
THE ROLE OF PHYSICAL THERAPY IN BALANCING THE SCOLIOTIC SPINE**ROLUL KINETOTERAPIEI ÎN ECHILIBRAREA COLOANEI VERTEBRALE SCOLIOTICE***Burcea Claudia¹*

Key –words: scoliosis, functional rehabilitation program physical therapy**Cuvinte cheie: scolioză, recuperare funcțională kinetoterapie**

Abstract: The studied lot consisted in 20 patients with scoliosis. All the patients, students at University of Medicine and Pharmacy “Carol Davila” Bucharest were physically treated. The patients were evaluated before and after the rehabilitation program. The results prove that the majority of the patients gain good results, if they beneficiate of an early and sustained treatment. The therapeutic success was based on a good knowledge of the clinical entity and its impact upon the body, kinetic techniques adequate to each particular case, a proper cooperation between the physical therapist and the patient.

Rezumat: Studiul a fost realizat pe un lot de 20 pacienți cu scolioză. Toți pacienții, studenți la Universitatea de Medicină și Farmacie “Carol Davila” București, au fost tratați fizical-kinetic. Pacienții au fost evaluați atât la începutul cât și la sfârșitul recuperării funcționale. Rezultatele detaliate în lucrare arată că majoritatea pacienților care încep tratamentul de recuperare funcțională și programul este susținut, sunt foarte bune. Succesul terapeutic a fost sprijinit și de o bună cunoaștere a entității clinice și impactului acestuia asupra organismului, tehnici kinetice adecvate fiecărui caz în parte, precum și de buna cooperare dintre pacient și kinetoterapeut

Introduction

The physiological curvature deviations of the spine from those considered normal finally lead to the onset of physical deficiencies of this axial system which provides the entire attitude of the human body.

Scoliosis is one of the most frequent diseases which affect the spine during the growing period.

Containing most of its essential elements – aspect, manifestation, evolution – C. Zaharia defines scoliosis as “an evolutionary disease, characterized by one or several lateral curvatures of the spine, visible in frontal plan, accompanied by vertebrae rotation, with superior and inferior compensating tendency of the curvatures, but without tendency of their complete reduction by hanging or decubitus and with an echo on the trunk morphology”.

Approaching scoliosis as research theme has never been done at random as it seems to be the most frequent physical deficiency of the spine encountered in girls, just as kypho-lordosis predominate in boys.

Scoliosis can present one or several curvatures (2-3 or even 4) in frontal plan, accompanied by vertebral rotation with with superior and inferior compensating tendency of the curvatures, but

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without tendency of their complete reduction by hanging or decubitus and with an echo on the trunk morphology”.

This chapter of orthopedic pathology should be very well known in order to be able to depict the cases as early as possible and to direct them towards one of the specialized services for corrective therapy. The treatment of many scoliosis is very difficult and should be continued systematically on long term, using, according to the form of scoliosis and the moment, varied and complex treatments.

Work hypothesis

In the research we tried to go through the stages necessary when treating scoliosis so as to accomplish a correlation to reality as correct and complete as possible, both from the point of view of diversity of scoliosis and that of the concrete means and methods to resolve functional rehabilitation.

Physical therapy represents the basic procedure in the treatment of scoliosis, the only one capable to provide a correction of the vertebral statics as well as an appropriate further evolution of the patient. We have also tried to verify the efficiency of physical therapy, depending on the evolutionary stage of scoliosis, respectively on its severity and vertebral curvature angle, and to verify the opportunity and efficiency of physical therapy in the treatment of scoliosis according to its etiology.

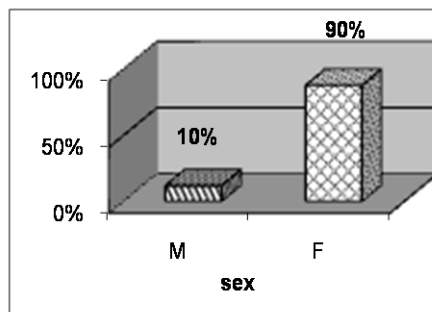
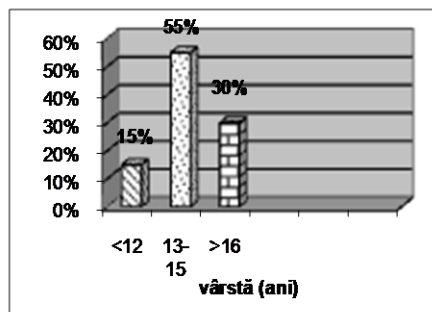
Material and working methods

Our purpose was to accomplish a practical study made on the casuistic of “Carol Davila” University of Medicine and Pharmacy from Bucharest, observing the epidemiological, etiological and treatment elements. We also observed the diversity of therapeutic procedures and we tried to emphasize the efficiency of physical therapy in the treatment of scoliosis.

The casuistic was studied depending on the age when scoliosis appeared and the patients’ sex, the type of physical activity and social environment, type of affection, applied treatment.

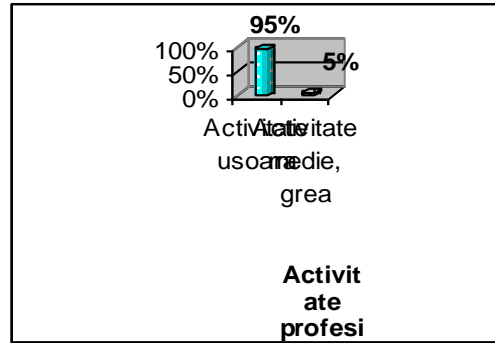
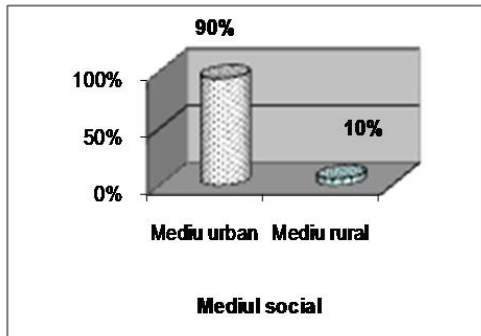
1. Analysis of patients’ lot according to the age when scoliosis appeared and sex

The study shows a special incidence of scoliosis if the age and sex criteria are taken as reference. The feminine sex represents 90%, compared to the masculine sex, where the percentage is 10%, the maximum incidence (of scoliosis debut) being encountered at the groups of age of 13-15 years old, representing a percentage of 55%, a percentage of 15% being encountered at the groups of ages under 12 years old, and the groups over 16 years old representing a percentage of 30%. So scoliosis appears at early ages in both sexes, that is at the groups of age of 13-15 years old, because there are vertebral anatomic changes which become worse during this period.



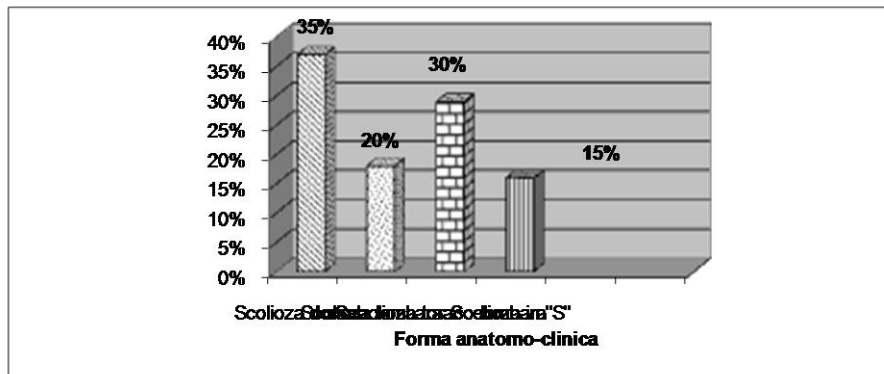
2. Analysis of patients’ lot according to the social environment and professional physical effort

From data analysis, we noticed that 90% of the patients come from towns, the rest of 10% from the country side. Considering professional activity as a study criterion, it can be noticed that the number of those who make easy (and sedentary) activities is much bigger, representing 95%, and those with medium and difficult physical effort only 5%.



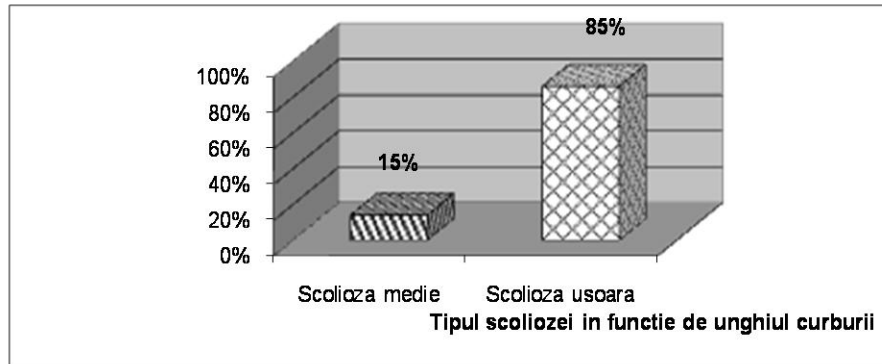
3. Analysis of patients’ lot according to the anatomo-clinical form of scoliosis

Analyzing the scoliosis graphic according to the anatomo-clinical form, it can be noticed that dorsal scoliosis is represented by a percentage of 35%, lumbar scoliosis by 20%, thoracic-lumbar scoliosis by 30% and “S” scoliosis by 15%.



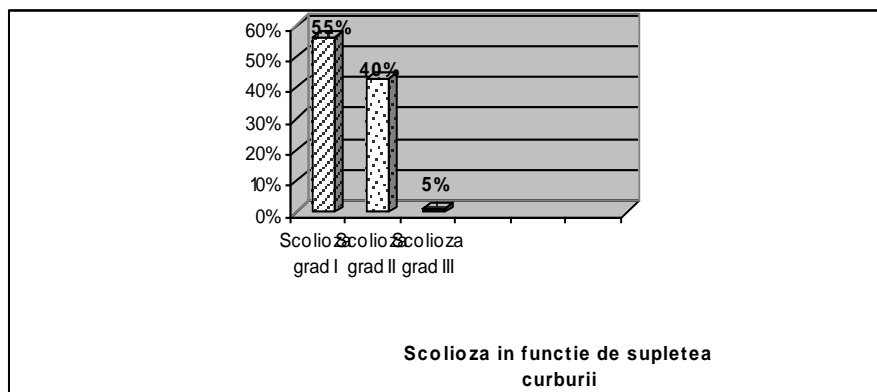
4. Analysis of patients' lot according to the scoliotic curvature angle value

Regarding the value of curvature angle we noticed that medium scoliosis has an incidence of 15% and light scoliosis of 85%.



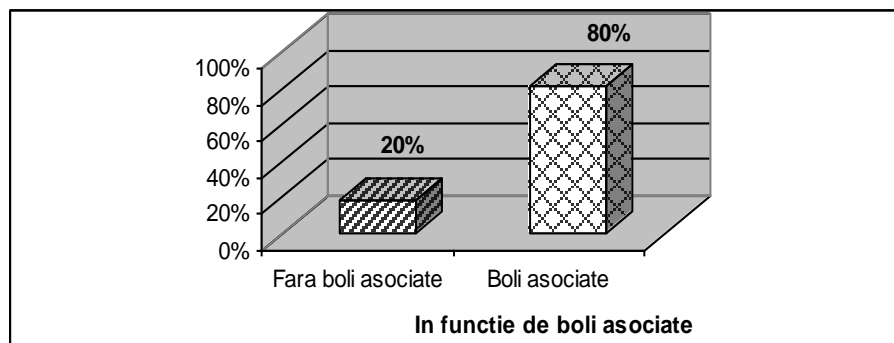
5. Analysis of patients' lot according to the curvature suppleness

Analyzing the scoliosis graphic according to the curvature suppleness, we notice that 1st degree scoliosis (reducible, mobile scoliosis) has an incidence of 55%, 2nd degree scoliosis (partially reducible, with reduced mobility) of 40% and 3rd degree scoliosis (fixed, irreducible scoliosis) of 5%.



6. Analysis of patients' lot according to associated diseases

From the graphic analysis it results that 20% of the patients do not present other diseases associated to scoliosis, the rest of 80% suffering of at least one more disease such as: dorsal kyphosis, unequal lower limbs, obesity, lumbar discopathy, hypothyroidism, chronic lumbago, sequelae of Osgood-Schlatter's disease – anterior tibial apophysitis of growth, sequelae of myocarditis, myopia forte, hyperlordosis, congenital hip dysplasia, discus hernia, flat foot, gonarthrosis.



Rehabilitation treatment of scoliosis

The purpose of treatment is to correct spine deformities and the conservative skeletal changes, to balance the spine and to maintain the obtained result and to remove cardio-vascular functional disorders and disorders of other organs.

The therapeutical means are:

Physiotherapy – with ultrasounds and diadynamics to reduce muscular reactions and contractures;

Orthopedic means – to achieve a maximum correction of curvatures with minimum risks, with apparatus such as: Milwaukee corset; distracter-deflector corset (Turubukle-Risser); Risser localizing corset, EDF (Cotrel-Morel): elongation, lateral flexion; Iznec corset (preferred by Stagnara); distraction halo-pelvic devices (accomplish a slow curvature correction);

Surgical means – consisting in performing posterior, anterior or mixed spondylosyndesis after the correction of curvatures through halo-pelvic distraction, in order to stop the evolution of deformity and to stabilize the spine;

Physical therapy – to correct deformities and functional insufficiencies, it is applied in all phases of scoliosis, from the prophylactic stage to the stage of patient's rehabilitation and reeducation;

Occupational therapy – completing physical therapy, represents a complex psychomotor method of active reeducation;

Hydro-physical therapy and swimming – by the physical action of water, represents an active means to balance the spine and develop respiratory capacity;

Massage – to relax contracted muscles, increase muscle tone and stimulate atonic muscular trophicity, it is applied at back, scapular belt and pelvic levels.

The physical therapeutic objectives followed in scoliosis were:

- Spine asuplisation;
- Scoliotic curvature recovery;
- Recovery of scapular belt elements (shoulder blades, shoulders, clavicles) and of the pelvic ones (pelvis and hips);
- Toning the muscle groups on the side of convexities in shortening regime;
- Toning the muscle groups on the side of convexities in lengthening regime;
- Normal development of thorax;

- Formation of correct spine posture reflex and of the entire body;
- Amelioration of respiratory function.

Within the physical therapy program there were used both positions in which the static loads of the spine are reduced, decubitus, four legged positions, and walking exercises, orthostatic position and sitting; static exercises (corrective positions) and dynamic ones (exercises of physical development with analytical character); applicative and respiratory exercises (exercises with corrective character).

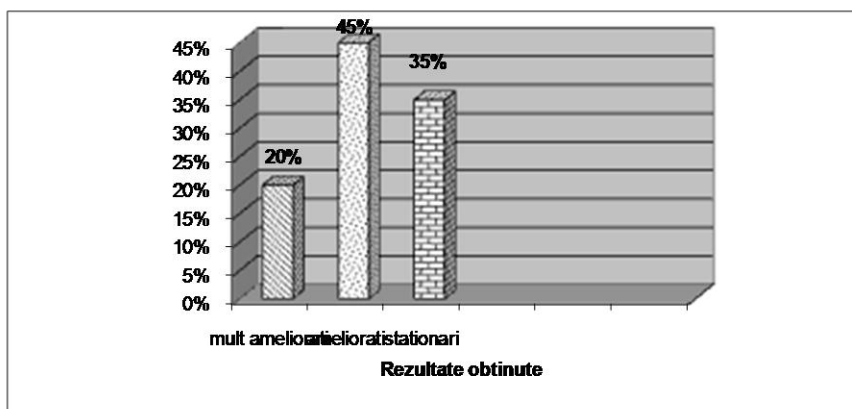
Techniques and methods used in achieving the objectives of rehabilitation in scoliosis

Klapp technique, Cotrel technique, Klapp four legged position, Cotrel elongation (to increase spine flexibility), Kabat technique, Wauger-Burger technique (to increase muscle strength).

In addition, swimming was used for many patients.

The results obtained after treatment were as follows:

45% ameliorated, 20% ameliorated a lot and the rest of 35% stationary.



Conclusions

The study shows a special incidence of scoliosis if the age and sex criteria are taken as reference. The feminine sex is prevalent, as presented in the specialty literature as well, especially in urban areas, with a maximum incidence of debuting age between 13-15 years old.

The most frequently encountered scoliosis type is dorsal scoliosis, followed by dorsal-lumbar scoliosis, the other types of scoliosis being encountered at a smaller number of patients.

The procedures most frequently used in the physio-physical therapeutic treatment were: physical therapy, massage, electro-therapy, and hydro-thermo-therapy.

Physical therapy is the most important part in scoliosis treatment leading to the increase of rehabilitation efficiency, improving not only the vertebral statics, but also the respiratory function.

By associating corrective corsets with physical therapy and swimming, the patients' pathological and functional modifications were improved.

The treatment with medicines in scoliosis, although without real importance in rehabilitation, was mainly based on analgesic medication and vitamins.

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