Acta Scientific Orthopaedics

Volume 2 Issue 5 May 2019

Review Article

Our Experiences in Conducting the School Screening Examination for the Spine Deformities-Content of the Questionnaire

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Received: March 14, 2019; **Published:** April 22, 2019

Abstract

Introduction: Adolescent idiopathic scoliosis is one of the most common spinal deformities, yet its cause is unknown, in present time postural spine deformity are increased by low physical activity in children. Various theories look to biomechanical, neuromuscular, genetic, and environmental origins, yet our understanding of scoliosis etiology is still limited. Determining the cause of a disease is crucial to developing the most effective treatment.

Aim of the Study: The aim of our study is to show the importance of all relevant factors who impact the deformities of the spine.

Materials and Methods: We have our own questionnaire, who can be used in school screening program for early detection of risk for spine deformity. It is consisted of 5 parts of questions, total 20. 1. The evaluation of the deformity in accordance to first detection and ways of treatment (1 - 2 question). 2. Evaluation of genetic factors and former sicknesses (3 - 7 question). 3. Evaluation of pain (8 - 9). 4. Evaluation of physical activity (10 - 14). 5. Evaluation of nutrition, as a factor of forming bone mass (15 - 20).

Discussion: Consulted from medical studies to assess gender, age, pain and genetic factor is important for quality of life in structural scoliosis. Some other factors like nutrition and physical activity are important for development of postural deformity in structural scoliosis.

Conclusion: Living in modern age, where bad body positions and physical inactivity are increased in school children, assessing them in school screening program is necessary.

Keywords: Spine Deformity; Content of Questionnaire

Introduction

The deformities of the spine are one of the most common deformities of the bone [1]. Early detection and treatment offer ways for conservative treatment [2,3]. The deformities can be structural of postural, primary or secondary. The greatest hardship for treating is given by the idiopathic adolescent scoliosis, because of the unknown etiology and the unpredictable progression of the curve. Some experts from the field of the spine deformities suggest the adding school screening may detect the deformities early when the curve smaller and with it the possibilities for conservative treatment are better [4]. The undertaking of school screening has some rules for application on the standard clinical tests because only 10 - 20% are sent to X-rays afterwards [5]. There are many questionnaires that are used during the scoliosis evaluation and are estimating it according to the presence of pain, presence of scoliosis in the family as well as the curve when it was detected and treated and if the deformity is giving psychological difficulties to the child [6,7].

In our long year experience we designed questionnaires for screening check up in the school population, which contains the already mentioned questions as well as some other questions related to the trends in modern society as well as evaluation of the environment and the nutritional habits, which have impact in forming bone and the load of the spine in adolescent age [8-10]. That's why we assume that the spine deformity is a sum of genetic factors, acquired factors, weakened bone mass because of bad nu-

trition habits and insufficient physical activity. Taking this all into concern it can affect the bone growth and after 6 months of bone growth it can become a postural deformity [11]. In our country the school screening only the simplest tests are being undertaken like the shoulder test and the Adams test each 24 months. These tests have many weak sides because they are not done with quantitative measurement and only the quality is taken into account. Also, the time of 24 months is enough for a development of dangerous postural curvature [12].

Materials and Methods

The questionnaire which we suggest contains the following anamnestic data as they all imply on the emergence of postural deformity and as it progresses into scoliosis.

1. The evaluation of the deformity in accordance to first detection and ways of treatment (1 - 2 question).
2. Evaluation of genetic factors and former sicknesses (3 - 7 question).
3. Evaluation of pain (8 - 9).
4. Evaluation of physical activity (10 - 14).
5. Evaluation of nutrition, as a factor of forming bone mass (15 - 20).

The content of this questionnaire is the following for school children:

1. When is the deformity confirmed?
2. Does it know that it has a deformity? If yes is it treated?

   a) Not treated, b) with exercise c) with brace d) with brace and exercise
3. Does anyone else in the family has a deformity?
4. Is there a diagnosed respiratory illness?
5. Has it taken therapy for low bone mass?
6. Was it treated as a child for dysplastic hips?
7. Does it had a surgical procedure or any injury on the bones?
8. Does it feel pain in the back neck or sacrum?
9. If yes what is the grade from 1-10?
10. Does it regularly go to physical education classes at school (3 times a weak)?
11. Does it have a sports activity outside school?
12. If yes how many hours weakly?
13. Does it use video terminals?
14. If yes how many hours weekly.?
15. Does it consume soda products of 0.5l and how much weekly?
16. How many times in the week does it consume fast food?
17. How many times in the week does it consume milk at least 0.5l?
18. How much fruit does it consume daily?
19. How much vegetables does it consume daily?
20. How many times daily does it consume fish?

Discussion

Each of the questions in our questionnaire has its own meaning and we support it with studies which are implying on it and its meaning.

The presence of curvature for a longer time which was not treated, gives us a picture for the care of the parent and the health of one juvenile child. The presence of a curvature despite the treatment gives more content about its nature and the effect and quality of the treatment [13].

The deformities of the spine can appear in some families due to genetical failure of structure of the locomotor system. The decrease of mass in the bones and the increased flexibility of the soft tissues could lead to deformity of the spine [14].

The existence of respiratory illnesses and the load on the chest impact kyphosis and the decreased vital capacity [15]. Dysplastic hips are common in this part of the world and it affects female more and the Slavic people in general. That is why we have a mandatory screening for this in newborns [16]. The shortened muscles inside the hip and around it in these people may increase the inner rotation of the hip which manifests itself curved in direction to the lumbar area and shortening of the muscle quadratus lumborum [17].

The injuries and operations in the neck area as torticollis or birth trauma on the axillar nerves may also cause scoliosis as a secondary manifestation. The operations on the hips near the spine may shorten the leg muscles and also cause scoliosis [17].

The localization and the evaluation of pain will show us how is the deformity impacting the quality of life and the status of the prognosis of the deformity [18,19].

In the past the doctors and parents were concerned about the caring of the school bag but today nobody really pays attention as it exceeds more than 10% of the child's weight and it causes deformities in any way [20].

The use of video terminals in the school population shouldn't be more than 2 hours daily and it should be used for educational purposes. The children spend their time on video terminals more and more with their hips and knees flexed and with decreased motion of the body in general and with all parts of the spine in a non-regular position. The use on one of the hands in order to use the pc mouse raises the shoulder from that side [21]. The long forced positions with no practice of physical activity increases the risk of deformity because of the shortening of some muscular groups near the neck and the rest of the spine [22].

Good bone mass is build at best in the period of 10 - 14 years with 4 hours of physical activity daily and with good intake of calcium and vitamins [23]. The studies who measured bone mass in children with deformities showed that the deformity is followed with weak bone mass [24]. These reasons imply towards assessment of the nutrition in the future and measurements of bone mass in adolescents. There are more questionnaires for assessment of quality of life and anamnestic data important for patients with idiopathic scoliosis like: SRS-24, SRS-30 I dr [25-28]. They are designed by communities who study scoliosis from all aspects but foremost they are used for confirmed scoliosis and not for preventable deformities [29].

Conclusion

In order to undertake this questionnaire as a national concept, firstly it must be applied as mandatory in systematic screening with measurable clinical test so it can be done once a year and after the evaluation a biosocial model to be used in compliance with the parents, the doctor and the center for improvement of psychophysical health. The gain will be greater before the use of invasive correction method for spinal deformities as it tends to create difficulties in the future of the individual.

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