patients, and in the absence of stable deterioration in the neurologic status under carrying out of traction tests, realization of surgical scoliosis correction becomes possible without carrying out neurosurgical decompression operations.

**Keywords**: Surgical correction, scoliosis, myelosyringosis, complications.

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**Introduction**

Quite often scoliotic disease complicated by myelosyringosis is considered as a scoliosis caused by neurologic deficiency at a myelosyringosis (Zadeh et al., 1995; Arai et al., 1993). In this connection the accent under selection of treatment tactics, not always reasonably, may be shifted in favor of the neurosurgical interventions directed on decompression of Central Nervous System, moving necessity of surgical correction of spine deformation to the second plan (Arai et al., 1993).

**Material and methods**

For the period from 2001 to 2010 under observation of the authors there were 284 patients with scoliotic disease whose angle of the basic arch of tortuosity by Cobb’s method exceeded 40°. Observation term was 6.8 years (1 - 9 years). Middle age in the 14.9 year group (5 - 26 years), middle age of primary revealing of rachiocampsis is 8.4 years (3-12 years), Risser’s sign is 3.9 (0-5). At all patients deformation was accompanied by structural changes of vertebra (cuneiform deformation of bodies, changes of joints, torsion of vertebra), disks (tapering of disk spaces) and thorax (rotation of ribs, costal humpback) characteristic for scoliotic disease. The average angle of a scoliotic component of deformation in a group was 106.2° (41°-180°), number of vertebra in an arch of tortuosity was 7.8. At six (2.4%) patients with deformation localization in thoracal and thoracal lumbar parts of spine the myelosyringosis was revealed which has been confirmed by NMR imaging examination. Middle age of myelosyringosis revealing is 15.6 years (13 - 16 years) at one male patient and at five female.

At five patients appreciable disturbances of motor sphere which showed in insufficiency of a muscle strength to keep balance, contractures of the large joints, expressed muscular atrophies are revealed. At performance of traction tests at six patients deterioration of the neurologic status of coming character was revealed. The subsequent regular excises with extension and medicamental therapy to be carried out during a year have not given essential changes at five patients. Only at one case the regular excises and carried out therapy within 1.5 years led to that repeated traction testing has not revealed any deterioration in the neurologic status.

In this connection five patients with the expressed disturbances in the motor sphere, continuing (despite long complex therapy) to show deterioration in the neurologic status at carrying out of repeated traction testing, had been referred to the neurosurgeon to solve
an issue on further tactics of treatment. One patient (0.4%) was operated with application of stage by stage method of segmentary reconstruction and correction of scoliotic deformation of spine on clinical base of the Tashkent Pediatric Medical Institute (Uzbekistan).

**Practical case**


The rachiocampsis was noticed by parents at the age of 13 for the first time. Despite conservative therapy the deformation progressed. At the age of 7 neurologic disturbances (left sided hemiparesis) were revealed. At examination she showed complaints to spine and thorax deformation, pains in back and feet, contracture in small joints of hands and night enuresis. Thoracal scoliotic deformation of a spine 67º by Cobb (1947) with the expressed structural changes of vertebra and thorax, characteristic for scoliotic illness was detected. At neurologic examination it was noted: instability in Romberg’s posture, inaccuracy at performance of locomotor tests, smoothness nasolabial fold at the left, tongue deviation to the right, hypertonus of muscles of extremities, tendinous hyperreflexia. Depression of superficial sensitivity by type “jacket, gloves, socks” at safety of penetrating sensitivity. Absence of abdominal reflexes, stop clonuses on the right, positive “tension” symptom, pathological Babinski’s reflex from two sides.

At performance of specific traction tests (free hanging-up in unsupported position) high tolerance to traction impact (from the first day of tests the patient could be in free hanging up position more than 5 minutes) was identified. At performance of traction tests there was not detected any deterioration in neurologic status of the patient. NMR imaging examination of cervical and thoracal regions of a spine has confirmed presence of Arnold-Chiari’s anomaly type I with similar characteristic signs of scoliotic disease and myelosyringosis (Figure 1).


In order to realize surgical correction of spine deformation the patient was hospitalized in plastic surgery unit of Tashkent Pediatric Medical Institute. Considering presence of the subcompensated scoliotic spine deformation exceeding 40º, stable syringomyelic process throughout 1.5 years of observation, and absence of deterioration in the neurologic status at performance of a series of primary traction tests, the correction of scoliotic spine deformation patient was indicated to the patient.
The purpose of surgical treatment is radical (more than 60% of initial size of a scoliotic arch) correction of tortuosity and spine stabilization; rising of functional reserves of respiratory system; elimination of implications of a functional spine inefficiency and outer defect of proportions of a body at the expense of increase of a trunk length, change of the thorax form; attaining of a trunk balance over sacrum.

The first stage: (24.10.2002) Mobilizing discectomy and interbody spondylosyndesis by bone autografts at 6 levels (Th5-6 - Th11-12). No changes were revealed in the postoperative period in the neurologic status of the patient. The second stage: (11.11.2002) Single-step correction of spine deformation with installation of design on the concave side with placement of the top “sublaminar” hooks for semi-handle Th1, 2, 3, inferior “supralaminar” for semihandle Th12, L1 vertebra. Sublaminar hooks of cross traction (Th 6, 9, 11) are positioned from the convex side of deformation. Back spondylosyndesis (Th4-L1) is made using bone autografts out of resected ribs on both sides of tortuosity arch.

On control roentgenograms there is residual scoliosis angle of 17º (74% of correction) of initial value of deformation with conservation of physiological spinal curvatures in sagittal plane. In a month after operation positive dynamics was recorded, namely: night enuresis regression, Babinsky’s pathological symptom regression at the left, reduction of extremities hypertonus and restoration of abdominal reflexes. Subsequent observation during seven years (2002-2009) has detected that the attained correction of scoliotic rachiocampsis is conserved (17º). During observation no new pathological implications in the neurologic status of the patient were revealed. However, in two years after end of surgical treatment the night enuresis recommenced again.

**Study results**

It is known that scoliosis as the symptom, can be detected in population of children and teenagers in 30-50% of cases (Özerdemoglu et al., 2003; Williams, 1979; Dzhalilov, 2005). Whereas, the development of the scoliotic diseases, characterized by rapid progression of deformation in the period of natural growth and specific structural changes of vertebra included into an arch, is proved by orthopedists only in 0.1-0.05% of cases (Inf. Letter of NIITO, MPH Uz 2005). The myelosyringosis occurs much less, about one case for 10 000 newborns (Badaljan, 2001). However, in population of patients with a scoliotic rachiocampsis in 20º and more, 4% of cases (Curr et al., 1988) falls on a myelosyringosis. The data received by authors are close to these indexes (2.4%). However, investigated group of 284 patients was characterized by presence of tortuosity exceeding 40º with average angle of scoliosis in the group presented by Cobb’s 106.2º.

According to Arai et al. (1993) neurosurgical decompression tactically is considered the most justified as it allows to avoid possible aggravation of neurologic deficiency in the course of surgical correction of scoliotic spine deformation by orthopedists. In some cases, it allows to detain temporarily scoliosis development (Zadeh et al., 1995). However, at selection of surgical treatment tactics the authors relying on results of own studies have considered safe, necessary and sufficient to perform the radical (more 60% of initial scoliosis size) surgical correction of spine deformation without application of neurosurgical methods of CNS decompression at one patient (0.4%). Thus, at absence of expressed disturbances of motor sphere in the initial neurologic status of the patients, and in the absence of stable deterioration in the neurologic status under carrying out of traction tests, the realization of surgical scoliosis correction is possible without carrying out neurosurgical decompression operations.

It should note that the presented observation in full cannot be regarded unequivocally, in connection with the short period of observation (7 years) and small number of cases. However, ascertained facts specify necessity to continue similar studies and accumulate new scientific knowledge for the purpose of a substantiation of the differentiated approach to tactics of surgical treatment of this combined pathology.
PHOTO AND SPONDYLOGRAM BEFORE OPERATION OF 1987 OF THE PATIENT T.D.
No. of case history 2128/398 (2002)

(a) Frontal view
(b) Back view
(c) Spondylogram in full-face projection

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References


