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Original Research

The modern methods of treatment of clinical manifestations of benign hypermobile joints syndrome (hypermobility spectrum disorders)

Tamar Mosulishvili[1] *, Manon Loria[2], Ekaterine Sheshaberidze[3], Lali Avaliani[4], Maia Chkhartishvili[5]

[1] Teaching University Geomedi, Tbilisi, Georgia
[2] The National Association of Medical Rehabilitation and Sports Medicine, Tbilisi, Georgia
[3] Eka Sheshaberidze Health and Rehabilitation Centre, Tbilisi, Georgia
[4] Batumi Shota Rustaveli State, University, Georgia
[5] Georgian State Teaching University of Physical Education and Sports, Tbilisi
* E-mail: mosulishvili.tamari@gmail.com

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Abstract

The thesis discusses the role of hippotherapy in correction of clinical symptoms of musculoskeletal system of (BHMJS). In recent years, the number of children with BHMJS has been increased. Therefore, the implementation of new method of treatment is urgent and well-timed. Due to imperfection of traditional treatment, the syndrome is accompanied with secondary complications what led us to determine the effectiveness of ride-therapy in correction of BHMJS.

The goal of the research is the development of the specific tactic of hippotherapy. The results of the initial research indicate the high effectiveness of hippotherapy in correction of clinical symptoms of musculoskeletal system of BHMJS.

Keywords: benign hypermobile joints syndrome (BHMJS), hippotherapy, hypermobile joints syndrome (HMJS), fibromyalgia, hypermobility spectrum disorders.

Introduction

According to the International classification of 2017 year, in the opinion of a certain group of scientists [1], benign hypermobile joints syndrome or hypermobility spectrum disorder appears to be a mediator (transitional) link between the norm and pathology of genetically determined connective tissue [2, 3]. Undoubtedly that they have a genetic basis, although its genetic markers are unknown [4]. Based on the various evidences, its distribution varies within the limits of 4-13% to 25% [5, 6]. 10% of the children and adolescents with this syndrome is subjected to physical and/or psycho-social

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dysfunction (anxiety, depression, chronic fatigue, etc.) in 0.5-2% of cases, in an average [7, 8]. Among clinical manifestations joint pains are more frequently observed, which can be both mono, and polyarticular, generalized or symmetric. A sharply bordered, local, joint short-term pains, especially in knee and ankle-tibia joint are characteristic in children. Muscle cramp and fibromyalgia may be revealed [3, 5, 9, 10]. For the treatment of BHMJS and prevention of secondary complications, as well as for the improvement of muscular strength and proprioception the isometric exercises are predominantly required. It is necessary for the restriction of all those movements and activities, which may lead to an excessive movement in the joints, an excessive stretching of tendons and muscles, which requires to implement a new method in the treatment tactics. As such method, we consider hippotherapy, which in its biomechanical essence appears to be a pathogenetic method for BHMJS treatment.

The goal of our research was to establish the effectiveness of hippotherapy method for the manifestation, treatment and prophylactics of benign hypermobile joints syndrome.

Material and Methods

Total of 96 children at the age of 7-14 years were involved in this research. These children were divided into 2 age groups: 7-11 years old (43 children) and 11-14 years old (53 children). There were 2 subgroups in each group: one subgroup was treated with hippotherapy procedures using the method developed by us, while the second subgroup was treated with therapeutic gymnastics using a traditional method.

The methods of the research

The following clinical functional researches in the dynamics were carried out: the determination of joint hypermobility using Beighton's table; the study of some anthropometric data (goniometry, dynamometry); dynamometry of quadriceps femoris, biceps brachii and triceps muscles, as well as wrist dynamometry; the determination of abdominal press and spinal extensor muscles strength and endurance using functional tests; goniometry and sonography of knee joint.

The methods for treatment

For the treatment of BHMJS, the hippotherapy procedures have been used according to the method developed by us and a traditional method of therapeutic gymnastics. The treatment using hippotherapy method consisted of 2 stages: the goal of the first stage was to create a horse-rider's stereotype, or the maintenance of balance in the saddle during any gait of the horse and the development of basic skills for horse driving; the goal of the II main therapeutic training was: the strengthening of limbs and torso muscles, developing of musculoskeletal sensation, the improvement of stability and proprioception of joints, etc. The duration of each stage made up 3 months, a number of procedures during one course was 36-40, duration - 45 min. three times a week. In order to strengthen proprioception mechanisms, we developed specific methods and therapeutic tactics of hippotherapy. On the basis of clinical studies,

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the patients were given individually selected course of exercises. During pronounced strong recurvation a joint fixator was used in the procedures. With the aim of stability increase and reduction of micro traumas, along with strengthening of periarticular muscles, the duration and frequency of fixator use gradually reduced.

The results

Based on the results obtained a positive dynamics was observed in all the groups. But, reliable high results were recorded in the groups treated with hippotherapy. In particular, the indicators of Beighton's score assessment decreased: recurvation in both knee joints ($p<0.05$, see the Table); recurvation of the both elbow joint in 11-14 age group ($p<0.01$; $p<0.05$); in the both groups, the strength of right and left biceps brachii reliably increased and was reliably high ($p<0.05$), than in control group; using dynamometry, the analogous results were obtained regarding triceps brachii ($p<0.001$, $p<0.05$) and quadriceps femoris ($p<0.001$, $p<0.05$) muscles ($p<0.001$, $p<0.05$); the strength and endurance of abdomen press and spinal extensor muscles improved.

Table of the Results

Age	Group	Recurvation of knee joint in degrees				
		The Initial data ±		The last data		
		right	left	right	left	P <
11-14 years	main	14,43±0,49 n = 15	14,13±0,49 n = 12	12,58±9,32 n = 15	12,53±0,44 n = 12	D-S 0,05
	control	14,17±0,43 n = 16	15,20±0,67 n = 16	13,81±0,42 n = 16	14,07±0,42 n = 15	_
	P <	_	_	0,05	0,05	

Discussion

The advantage of hippotherapy treatment is conditioned by the peculiarities of horse-riding biomechanics, as compared to other methods of treatment. Among many factors of its impact, the following are very important: the activation of proprioception impulses, the strengthening of those muscles, which are necessary for riding status, conditioning a significant increase in muscular tonus, as well

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as the minimization of excessive movements in the joints and the avoidance of possible injuries. Accordingly, the above-said promotes to prevent secondary complications to improve a life style of the adolescents.

Conclusion

Thus, on the basis of the obtained results a high therapeutic effectiveness of hippotherapy during BHMS, as compared to other methods of rehabilitation (therapeutic gymnastics) has been revealed. It was expressed by a reliable improvement of clinical and functional parameters; decrease in pain in the joints or its complete disappearance; reduction of joint recurvation and hypermobility; increase in strengthening and endurance of torso muscles, and generally by the strengthening of muscular system of the whole organism, etc.

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თამარ მოსულიშვილი[1] *, მანონ ლორია[2], ეკატერინე შეშაბერიძე[3], ლალი ავალიანი[4], მაია ჩხარტიშვილი[5]

[1] სასწავლო უნივერსიტეტი გეომედი, თბილისი, საქართველო
[2] სამედიცინო რეაბილიტაციისა და სპორტული მედიცინის ეროვნული ასოციაცია, თბილისი, საქართველო
[3] ეკა შეშაბერიძის ჯანმრთელობისა და რეაბილიტაციის ცენტრი, თბილისი, საქართველო
[4] ბათუმის შოთა რუსთაველის სახელმწიფო უნივერსიტეტი, საქართველო
[5] საქართველოს ფიზიკური აღზრდისა და სპორტის სახელმწიფო სასწავლო უნივერსიტეტი, თბილისი
* ელ. ფოსტა: mosulishvili.tamari@gmail.com

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აბსტრაქტი

ნაშრომში განხილულია ჰიპოთერაპიის როლი ძვალ-კუნთოვანი სისტემის კლინიკური სიმპტომების კორექციაში, კეთილთვისებიანი ჰიპერმობილური სახსრების სინდრომის დროს. ბოლო წლებში, კეთილთვისებიანი ჰიპერმობილური სახსრების სინდრომით დაავადებული ბავშვების რაოდენობა გაიზარდა, რაც ხაზს უსვამს მკურნალობის ახალი მეთოდის დანერგვის საჭიროებას და დროულობას. არსებული ტრადიციული მკურნალობის არასრულყოფილების გამო, სინდრომს ხშირად თან ახლავს მეორადი გართულებები, რამაც გადაგვაწყვეტინა გაგვერკვია ჰიპოთერაპიის ეფექტურობა კეთილთვისებიანი ჰიპერმობილური სახსრების სინდრომის კორექციაში. კვლევის მიზანია, ჰიპოთერაპიის სპეციფიკური ტაქტიკის შემუშავება. კვლევის შედეგები მიუთითებს ჰიპოთერაპიის მაღალ ეფექტურობაზე კეთილთვისებიანი ჰიპერმობილური სახსრების სინდრომის მქონე პაციენტებში, ძვალ-კუნთოვანი სისტემის კლინიკური სიმპტომების კორექტირებაში.

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