23 - PHYSIOTHERAPY IN THE TREATMENT OF CONGENITAL SHORT FEMUR: A CASE REPORT

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INTRODUCTION

Deficiencies are defined as congenital absence or hypoplasia of a bone, and sufficient to cause a significant deformity that can be detected at birth or during a physical examination (IBARRA, 2005).

The two congenital abnormalities of the femur most common are: the proximal focal deficiency (CRD), and no bone defects, called congenital short femur (FCC) or simply hypoplasia of the femur (OLIVEIRA, 1997; GRIGOLON, 2001).

The proximal focal deficiency (CRD) is a rare congenital anomaly, which are involved in the femoral and acetabular defects of varying degrees and were classified into 4 groups by Aitken - Aitken GT (AD), since a minor bug with short femur but the femoral head acetabula and normal to very severe cases, in which both the femoral head and acetabulum are absent and the femur is very short and curved (CAMACHO, 2006). According to Oliveira (1997) and Grigolon (2001), the congenital short femur is the most common form of longitudinal deficiency of bone. There is no other defect, the femur is simply smaller. Your involvement is usually unilateral usually not associated with other congenital defects of the skeletal system, but there is usually a congenital absence of the cruciate ligaments with laxity of the knee (OLIVEIRA, 1997).

The congenital short femur is approximately 10% lower than the normal femur. Rarely total inequality of the lower limb is greater than 6cm. If this gap provided between the members is greater than 5cm, can contemplate the lengthening of the femur. May be of three types: simple hypoplasia, in which the proportions are normal, hypoplastic femur with coxa vara, and femoral hypoplasia with coxa valga (Grigolon, 2001). The dysmetria of value below that are very well treated with the compensation of shortening the patient's shoes.

Grimm (1997) describes that another option being considered, the discrepancies of less than 5 or 6cm, is epiphysiodesis contralateral technique described primarily by Phemister in 1933. This can be mainly used in patients who have a reasonable expectation of stature - it blocks the growth of the healthy side until the affected equalize or reduce the discrepancy. Moreover, the realization of epiphysiodesis the same patient - reducing how much each method must correct the discrepancy. It's an interesting tactic, since it reduces the complications of each method as well.

According Grigolon (2001), a form of treatment used in congenital short femur is the bone elongation, in which the techniques employed the use corticotomy and external fixation of the stretch.

Vallim (2005) describes the external fixation and correction method for bone loss, congenital or acquired deformities, as well as other bone pathologies, such as pseudoarthrosis, for example. Since its clinical applications in patients with lower limb dysmetria. However, according Guarnieiro (1993), only unequal leg length, either congenital or acquired, with a value greater than 3.0 cm require attention in order to indicate the treatment of the discrepancy.

Accurate assessment of the evolution of treatment is difficult and is based on X-ray analysis of the elongated region. Good clinical outcome necessarily mean bone distraction with the formation of bone of good quality (GRIGOLON, 2001). As noted satisfactory progress with the onset of physiotherapy.

Patients with the disease in question present in the affected limb decreased muscle strength, joint limitation, changes in the balance, weight transfer and therefore inadequate muscular atrophy (OLIVEIRA, 1997).

In 2000 came a method of classification focused on components of health, rather than the consequences of disease to be called the International Classification of Functioning, Disability and Health (ICF). ICF organizes information in two or three levels. The first is called 'functioning and disability "and includes two components: functions and structures of the body" on the physiological functions of body systems and anatomical parts of the body, respectively, and "activities and participation" which integrates the activities, or that is, the execution of a task or action, and participation on the involvement of the individual in a life situation. The second part of the CIF presents the contextual factors (environmental and personal) that interact with the previous constructs (SABINO, 2008).

The physiotherapy is indicated to address alleged deficiencies in addition to providing greater functionality and quality of life. Thus the goals of physiotherapy should include a proposed natural therapy focused on functional health of the individual, if, would enable better understanding of the process experienced by the individual, since the onset of the disease to their functional consequences (SAMPAIO, 2005).

The disease presented by the patient, although relevant to defining the practice of physical therapy consists of only one of the data recorded during the interview and should not be used exclusively to guide treatment, considering the number and variety of changes in structure / function body , activity and participation that the same health condition may result. The structure and content of the ICF are therefore able to assist physical therapists in the registration of functional data, definition of targets for intervention and documentation of outcomes, enabling the adoption of a new model to guide clinical practice (SABINO, 2008).

The aim of this study is to demonstrate the intervention of physiotherapy in the treatment of congenital short femur after bone distraction by a case report.

REPORT CASE

Patient MAC, 7 year-old male with a clinical diagnosis of congenital short femur left, being carried out by bone of 07cm, through the use of external fixator, linear throughout the period March 2007 to March 2008. It was later removed the external fixator and the patient began to make use of axillary crutches until November 2008, when he started work at the Physical Rehabilitation Center, Universidade Estadual do Oeste do Paraná, Cascavel campus (Unioeste).

The patient was evaluated by means of physical therapy evaluation of the sector of Pediatrics Physiotherapy Clinic (UNIOESTE), and the assessment made by history, patient presentation, physical examination, range of motion, muscle strength, muscle tone, reflexes and reactions, stage of development, and gait. We also assessed the functionality of the patient through the International Classification of Functioning, Disability and Health (ICF).

Physical examination showed scar on his left thigh in the proximal and distal, 30 cm in the lateral thigh, and this was in internal rotation, pelvic inclination and rotation increased the left knee valgus, foot eversion, retraction of triceps surral. The march presented with right-sided support, and support to make the left, there is exacerbation of valgus deformities.

The patient underwent four weekly sessions at the Rehabilitation Center Physical Therapy Clinic at the State University of West of Paraná (UNIOESTE - Campus Cascavel), an average of 45 minutes per session, totaling 96 sessions. Treatment based on kinesthetic methods aimed to: promote muscle strengthening, maintenance of range of motion, weight bearing, proprioception, balance training, gait training and postural correction.

RESULTS AND DISCUSSION

In the physical therapy evaluation based on the international classification of functioning, disability and health (ICF) has characterized the individual before treatment and the results obtained after treatments (Table 1).

Table 1: International Classification of Functioning, Disability and Health - CIF:

2008 – Before Attendances		2009 – After Attendances	
Code of CIF	**Description of the code CIF**	**Code of CIF**	**Description of the code CIF**
b7100.3 s750.0082	Functions related to the mobility of joints - a sin gle joint, serious Congenital short femur	b7100.2 s750.0082	Functions related to the mobility of joints - a single joint moderately Congenital short femur
b7303	Functions related to muscle strength - strength of the muscles of a member of a moderate	b7301	Functions related to muscle strength - strength of the muscles of a member of the mild
b7703 - b7701 e120+3	Functions related to the pattern of movement - so serious (limp) Use crutches	b7701 e120+4	Functions related to the pattern of movement - a mod erate (limp) Use of orthopedic footwear (compensatory)
d5100.2 e310+1	Difficulty moderate to wash Mother is light facilitator	d5100.0	No difficulty in washing
d420.2 e310+41	Moderate difficulty to transfer to Mother is light facilitator	d420.0	No difficulty in transferring it.
d920.2 e.310+0	Difficulty moderate recreation and leisure Without a facilitator, barrier staff	d920.0 e.310+0	No difficulty for recreation and leisure Without a facilitator, barrier staff.

According to Sampaio (2005), adopting the model of human functioning and disability allows the physiotherapist in their evaluation and intervention, consider a specific functional profile for each individual, identifying capabilities and limitations of the three levels involving health and develop a treatment plan focused on the patient.

Thus, from 2008, with the completion of bone lengthening by external fixation, and after the release of the tensor fascia lata, and hamstring, focused treatment to the patient a posterior femur, traction of the knee with anterior tibial; stretching of hip flexors, hamstring, and triceps dorsiflexors surral; weight-bearing in a standing position. In the period of 2009, the treatment is focused on the postural exercises and postural awareness, strengthening of the lower limbs; training of balance and gait, and proprioceptive stimuli. Silva (2002) describes the main goals of therapy in patients with bone distraction are to maintain the image of psycho-social and sensory-motor of the patient, promoting muscle recovery, tendon and joint, improve circulation arterio-venous and lymphatic; promote relaxation with dynamic and rhythmic movements, improve coordination, increase muscle tone, thenar muscle and range of motion, and combat localized pains and edema.

When compared to the length of the lower limbs during 2008, after bone elongation, patient in a supine position on the lower right 63cm and 60cm left leg, and in the standing position showed in the lower right 60cm and 56cm in the left lower . While the period of 2009, introduced in the supine position in the lower right 71cm and 68cm left leg, and in the standing position has on the lower right 67cm and 64cm in the left lower (Table 2). These data show that the measurement in the supine position equivalent to dysmetria real, while the standing measurement demonstrates the apparent dysmetria.

Comparing the values of isolated femur and tibia bilaterally, was observed in right femur 47cm and 43cm left, while the right tibia and left measuring 27cm respectively. Thus proving the dysmetria of the femur as real problem of the individual.

Table 2: Values of the length of the lower limbs after surgery

	Supine MID	**Supine MIE**	**Standing MID**	**Standing MIE**
2008	63	60	60	56
2009	71	68	68	64

According Santili (1998), the difference in length between the limbs is a common situation in the orthopedic clinic daily. Is often the correct assessment one difficulty, when the goal of their clinical compensation, or else their equalization by surgical procedures. Thus in practice, the more you use these assessments are measurements with tape measures. While there are certainly more reliable methods for measuring real members, as many variations radiographic or CT. But generally, the mere placing wooden blocks under the plantar region of the shortest member to complete the clinical level of the basin is the most practical way to compensate and, therefore, to understand the functional difference in the length of members.

According to Gonzalez (2005), to identify whether the discrepancy is real or functional (apparent) should be performed measurements of the lengths of the real and perceived lower limb (LL), with a tape measure. When the discrepancy is real can be caused by abnormalities that cause the bones of one leg is shorter or longer than the contralateral bone. And the apparent discrepancy may be caused by contractions in the lumbosacral junction due to scoliosis, post-traumatic deformities, contractures of the hip or other. Methods that help to assess the discrepancy, according to Hoppenfeld (2006), is testing to see if this difference is real or apparent, and the real gap can be measured with a tape measure, with the patient in the supine position, measuring is from the iliac crest anterior superior to the internal malleolus. However, the apparent discrepancy determines whether there is a difference in leg length before testing the possibility of an apparent discrepancy, in which there is inequality in the size of the bones.

The rehabilitation of patients with bone elongation can be divided into four phases. The first phase is the period of post-operative period, in which the therapist teaches the correct position that the State must take the bed, making use of splints to correct the position also performs the movement or active mobilization of adjacent joints, with the aim not only to reduce the stiffness after surgery, as well as facilitate the nutrition of articular cartilage. In the second stage (distraction) physical therapy aims to maintain joint mobility, prevent contractures and muscle atrophy also adjacent to muscle strength exercises during the stretch. In the third stage (bone) is the period of bone growth, so the goal of rehabilitation is to prevent loss of joint mobility, muscle weakness and pain, and is known as phase of muscle re-education. And in phase four (after removal of external fixator) there is the risk of bone fracture at the site of regenerated and where the pins were drilling through the bone. So patients can be detained, not necessarily by plaster cast or orthosis for 1 month (SILVA, 2002), and physiotherapy have to worry about avoiding fractures.

So there is that physiotherapy does not interfere directly in the diametrical of the lower limbs, but by maintaining joint range of motion during the four phases of rehabilitation while the gain made by the bone length, bone distraction.

In relation to the perimeter of the lower limbs during 2008, was found starting at 10-10cm above the knee, and 5-5cm

below the knee. Thus the values above the knee were 27-29-37cm in the right leg and 28-33-37cm in the left lower limb, and these values can result from a swelling in the distal left thigh. And the values below the knee were 22-20-17-16cm in the right leg and 21-19-17-14cm in the left leg. While the period of 2009, the figures from above the knee were 30,5-35,5-39,5 cm in the right leg and 32.5-36-37cm in the left lower limb, and these values may result Change scar, as keloids. And the values below the knee were 25-23-19,5-17 cm in the right leg and 24.5-23-19-16cm in the left lower limb (Table 3 and 4).

Table 3: Values of perimeter of the lower limbs after surgery between 10 and 10 cm above the knee.

	Right Lower Limb			Left Lower Limb		
	10 cm above knee	*20 cm* above knee	*30 cm* above knee	*10 cm* above knee	*20 cm* above knee	*30 cm* above knee
2008	27	29	37	28	33	37
2009	30,5	35,5	39,5	32,5	36	37

* Values measured in cm

Table 4: Values of perimeter of the lower limbs after surgery between 5 and 5 cm below the knee.

	Membro Inferior Direito				Membro Inferior Esquerdo			
	5 cm below knee	*10 cm* below knee	*15 cm* below knee	*20 cm* below knee	*5 cm* below knee	*10 cm* below knee	*15 cm* below knee	*20 cm* below knee
2008	22	20	17	16	21	19	17	14
2009	25	23	19,5	17	24,5	23	19	16

* Values measured in cm

The data above the knee of both limbs showed that there was an increase in circumference, and 3.5 cm in the right leg and 4.5 in the left leg. This shows a decrease in the difference between the circumference of the members, despite the circumference observed in 2008 show changing values due to the presence of edema in the distal left thigh, and change scar. And the values below the knee also showed an increase in girth between periods in both limbs, and 3.0 cm in the right leg and 3.5 cm in the left leg, which also shows a greater similarity of the perimeter members.

Secchi (2008) reports that the stretching can be sufficient to increase muscle length, the number of sarcomeres in series and cross-sectional area of muscle fibers of non-shortened muscles. As resistance exercise promote gains in muscle mass. This muscular hypertrophy resulting from exercise training can be translated as an increase in cross-sectional area of muscle fibers (radial growth) as well as an increase in the number of sarcomeres in series (linear growth).

According Belczak (2004), evaluating the effectiveness of rehabilitative therapies can be obtained by measuring volume changes of the lower limbs, with the realization of indirect measurements, the circumference of the lower limb, with the help of tape. But the measure of the circumference or girth is not necessarily the measure of volume.

Recently, the development of techniques, the best quality and reliable means of external fixation have leveraged the aspiration of patients and efficiency of care in order to achieve equalization of large discrepancies in the lower limbs, by bone lengthening (SANTILI, 1998). As a result of a discrepancy in the lower limbs can find a functional scoliosis, an apparent malfunction or even slow gait, with increased energy expenditure, contracture ankle equinus on the shortened, delayed degeneration of the hip and knee back pain (CAN, 2005).

CONCLUSION

Through this case report, we concluded that physical therapy had fundamental importance in rehabilitation, especially as its functional independence in activities of daily living and practical life.

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PHYSIOTHERAPY IN THE TREATMENT OF CONGENITAL SHORT FEMUR: A CASE REPORT

ABSTRACT:

Deficiencies are defined as congenital absence or hypoplasia of a bone, being sufficient to cause a significant deformity that can be detected at birth or during a physical examination. The two congenital abnormalities of the femur most common are: the proximal focal deficiency (CRD), and no bone defects, called congenital short femur (FCC) or simply hypoplasia of the femur. The congenital short femur is approximately 10% lower than the normal femur. Rarely total inequality of the lower limb is greater than 6cm. If this gap provided between the members is greater than 5cm, can contemplate the lengthening of the femur. According to literature, a form of treatment used in congenital short femur is the bone elongation, in which the techniques employed the use corticotomy and external fixation of the stretch. Case report: patient MAC, 7 year-old male with a clinical diagnosis of congenital short femur left, being carried out by bone of 07cm, through the use of external fixator, linear throughout the period March 2007 to March 2008. The aim of this study is to demonstrate the intervention of physiotherapy in the treatment of congenital short femur after bone distraction by a case report.

THERAPIE PHYSIQUE DANS LE TRAITEMENT DU COURT CONGENITAL FEMUR: A CASE REPORT

RÉSUMÉ:

Les carences sont définies comme une absence ou une hypoplasie congénitale d'un os, étant suffisante pour provoquer une déformation importante qui peut être détecté à la naissance ou au cours d'un examen physique. Les deux anomalies congénitales du fémur plus courantes sont: l'insuffisance de contact proximal (CRD), et aucune anomalie osseuse, appelé fémur court congénital (FCC) ou simplement une hypoplasie du fémur. Le fémur court congénital est d'environ 10% inférieur à la normale du fémur. Rarement l'inégalité totale du membre inférieur est supérieure à 6cm. Si cet écart prévu entre les membres est plus grand que 5cm, peut contempler l'allongement du fémur. Selon la littérature, une forme de traitement utilisés dans le fémur court congénital est l'allongement des os, dans lequel les techniques employées corticotomy l'utilisation et la fixation externe du tronçon. Case report: patient MAC, 7 ans, mâle ancienne avec un diagnostic clinique du fémur court congénital gauche, menée par l'os de 07cm, à travers l'utilisation de fixateur externe, linéaire tout au long de la période de Mars 2007 à Mars 2008. L'objectif de cette étude est de démontrer l'intervention de la physiothérapie dans le traitement du fémur court congénital après distraction osseuse par un rapport de cas.

FISIOTERAPIA EN EL TRATAMIENTO DE CORTO CONGÉNITO FEMUR: PRESENTACIÓN DE UN CASO

RESUMEN:

Las deficiencias se define como la ausencia congénita o hipoplasia de los huesos, siendo suficiente para causar una deformidad significativa que puede ser detectada al nacer o durante un examen físico. Las dos anomalías congénitas del fémur más comunes son: la deficiencia de coordinación proximal (CRD), y no de defectos óseos, llamado fémur corto congénito (FCC) o, simplemente, hipoplasia del fémur. El fémur corto congénito es de aproximadamente 10% menor que el fémur normal. Rara vez la desigualdad total de la extremidad inferior es mayor que 6 cm. Si esta brecha siempre entre los miembros es mayor de 5 cm, se puede contemplar la prolongación del fémur. Según la literatura, una forma de tratamiento utilizada en el fémur corto congénito es la elongación ósea, en la que las técnicas empleadas en la corticotomía uso y la fijación externa de la recta final. Caso clínico: MAC paciente, 7 años-hombre de edad con diagnóstico clínico de fémur corto congénito a la izquierda, se lleva a cabo por los huesos de 07cm, mediante el uso de fijador externo, lineal durante todo el período de marzo de 2007 a marzo 2008. El objetivo de este estudio es demostrar la intervención de la fisioterapia en el tratamiento de fémur corto congénito después de la distracción ósea por un informe del caso.

FISIOTERAPIA NO TRATAMENTO DE FÊMUR CURTO CONGÊNITO: RELATO DE CASO

RESUMO:

As deficiências congênitas são definidas como ausência ou hipoplasia de um osso, sendo suficientes para provocar uma deformidade significativa que pode ser detectada ao nascimento ou durante um exame físico. As duas anormalidades congênitas do fêmur mais comuns são: a deficiência focal proximal (DFP), e a sem defeitos ósseos, denominada fêmur curto congênito (FCC) ou simplesmente hipoplasia do fêmur. O fêmur curto congênito é aproximadamente 10% menor do que o fêmur normal. Raramente a desigualdade total do membro inferior é maior do que 6cm. Caso esta discrepância prevista entre os membros seja superior a 5cm, pode se contemplar o alongamento do fêmur. Segundo a literatura, uma das formas de tratamento utilizado no fêmur curto congênito é o alongamento ósseo, no qual as técnicas mais empregadas utilizam as corticotomias e colocação de fixador externo com alongamento progressivo. Relato de caso: paciente M.A.C, 7 anos, sexo masculino, com diagnóstico clínico de Fêmur Curto Congênito esquerdo, sendo realizado alongamento ósseo de 07cm, através do uso de fixador externo, tipo linear, durante todo o período de março de 2007 à março de 2008. O objetivo do presente estudo é de demonstrar a intervenção da fisioterapia no tratamento de fêmur curto congênito após alongamento ósseo, através do relato de caso.

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