METHODOLOGICAL-PRACTICAL LANDMARKS IN PEDIATRIC SCOLIOSIS ACQUIRED DUE TO THE INEQUALITY OF THE LOWER LIMBS

Mihai Constantinescu
Stefan cel Mare University of Suceava, Romania

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Abstract: This study aims to present some elements of pediatric anatomy-physiology and semiology with reference to the period of growth and development on body posture disorder due to the installation of functional physical deficiencies of the spine. But the cause of this deficit is known, namely the inequality of the lower limbs. In this sense, the management and start of a program for the preservation of postural function can be applied as early as possible with high chances of success.

Introduction: In order to understand the mechanisms of installation and development of postural deficit, namely scoliosis, which we include in the branch of functional physical deficiencies of the spine, we will go through some elements of spine biomechanics and notions of etiopathogenesis of scoliosis, all reported depending on body posture.

The spine represents the central axis of support of the upper half of the body and is limited in the lower part of the pelvic-trochanteric belt and in the upper part of the scapulo-humeral belt.

One of the roles of the spine is to maintain the verticality of the body, but this depends on the functional state of the adjacent muscles, joint and ligament structures that are directly related to it. It protects the spinal cord in the spinal canal against mechanical trauma and provides support for the whole body. [1, 10, p.15, 7].

The vertebral column in the frontal plane is rectilinear, and in the sagittal plane it presents a series of physiological curves, which alternate, compensating each other: determined by the position of the head (corresponds to the neck region); - thoracic kyphosis, consisting of 12 vertebrae, has posteriorly oriented convexity, maximum curvature at the vertebrae D6, D7 and achieves an angle with a value of 30 °; is determined by the position of the head and scapular girdle (corresponds to the rib cage); - lumbar lordosis, made up of 5 vertebrae, has the convexity oriented again previously, the maximum curvature is oriented at the level of the vertebra L4, L5; is determined by the position of the

pelvis and abdomen (corresponds to the abdominal region); Short sacro-coccygeal kyphotic curvature, fixed with posteriorly oriented convexity.
[4, p.188]

These physiological curves in the sagittal plane increase the mechanical strength of the spine, which is proportional to the square of the curves +1, so 4_2 +1 = 17, so the column is 17 times stronger than if it were rectilinear. [4, p.188, 5, p.21-22, 11].

Scoliosis, unlike deviations in the sagittal plane, whose highlighting is more difficult, the deviations of the spine in the frontal plane, are easily observed, the normal spine not having physiological curves in this plane. In the frontal plane are described forms of deviations of the spine with one, two or more curves, structural and non-structural deviations, with or without vertebral rotations, with or without neighboring thoracic deformities. From this category of deviations of the spine includes scoliosis and kypho-scoliosis. [6, 9, p. 201].

Scoliosis simply indicates a lateral deviation of the spine in the frontal plane. Therefore, the scoliosis can be confirmed when examining the human body in a sitting position (orthostatism) with the weight evenly distributed on both legs, it is found, looking back, the lateral curvature of the line formed by the spinous processes of the vertebrae. In the help of the above we will specify some aspects regarding the installation and naming of scoliosis with reference to the anatomical topography and the developed form, namely:

- The name of scoliosis is given by the convexity of the curvature, namely if the convexity is on the left;
- The curves can be in C or in S;
- It can be cervical, thoracic, lomabar or combinations, cervico-thoracic, thoraco-lumbar;
- The curvature with the higher angulation is the primary one and the curvature with the lower angulation is the one that compensates.

Among the etiological factors incriminated by Birtolon Ş.A. (1978), in the appearance and development of spinal deviations are highlighted: congenital malformations of the vertebrae and ribs, rickets acting in early childhood, infectious diseases such as polio, tuberculosis of the vertebral bodies, rheumatic, traumatic, sequelae of thoracic surgery. Inequality of the lower limbs is included as an etiological factor in acquired categories, meaning the scoliosis that has a known cause.

Scoliosis in which the etiopathogenesis has not been identified is called idiopathic scoliosis and represents the majority of deficiencies found in the spine.

In addition to the enumerated causal factors, in the prepubertal period we also have the favoring factors that maintain or aggravate static disorders (nutritional, metabolic disorders). [2, p.27, 3].

Functional deficiencies, also called deviations, postures or deficient attitudes, are disorders of the support and movement function of the body, physical deficiency is an advanced stage in the evolution of deviations from normal, due to the permanence of vicious attitudes (this is corrected, but not hipercorectează).

Regarding the rhythm of growth and development of children in the prepubertal period, it is characterized by a rapid increase in height, without a corresponding increase in weight, which can lead to evidence of disruption of physiological relationships of proportionality.

The dynamics of growth and development during this period, namely the prepubertal one, comes with a complex of specific changes, which are not always controlled, favoring the installation of different postural physical deficiencies.

Also, in this context, one of the general laws of growth quoted by NN Trifan 1982, presents the following aspect "The law of puberty: before puberty the length of the body increases mainly at the expense of the lower limbs and then at the expense of the trunk" that of bone thickening. Before puberty the bones develop more than the muscle mass. [8, p.140]

Aim and objectives of the study:

The aim of the paper is to present some aspects of how the misalignment of the pelvic girdle, due to the inequality of the lower limbs, determines the installation of scoliosis in children during growth and development.

The objectives of the research:

- the analysis of the specialized literature regarding the disturbance of the body posture in children during the period of growth and development;
- scoliosis identification of specifically kinetic means for limiting the factors underlying the change in body posture caused by inequality of the lower limbs, namely scoliosis.

Material and method: In this case we will present a scoliosis in the left thoraco-lumbar C, which is among the most common scoliosis

installed in children. The 15-year-old patient presented for study has a rather laborious history, due to the fact that at the age of 2 she suffered a craniocerebral trauma following a car accident, as a result of which she was left with severe neuro-motor sequelae among which and spasticity.

However, the element that is relevant in the study presented is the inequality of the lower limbs and the imbalance developed in the pelvic-trochanteric belt that favored the installation of scoliosis. In order to perform the somatoscopic examination that presents all the specified misalignments, we will also present the imaging investigation performed in this regard.

fig.1 rgf. Pelvic **fig.2 rgf. scoliosis**

At the somatoscopic examination performed, imbalances can be observed both at the scapulohumeral belt, respectively the biacromial line, the line of the shoulder blades, but also at the pelvic belt, respectively the bicretic line, the bitronhaterian line. Also, in the context of the somatoscopic examination, the hypotrophy of the upper and lower limb on the right side is observed. The functional examination shows a limitation of the range of motion of the joints on the affected side, low muscle tone, all due to spasticity associated with inequality of the upper and lower limb segments. Changes in the sacroiliac and coxofemoral joints which determines the dynamics. disturbances of the proprioceptive capacity, in statics and dynamics.

The objectives of the recovery program are oriented on the direction:

- maintaining the trophicity of the anatomical structures in conflict;
- reducing the spasticity of the involved segments;

- increase joint mobility;
- corrective postures in order to limit the installed scoliotic deficiency;
- develop proprioceptive abilities in statics and dynamics;

Methods and means of work approached:

- spasticity inhibition exercises performed in supine position: mobilization of the FNP, Kabat, Bobath type;
- exercises for the development of lying joint mobility on the trellis with objects for facilitation;
- corrective postures in dorsal and ventral decubitus to maintain / correct scoliotic curvature;
- exercises for the development of muscle tone / strength;
- exercises for re-education of body posture in static and dynamic, gait recovery.

Results and discussions: The recovery program was performed for a longer period of time (permanently) three times a week, during which time the patient received specialized medical care, neuro and pediatric orthopedics. Regarding the reduction of the inequality of the lower limbs was achieved by orthopedic footwear, spasticity cannot be completely reduced. Regarding the angulation of scoliosis, it is kept within the specific limits of physical therapy 0 ° -30 °, it was not necessary to apply the corset, which could have been a factor in increasing spasticity. The proprioceptive capacities had a slow growth which was slowed by the patient's growth rate due to the fact that the dynamics of growth and development in this prepubertal period is more accelerated.

Conclusions:

- the kinetic program was necessary to be established to maintain trophicity and somato-functional parameters as well as to prevent the deconditioning of the musculoskeletal system;
- somatic changes of the limbs related to the right hemibody and pelvic imbalances, changes in the content of the sacroiliac and coxo-femoral joints determine the installation of scoliosis;
- the prognosis is a reserved one because the post-traumatic sequelae are already structured, spasticity being an element that cannot be managed properly;
- scoliosis is stabilized due to the fact that it is not evolutionary and the period of growth and development is almost over;

- the program can be maintained for a longer period of time due to the fact that it can contribute to maintaining the somato-functional status at physiological parameters.

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