

## The Results of Clinical Examination of Children About One Year With Spinal Hernia

**GALIMZHAN MAMIRBEKOVICH YELIKBAYEV and AIGERIM AITBAYEVNA TUTAYEVA**

Department of Surgical diseases, International Kazakh-Turkish University K..A.Yassawi, 161200 Turkestan, Kazakhstan, International Kazakh-Turkish University K..A.Yassawi, B. Sattarkhanov 29.

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### ABSTRACT

To study the main clinical symptom of spinal hernias with different variants of their location, shapes and combination of defects. Examination of 30 children with spinal hernias treated at the Department of Neurosurgery of the regional children's hospital in Shymkent for 2013 - 2015. The age of patients ranged from 1 day to 1 year. The age of patients ranged from 1 day to 1 year. Of these, 12 were boys, girls - 18. Children from birth to 1 month amounted to - 17 (56.6%), from 1 month to 3 months - 8 (26.6%) from 3 months to 6 months - 3 (10.0%), from 6 months to 1 year - 2 (6.7%). Among patients with spinal hernias accounted for most of the children with myelomeningocele (63.3%). A number of children with spinal hernia on the periphery of herniation within healthy skin and pilosity observed vascular pattern (50%). Children under 1 year with spinal hernias observed neurological changes of the lower extremities (paraparesis - 63.3%, paraplegia - 16.6%), pelvic disorders (70.5%) and the combination with other anomalies and malformations (hydrocephalus - 93.3%, bilateral clubfoot - 30.0%, congenital dislocation of the hip joint -13.3%, exotropia - 10,0%).

**Key words:** Spinal hernias, malformations, Children, Myelodysplasia, Congenital anomalies.

### INTRODUCTION

Spinal hernia is one of the difficult and poorly understood malformations of the central nervous system. The problem of diagnosis and surgical treatment of spinal hernias attracts the attention of pediatric surgeons, neurosurgeons, urologists, orthopedists, neurologists and other doctors, but far from being solved [1, 2].

The relatively high detection rate of spinal hernia, clinical severity and poor treatment outcomes of a number of its forms make the problem of diagnosis and treatment to date and today [3, 4]. Polymorphism defeats as different strain, most often, spine, and failure of segmental conductor unit of the spinal cord, motor, sensory, autonomic nerve roots of the spinal determine the clinical manifestations of the disease. The combination of various malformations are making significant

changes in the course of disease and transform the clinical manifestations of spinal hernias, but the origin of these combined, their clinical value requires further studies [5, 6].

**Objective:** to study the main clinical symptom of spinal hernias with different variants of their location, shapes and combination of defects.

### MATERIALS AND METHODS

The work is based on the results of clinical examination of 30 children with spinal hernias treated at the Department of Neurosurgery of the regional children's hospital in Shymkent for 2013 - 2015. The age of patients ranged from 1 day to 1 year. Of these, 12 were boys, girls - 18. Children from birth to 1 month amounted to - 17 (56.6%), from 1 month to 3 months - 8 (26.6%) from 3 months to 6 months - 3 (10.0%), from 6 months to 1 year - 2

(6.7%). Among patients with spinal hernias accounted for most of the children with myelomeningocele (63.3%). Patients with meningocele was 4 (13.3%), with meningoradiculocele 3 (10.0%), with myeloschisis - 3 (10.0%), and a child with a terminal myelocystocele (3.4%).

By clinical and radiographic contrast studies were isolated and studied mainly meningocele, myelomeningocele and meningoradiculocele. It is these forms of great interest and are more promising in terms of postoperative recovery and rehabilitation. [7]

#### **Methods of examination**

In children with congenital spinal hernias conducted physical and neurological examination, intraskopic diagnostic methods. Pluricausal, exceptional complexity of the pathogenesis and clinical severity of malformations put forward specific requirements for diagnostic procedures [8, 9].

Clinical examination in children with spinal hernias include: identification of complaints, anamnesis, external examination of the patient's neurological examination data, evaluation results of the study of the musculoskeletal system, urinary system. For diagnosis it was necessary to collect a good history. Inspection of local changes, largely determined by the degree of urgency of the operation, the need for toilets, disinfection and surface treatment of a hernia. The facial expression, body position and the nature of the Movement is in itself important diagnostic indication. Skin pigmentation, hypertrichosis, nevi indicated meningocele or the presence of other malformations. A very important point is the correct assessment of the size of the head and its growth rate, as well as the state of physiological development.

Neurological examination in children differ from adults in connection with the anatomical and physiological characteristics of the growing organism. Direct study of the nervous system evolved from the study of reflex activity, cranial nerves, motor activity, sensitivity. Neurological examination of the child was preceded by a general

examination and the study of its physical development. Identify disparities parts of the body, changes in the size and shape of the skull, the detection of congenital anomalies indicative of current or adjoined disease of the nervous system.

A study of the musculoskeletal system consisted of the evaluation of motor deficit, identify deformities of the spine, extremities, clinical factors contractures and deformities.

#### **Instrumental methods of research**

The practice of child neurocasualty department implemented different methods of beam diagnostics of a pathology of the spine and spinal cord: ultra sound, spondylography, computed tomography, magnetic resonance imaging.

### **RESULTS**

Visually spinal hernia represented tumor protrusion, round or oval in shape, and dorsal midline. Hernias often have a wide base and a leg, so that they hung down and were as if suspended.

A number of children with spinal hernia on the periphery of herniation within healthy skin and pilosity observed vascular pattern (50%). Skin markers are present at open neural tube defects [10]. Half of patients with spina bifida occulta found some form of the dermal embryopathy [11]. These symptoms are often the key to recognizing the spinal dysraphie. In this connection it is necessary to exercise great caution when examining a child who discovered lipomas, skin stigma dermal sinus, hemangioma at the average line, hypertrichosis and asymmetric folds of the buttocks [12, 13].

With the growth of the child's size increased herniation. And some children slowly (6), others more rapidly (24). Rapidly growing hernia is usually stretched and combined with hydrocephalus (93.3%).

Dimensions herniation were very different. Large size is achieved spinal herniation of the lumbar spine (36.6%). Consistency protrusions dependent on the contents of the hernial sac and preceding inflammatory processes which remained after scarring wall hernia (20%). As a result of the

presence of the bone defect of the rear wall of the spinal canal under the influence of high pressure cerebrospinal fluid in the subarachnoid space to the spinal cord and membranes protrude roots, forming a mass lesion partially or completely covered with leather.

Skin herniation in 93.3% of cases were as thin as tissue paper, and had a tendency to break. Sometimes there is a maceration of the skin due to constant rubbing of clothing, joined inflammatory changes (26.6%). Especially difficult the infected spinal hernia lumbar, lumbosacral, and sacral localization. The lower localized hernia, the more happening inflammation of the skin, their maceration and create more conditions to break the hernia sac with subsequent formation of cerebrospinal fluid fistula.

Movement disorders ranged from flaccid paralysis to subtle disturbances. With involvement of the spinal cord and its roots in the hernial sac arose paraplegic. The basis of neurological disorders were the disorder mechanisms innervation of the lower extremities and was seen by us as a result of gross underdevelopment of the spinal cord (myelodysplasia). But not completely clear mechanisms responsible for progressive neurological disorders in patients with spinal hernias [14, 15]. In our study, lower flaccid paraparesis occurred in 63.3% of cases, and paraplegia occurred in 16.6% of cases.

## DISCUSSION

More than 70% of patients with myelomeningocele arose combined incontinence. Violations of urodynamics of the lower urinary tract, which arose at an early age, contribute to the development ureterohydronephrosis, vesicoureteral reflux, and often are the cause of severe kidney damage (renal disease, reflux nephropathy, etc..) Later in life. [7] Obstructive uropathy (vesicoureteral reflux, hydroureteronephrosis, pyelectasia) are observed in 30-50% of patients with spinal hernias [16, 17].

We have observed a combination of functional disorders of the spinal cord with other anomalies and malformations. Identified exotropia

(3), bilateral clubfoot (9), congenital dislocation of the hip joint (4). Neuro-orthopedic syndromes manifest bone deformities and muscle atrophy in the lower limbs, unsteady gait, pain in the limbs and scoliosis [18, 19]. The anomalies of the spine occur in patients with spinal hernias include: spina bifida, sacred aplasia, segmentation violation and can be detected in 75% - 95% of children [20, 21, 22].

Spinal hernia, especially in children under one year, is often associated with disorders of the flow of cerebrospinal fluid, which result in hydrocephalus (93.3%). Postoperatively, these patients in 60% of cases, there is an increase hydrocephalic syndrome, cerebrospinal fluid fistula occurred, liquorrhea discrepancy cranial sutures with the accession of inflammatory complications. The success of the combination treatment of spinal hernias with hydrocephalus is largely dependent on the nature of the anatomical and functional disorders, and early diagnosis of shunting operations.

Hydrocephalus is one of the constituent elements of the classic symptom complex congenital spinal hernias (dysfunction of the lower extremities, pelvic disorders, orthopedic manifestations). Hydrocephalus occurs mainly in open forms dysraphie (spina bifida aperta) and before the introduction of shunting operations are the leading cause of death and poor intellectual development of children [23]. Surgical correction (shunting operations) require 80-95% of patients with spina bifida aperta [24, 25]. According Tulipan N. et al. (2003), the frequency shunting operations within a year of life of these patients is 93% of the patients [26].

We have conducted 18 operations for progressive hydrocephalus after excision of spinal hernias. Our research has shown that babies with severe and progressive hydrocephalus require emergency surgery, while moderately expressed and not expressed ventriñulodilatation signs of increased intracranial pressure allow intervention to delay or even postpone it. When the primary bypass surgery efficiency was quite low (30%), which is consistent with the world literature [27]. This is due mainly to the peculiarities of the

anatomical structure of III ventricle at meningomyelocele - ventricle less it extended its bottom denser and elastic. Therefore, urgent interventions we did not use tactics of simultaneous or prior shunting operations. On the one hand, sought to minimize the duration of the operation, and on the other side - there was no expressed intracranial hypertension in the presence of cerebrospinal fluid.

Postpartum hydrocephalus stated approximately 15-25% of cases of children with meningomyelocele [28, 23]. Therefore, congenital hydrocephalus congenital spinal hernias often not diagnosed. Most hydrocephalus developed after the "closing" of the spinal defect. The need for shunting interventions occurred in 10 of 15 infants (75%) operated on urgent indications, operations were carried out in 1-3 months after the initial intervention.

According to the literature of shunt dysfunction occurs in 51-86% of children with myelomeningocele who underwent shunt surgery for hydrocephalus. Most complications develop during the first year after bypass surgery [29, 30]. According to our data of 18 operated in 8 cases was the dysfunction of the shunt system, and all the cases developed within the first year after bypass surgery.

## CONCLUSIONS

1. The clinical picture of the disease in children with spinal hernia depends on the location, and the progression of the depth of the lesion of the spinal cord and roots, the presence and severity of associated malformations, the child's age.
2. Children under 1 year with spinal hernias observed neurological changes of the lower extremities (paraparesis - 63.3%, paraplegia - 16.6%), pelvic disorders (70.5%) and the combination with other anomalies and malformations (hydrocephalus - 93.3%, bilateral clubfoot - 30.0%, congenital dislocation of the hip joint -13.3%, exotropia - 10,0%).
3. Disability of patients with spinal hernia is mainly determined by the degree of involvement in the pathological process of the spinal cord and its roots (myelomeningocele - 63.3%).
4. Hydrocephalus is a common and life-threatening brain injury combined with the congenital malformations of the central nervous system.
5. Better results of treatment of hydrocephalus was the determining factor in long-term positive results of treatment of spinal hernias in children.

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