

STUDY ON THE APPROACH TO SCOLIOSIS IN CHILDREN OF AGE PREPUBERTY

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Keywords: scoliosis, ethiopathology, spine, children, prophylaxis.

Abstract This paper aims to present some of the usual aspects that accompany the processes of installation and development of scoliotic attitudes in prepubertal children. The aspects presented are known and are not new, however the approach to postural deficits at this age is superficial in terms of investigations/assessments. Often discovered too late, many spinal deviations are progressive and difficult to manage. For these reasons, we believe that this paper can raise the attention of specialists and not only a wake-up call to combat these postural deficits that may start in prepubertal age.

Introduction

Spinal static disorders are a health problem for children in general, with long-term consequences. In the context of the increasing number of new cases of this condition, health programmes should be introduced and it is also useful to carry out screening to identify vertebral statics disorders in prepubertal age. The spinal column, allowing flexion, extension, lateral tilt, rotation and curvature. Protects the spinal cord in the spinal canal against mechanical trauma and provides support for the whole body. One of the roles of the spine is to maintain the verticality of the body, but this is dependent on the functional state of the adjacent musculature, joint and ligament structures that are in direct relation to it. Spine - ontogenesis: development of the spinal curves, with two types of curves in the sagittal plane and in the frontal plane. In the sagittal plane - forward convex lordotic and backward convex kyphosis. During intrauterine life, the spinal column shows a single backward convexity curve, cervical lordosis occurs in months 3-5 (infant head elevation), lumbar lordosis occurs around 2 years of age due to orthostatic positioning and walking.(so sagittal plane curvatures are acquired postnatally). Frontally, less pronounced, left convex cervical, right thoracic, left lumbar curvature. Thoracic curvature is primary due to traction of right upper limb muscles, other curvatures are compensatory in order to establish body balance. [5]

The term scoliosis simply indicates a lateral deviation of the spine. Scoliosis can therefore be confirmed when, on examining the human body in the sitting position (orthostatic) with the weight equally distributed on both legs, one sees, looking from behind, the lateral curvature of the line formed by the spinous processes of the vertebrae. From the wide variety of clinical and radiological forms of scoliosis, there are two main categories: non-structural scoliosis and structural scoliosis, which indicate the course of treatment. Scolioses, whose aetiology cannot

be specified, are defined as idiopathic scoliosis, while progressive scoliosis is called scoliotic disease. Non-structural scoliosis: is largely reducible (correctable), especially when discovered early, when the static component can be remedied and when there is conscious, active participation of the person concerned. [8]

The prevalence of adolescent idiopathic scoliosis (AIS) is increasing, partly due to lack of physical activity. [3]

Structural scoliosis: presents with vertebral deformities of varying degrees, leading to more or less pronounced vertebral rotations and various deformities of the torso. They may sometimes be accompanied by disorders of the intervertebral joints and discs (osteoarthritis, disc disease), disorders of muscle tone and trophicity (contractures, retractions), and nerve damage due to tension or compression. Scoliosis, like other spinal deviations, can be classified into hereditary, congenital and acquired scoliosis.

Acquired scoliosis: osteogenic, arthrogenic, myogenic, neurogenic (spastic paralysis), static due to length differences of the lower limbs, pelvic asymmetries or large functional and weight differences of the upper limbs, as in paralysis and especially in amputations, post-traumatic, habitual positions, idiopathic (with unknown cause). In conclusion, we can list the risk factors that can lead to postural deficits in the spine: congenital, hereditary, habitual, endocrinometabolic disorders, acquired pathologies, overuse. [5]

Etiopathogenesis, Dr. Dragan I (1981), reports that spinal deviations occur and evolve at all ages, but the most numerous are observed in the period of growth, namely the prepubertal period. According to sex, kyphosis was found to be more common in boys and lordosis more common in girls. Causes, predisposing (morphological type, sex, immaturity); favouring (living and working conditions, hearing and sight defects, chronic diseases, surgery); determining (congenital malformations, trauma, diseases) [2].

Birtolon S.A. (1978), highlights: congenital malformations of the vertebrae and ribs, rickets acting in early childhood, infectious diseases such as poliomyelitis, tuberculosis of the vertebral bodies, rheumatic, traumatic causes, sequelae of thoracic surgery. In addition to the causal factors listed above, in the prepubertal period we also have the favouring factors that maintain or aggravate static disorders (nutritional and metabolic disorders) [1].

Dr. Corneliu Zaharia The musculo-ligamentous theory considers as the main causes of spinal imbalance the nervous dystonia of vegetative-endocrine origin, as well as sacral tilting caused by hypotonia of the vertebral muscles and hyperlaxity of the capsulo-ligamentous apparatus, caused by endocrine changes occurring during puberty (hyperfolliculinemia). Osteopathic theory discusses the involvement of several factors related to the architecture of the spine: growth disorders of the vertebrae; vertebral microtrauma; exaggeration of physiological curvatures for various reasons; general inflammatory conditions. [9]

As a mandatory investigation, postural analysis, identification of possible malalignments and asymmetries of the physiological axes in the sagittal and frontal plane (o.o., biacromial, bispinal, biceps, bitrochanteric, biepicondylar femoral, bimalleolar axes). Somatoscopy is a subjective method of investigation, so its results must be supplemented and confirmed by functional tests, anthropometric measurements and, last but not least, imaging investigations. [6,7]

To confirm and complete the clinical picture of the postural deficit, the following forms of investigation, performed by the specialist, are also used.

- Cobb angle determination (Stagnara criteria);
- Determination of vertebral rotation (Nash and Moe technique),
- Assessment of bone maturity (Risser test).

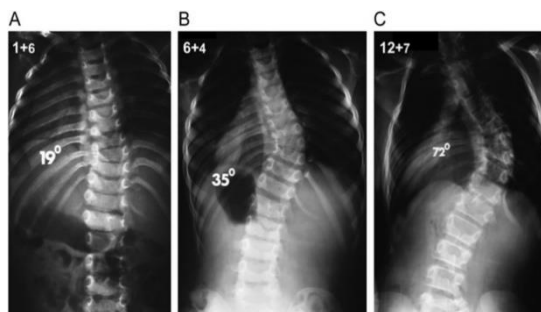


Fig.no.1 X-ray of the spinal column [10]

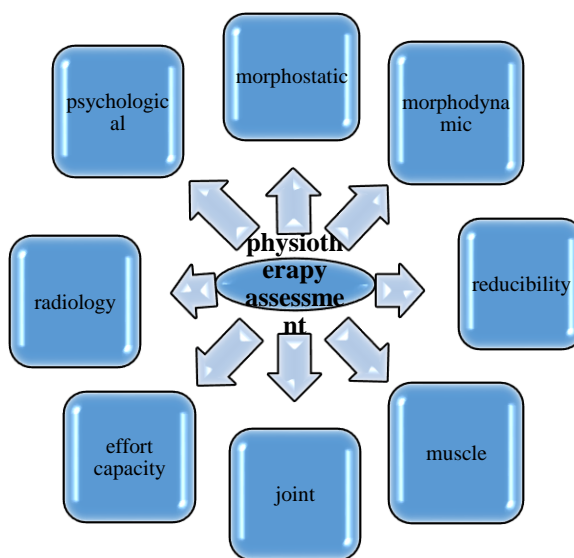


Fig.no.2 physiotherapy assessment

The role of the physiotherapist is also well established, representing the finality of the prevention or rehabilitation physiotherapy programmes.

The objectives of the physiotherapy programme are the following:

- Awareness of deformities and their consequences;
- Ensuring joint mobility at the level of the rachis and scapulo-humerus/pelvic-trochanteric girdles;
- Optimising proprioceptive capacities in static and dynamic;
- Increase paravertebral, lower limb and pelvic muscle strength to parameters that allow for rachis support;
- Educate body posture and adopt postural hygiene;
- Ensuring caloric intake and observing the necessary rest times;
- Increasing exercise capacity through recreational physical activities.

Aim and objectives of the study:

The aim of the study is to identify in a timely manner any malalignments that may have developed in the spine in order to prevent postural deficits.

Research objectives:

- literature review on the onset of postural deficits in prepubertal children;
- to predict a possible investigative pathway on the spine during growth and development in children.

Materials and methods: in order to argue the necessity of the present study we used the results of a questionnaire that was developed according to the methodology, with multiple choice, medium difficulty level with 14 questions.

The distribution area was large enough, parents from 5-7 counties of the country were interviewed: Suceava, Bucharest, Bacau, Iasi, Brasov. Also, age and occupation was one of the variables, it is assumed that we managed to interview parents from all social categories. In order to obtain statistical data, we entered 118 questionnaires into the database. In the present study we selected only 3 questions out of 14. [4]

Results and discussions:

Question number 1, which asks to identify the causes of the occurrence of physical impairment in prepubertal children, is plotted in Figure 3

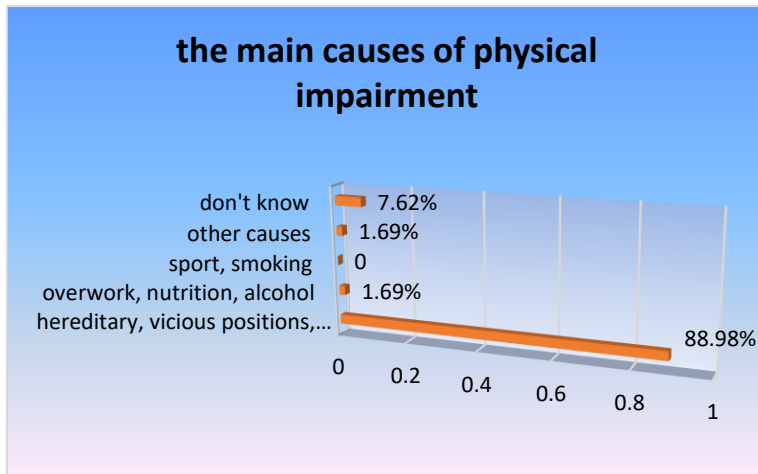


Fig.no.3 Graphical representation of question 1

In figure no.3 it can be seen that a majority of about 90% answered correctly to the question asked, therefore parents are aware of the etiology of scoliosis.

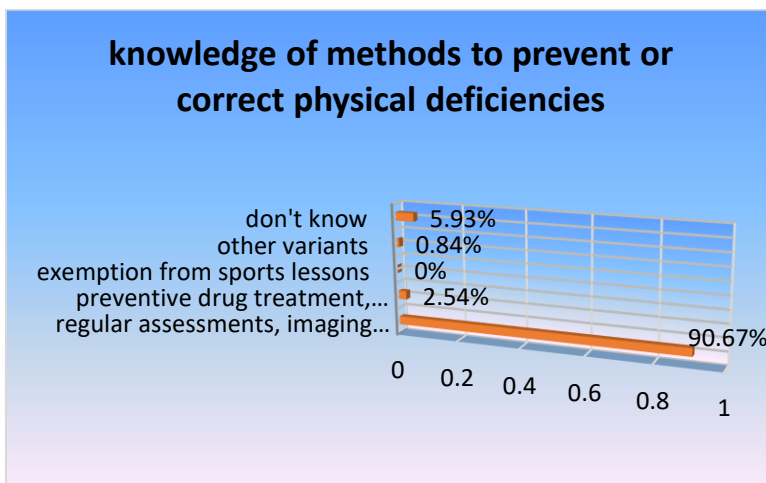


Fig.no.4 Graphical representation of question 2

According to the result obtained for question 2, which refers to the knowledge of methods to prevent or correct physical deficiencies of the spine, the respondents had a positive percentage of 90.67%, which raises the question: 'If the methods are known, why are they not applied in time? "

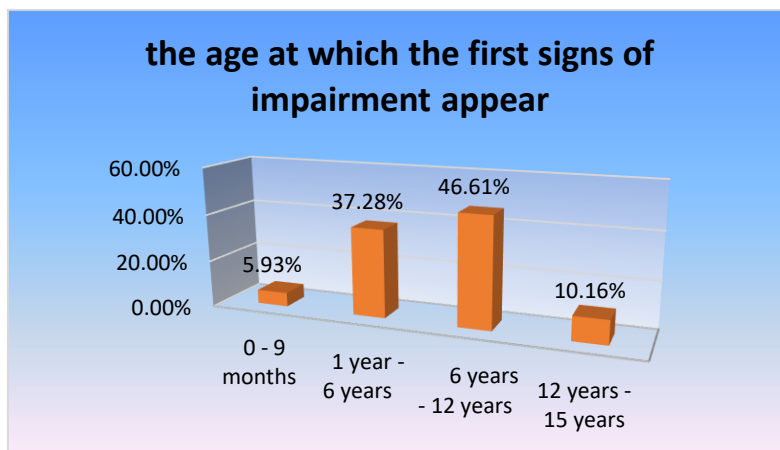


Fig.no.5 Graphical representation of question 3

All parents also agree that these deficiencies can be detected in good time, and the methods used to prevent and correct them are known. Problems were encountered in identifying the approximate age at which these physical functional impairments can start: 1-6 years - 37%, and 6-12 years - 47%, respectively question 3.

Conclusions:

- almost 90% of parents are aware of the etiology of scoliosis;
- regarding the knowledge of methods to prevent or correct physical deficiencies of the spine, the respondents were 90.67% positive;
- the age period 6-12 years has almost 50% predictability as the onset of postural deficits;
- the need for regular body posture assessments from the age of 6 years is mandatory in order to prevent and properly manage children's growth and development during this period.

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