15 - EVALUATION OF THE FUNCTIONALITY DEGREE IN VICTIMS OF ENCEPHALIC VASCULAR ACCIDENT (EVA) THROUGH THE BARTHEL INDEX AFTER HYDROTHERAPY INTERVENTION WITH THE BAD RAGAZ METHOD .

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INTRODUCTION

The Encephalic Vascular Accident (EVA) is defined as the rupture initial or in a form crisis of focal or global neurological symptoms caused by ischemia or cerebral hemorrhage or around it, as result from diseases of the brain blood vessels (ROWLAND, 2007). The most common symptom of this pathology is responsible for leaving the patient unable to perform their usual activities and, in accordance with the degree of stroke, totally dependent on others (BRITO and TOSINI FILHO, 2001).

The EVA sequelaes are variable and may be dysfunctions sensory, motor and cognitive, manifesting deficits on the functional ability, independence and life quality (QOL) of the people. The deficit in the motor function involves paralysis or paresis of the muscles on the contralateral body to brain injury. Hemiplegic or hemiparetic stroke victims have a weakness muscle and low self-esteem, depression, social isolation and decreased physical fitness (TEIXEIRA-SALMELA, Et al. 2005).

One of the motor function commitments from the EVA is hemiparesis, where there is an important loss of the activity in the muscles which controls the trunk, mainly in the muscles which are the responsibles for flexion, rotation and lateral flexion where the patient is limited to perform his independent daily activities (LUCARELI, 2005).

The ADLs scales can provide an overview of the patient's condition as a result of the framework from post EVA and in this way detect the functional disability that it presents in a performance of their ADLs, and so measuring clearly and objective during and post rehabilitation the results (MAGALHAES and COIMBRA, 1998).

Thus, the Barthel Index (BI) was developed to measure the assistance degree required in ten activities: feeding, bathing, personal hygiene, dressing, bladder control, bowel, transferring of chair and bed, walking and climbing stairs. The specific grades are assigned for each proposal activity, according to the clinical observation from 0 or 5 (with help) to 10 or 15 (independent), so that detection of functional disabilities show the performance of their ADLs, and so can measure in a clear and objective way during and post rehabilitation, the results obtained (ALVARENGA, 2006).

According to Kakihara and Neves (2005), patients who suffered a brain stroke may have a great ease in performing their ADLs because of the practice of aquatic therapy, because the hydrotherapy works for all external application of water for therapeutic purposes. It is a physical therapy that has shown a positive result in the treatment and prevention of several diseases (Bates and Hanson 1998).

In aquatic therapy there are several techniques used for therapeutic purposes, and according to Moraes (2005), the application of Bad Ragaz Ring Method (BRRM) is a very suitable technique for stroke patients where there are benefits in relation to the trunk symmetry.

It is a technique that uses the features of physical water properties , such as turbulence and hydrodynamics, floating with support, the anatomical restoration movements, biodynamic and physiological joints and muscles in the functional patterns and individual application, based on the technique of proprioceptive neuromuscular facilitation (PNF), (SKINNER and THOMSON, 2000).

The BRRM was developed in Bad Ragaz, Switzerland, in 1957, but it is still in development: since its creation, it has been modified in order to improve and achieve better results of the method (RUOTI et al, 2000).

The goals of this study were to verify the responses related to biomechanical alignment of the body trunk and the functionality degree of patient with EVA after the intervention of aquatic therapy.

METHODOLOGY

The study was developed in the “Clínica Integrada da Faculdade Assis Gurgaz - FAG (Integrated Clinic of the Assis Gurgacz College) after approval by the local Ethics Committee. This research is classified as exploratory, qualitative, longitudinal cut, a kind of developing cause effect for a case study. The sample consisted of one female patient; 55-years-old, which has a diagnosis of neurological stroke since December 2007, diagnosis of the therapy: moderate spastic hemiplegia on the left. The patient was referred to the FAG's Integrated Clinic's in 04 May 2009, in Cascavel city and she had assistance, in this study, from May to June 2009.

For the research could be initiated, the patient received the procedures about the study and its importance and purpose. After the voluntary signing consent, in the consent paper, the research started.

First, the patient underwent in a physical therapy evaluation prepared for this study, consisting in the life history (“anmnese”), postural evaluation using squared standing with the previous view, posterior and lateral (right and left). The patient was wearing a swimsuit (bikini), face forward with a straight trunk, upper limbs pending and lateral, palms and fingers prone semi-flexed, knees extended rectilinear and feet together, behind the squared positioned parallel to the ground into a high of 1 m, with the help of a professional tripod with plumb during the evaluation process, ensuring comfort and well being.

As assessment protocol was used squared, an instrument used by physiotherapists to assist the detection of asymmetries and differences between the body segments during the postural assessments. According to the literature of Kendal, 1997. Postural evaluation is the presence or absence of changes.

In the anterior view, the individual remained in front of the examiner with the plumb line anterior and the simetrograph posterior to the body. Observed aspects related to the angles of head, shoulder height, level and angle of Tales valgus or varus knees.

In the side view left and right, the individual profile to the examiner with the plumb line anterior and the simetrograph posterior to the body. Observed aspects related to posterior or anterior tilt of head protrusion or retraction of the shoulders, the absence or presence of increased thoracic kyphosis, lumbar concavity and grinding back, anterior or retroversion of the pelvis, knees hiperextension or flexion, presence of pes cavus or flat feet.

In hindsight, the individual back to the examiner with the plumb line anterior and posterior to the squared body. Observed aspects related to the abduction or adduction of shoulder blades and the presence or absence of scoliosis in the spine.

Moreover, in order to measure the degree of functionality, we applied a questionnaire, Barthel, second Alvarenga et al

(2006), is a quantitative method of assessment that was developed in 1965 by Mahoney & Bartehl. It is a range of ADLs (Activities of Daily Life), which provides an overview of the condition of the patient as a result of the framework originated with stroke and thereby detects the functional disability that it presents the performance of their ADLs, and so the way they measure clear and objective during and after rehabilitation, the results obtained.

According to Lee et al (2008), the Barthel Index specifically measures the degree of assistance required by an individual on 10 items of ADLs involving mobility and personal care. The levels of measurement are limited to full independence, or the need for assistance. Each item's performance is evaluated on an ordinal scale, with specific number of points indicated for each level or rank.

The treatment program proposed in this study was based on references to scientific reasoning. We used the method of Bad Ragaz Ring (BRRM), composed of eleven years divided into four ways in which the therapist acts in relation to the patient, passive, isometric, isotonic and isokinetic.

The emphasis of treatment consisted of more active participation of the patient with the therapist, performing active movements against the trunk and legs, aiming for postural symmetry (BOABATH, 2001).

At the end of the practice of hydrotherapy was made to re-using the same instruments of the evaluation process. There were two appointments in soil (and re-evaluation) and twelve in the aquatic lasting forty-five minutes each.

RESULTS AND DISCUSSION

For each parameter described in the Barthel Index there is a score. In the end of the results are added to a score of zero to one hundred points, making it possible to classify the patient as to their degree of dependence or independence, the of 0 (zero) points corresponds the total dependence and 100 corresponds the independence.

The results obtained for the Barthel Index pre and post test were identical, reaching a score of 90 points. It is worth noting that the patient had suffered a stroke at 17 months, during which, 1 year and 7 months she was helped by the physiotherapy in soil, which probably provided a development within the same functional framework.

Souza et al (2008), assessing the degree of functionality of the stroke victims, 9 months after the accident, noticed that 22% of patients classified as dependent, development to the independence. Mayo et al (1999), in a study about the disabilities that debilitating of the stroke victims, observed that the most recovery motor occurs in the first three months. The BI should be applied mainly until the sixth month, by demonstrating that in this period there is a considerable increase in physical function of patients (Souza et al, 2008).

Lopez et al (2005) found that the patients aged over 65 years old remain with a great degree of dependence after the EVA, while younger patients have achieve better recovery of functional capacity. In this study the patient was 53 years, which may have influenced the improvement of their functional status.

Although the Barthel Index is widely used because of reliability and practicality of implementation (CID-RUZAFA, 1997), there is a little degree points of each topic, leaving to consider, so that refined as the state of patient dependency.

The patients with post EVA have difficulty in maintain weight in the body affected that is interfering with postural control. In the initial postural evaluation, it was observed changes in posture that are described in Table 1.

All of these changes identified (Table 1), together, causes, the medium to long term the development of secondary commitment such as contractures, joint deformities and impairments in the performing activities of daily living (O'SULLIVAN, 2004). As a result of loss of the trunk control, the patients with hemineglect have difficulty in a greater or lesser degree, to practice the activities during their rehabilitation (Davies, 1996).

Table 1: Initial postural evaluation

Anterior View.	• Head tilted to the left; • Left shoulder high; • Angle of Tales augmented on the right side; • Valgus knees.
Lateral View (right and left)	• Anterior head; • Hyperkyphosis chest; • Protrusion of the shoulder; • Pelvic retroversion; • Hyperextension knees; • Flat feet.
Posterior View	• Thoracic scoliosis in S; • Abduction of the shoulder blades

SOURCE: Author, 2009

Among the benefits of aquatic therapy there are the prevention of disorder side-effects of the sedentary lifestyle, partial improvement of the functions disrupted or unaffected and the improvement of functional the trunk muscle, upper limbs and shoulder girdle (BURKHARDT & ESCOBAR, 1985). In postural evaluation after the treatment, the patient showed some developments that are described in Table 2.

Anterior View.	• Head tilted to the left; • Left shoulder high; • Angle of Tales augmented on the right side; • Valgus knees.
Lateral View (right and left)	• Anterior head; • Hyperkyphosis chest; • Protrusion of the shoulder; • Pelvic retroversion; • Hyperextension knees; • Flat feet.
Posterior View	• Thoracic scoliosis in S; • Abduction of the shoulder blades

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Table 2: Final postural evaluation

Anterior View	• Head tilted slightly to the left; • Shoulders aligned; • Angle of Tales decreased in the right side; • valgus knees.
Lateral View (right and left)	• Decreased anterior head; • Decreased thoracic kyphosis • Reduction of protrusion of the shoulder; • pelvic retroversion; • Hyperextension knees; • Flat feet.
Posterior View	• Alignment of thoracic and lumbar spine. • Decrease of the abduction of the shoulder blades.

SOURCE: Author, 2009.

At the end of postural treatment assessment in anterior view showed a decrease in the tilt of the head, shoulder alignment, angle of tales decreased in the right side. There are several studies on rehabilitation after EVA. With the technique of global postural reeducation (GPR), Gomes et al (2006) observed improvement in the standard posture of the patient showing a reduction of the shoulder asymmetry by the blades alignment.

In this study after implementation BRRM, there were similar results when used in the treatment of rehabilitation in stroke patients.

In postural evaluating of lateral view (right and left) showed a decrease in the anterior head, a decrease in thoracic kyphosis, and decreased protrusion of shoulders. According to Kendall et al (1995), the anterior of the head and the lumbar spine straighten occur as a need to compensate other posture changes. In this position, the extensor muscles of the neck are in a shortened and strong position, and there is potential for the development of adaptive shortening of these muscles.

According to Verderi (2001), increasing the kyphotic curvature promotes certain anatomical abnormalities such as: curved back, posterior spinal deformity, spinal shortening, respiratory deficit, decreased chest expansion, reduction of the carrying capacity of the spine, dislocation of the shoulder blades down and forward; girdle designed for front, anterior head.

Second Ruoti and Morris (2000), the (BRRM) aims to reduce muscle tone, relaxation, increased of range motion, muscle re-education, muscle strengthening, restoration of normal patterns of movement, in addition to improved overall strength. However, better functionality of the upper limbs, eventually step in as balanced and confident movement during activities such as selectivity of movement can only be achieved by improving the selective activity of the trunk, particularly in the abdominal muscles. Physiotherapy is very important in the recovery of adaptive stability of the trunk and the ability to move the separate parts of it (SAVIATTO, 2004).

In the assessment of postural hindsight identified an alignment of the thoracic spine and decreased abduction of the shoulder blades. Ruoti et al (2000), found in their study that the BRRM promoted improvement in the patient's posture that may result from the combined effects hydrotherapeutic as water turbulence, which requires stabilization of the central co-contraction of abdominal and paraspinal muscles, with the BRRM effects, such as muscle re-education, stretching paraspinal, improved alignment, trunk stability and the preparation of the lower extremities for weight bearing.

According to Skinner (1985), the BRRM presents a differential in relation to other hydrotherapeutic techniques therefore combines the physical properties of water to the possibility of the same act on behalf of the anatomical and physiological function of muscles and joints.

In this study it was observed that before applying the techniques, the patient had a tendency to support more forward and to the right side, his side not compromised, in other words, typical hemiplegic patient posture (UMPHRED, 1985).

But according to Chagas and Tavares (2001), after the use of specific technique in neurological rehabilitation, have shown a significant correlation of asymmetry and activity of daily live in the hemiplegic individual postulating that every time there is an improvement in symmetry in such individuals, tends to improve the performance in activities of daily live, making the patient more independent in their ADLs.

According to the results of the postural evaluation can identify a significant improvement of postural symmetry, but according to Barthel Index results were not significant because the patient had been classified as an independent before undergoing treatment hydrotherapeutic, where in the end of treatment can not be observed improvement in quality of life because the patient is already in a good functional state.

After application of the Bad Ragaz Method, has been possible to observe an improvement in symmetry in the frontal plane and ease of implementation of some ADLs. This response is consistent with quotes from Lambeck (2004) that informs that the hydrotherapy carries benefits in postural symmetry, thus enabling improvement in the achievements of ADLs.

Moreover Bates and Hanson (1998) confirm that the comprehensive therapeutic approach that uses the water environment to assist in rehabilitation, it is quite advantageous because the pool provides a healthier environment and less risky for the rehabilitation which reduces wear and impact seen in soil exercises.

Through scientific studies Moraes, Lima and Kakihara (2005), agree that patients who have suffered strokes, have difficulties in executing their ADLs due to the debilities of hemibody, and thus the quality of life of these patients are poor.

CONCLUSION

The BRRM enabled the patient improves flexibility, posture and quality of life showing up this way an important tool for the treatment of patients who suffered strokes.

We suggest further research using larger sample of individuals, as well as a treatment for a longer period of time, starting right after the stroke. We also suggest some modifications in the Barthel Index questionnaire, using more questions with a score of different points in order to reaffirm the use of this method as an ally of physiotherapy in the patients with stroke treatment.

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EVALUATION OF THE FUNCTIONALITY DEGREE IN VICTIMS OF ENCEPHALIC VASCULAR ACCIDENT (EVA) THROUGH THE BARTHEL INDEX AFTER HYDROTHERAPY INTERVENTION WITH THE BAD RAGAZ METHOD .

ABSTRACT

Encephalic Vascular Accident (EVA) is one of the main causes of neurological consequences. The patient may present abnormal positions and movements, structural deformities and limitation in the activities of daily life (ADLs). Through the application of the Barthel Index (BI) and intervention of the Bad Ragaz Ring Method (BRRM) the research aimed to verify the responses related to the biomechanical alignment of the trunk and the degree of functionality of a patient with EVA stroke after the aquatic therapy intervention. This research is characterized by a case study of cause-effect, with exploratory character. It was selected a female patient, 55 years-old, with EVA stoke diagnosis at 17 months ago. As an evaluation and re-evaluation procedure was used the simetrograph and the BI questionnaire. Fourteen appointments of 45 minutes each had been made, in the period of two Months. The results obtained in IB pre and post test were identical reaching a simple percentage score of 90 points. Although the Barthel Index is widely used because of the trustworthiness and practicality of implementation there is little degree of each topic, leaving to consider, so that refined as the state of patient dependency. But the BRRM made possible to the patient improvement of the postural symmetry.

KEYWORDS: Activities of Daily Life (ADLs), Barthel Index (BI), Encephalic Vascular Accident (EVA), Hydrotherapy and Bad Ragaz Ring Method (BRRM).

ÉVALUATION DU DEGRÉ DE FONCTIONALITÉ CHEZ LES VICTIMES D'ACCIDENT VASCULAIRE CÉRÉBRAL ENCÉPHALIQUE À TRAVERS L'INDICE DE BARTHEL APRÈS DE L'INTERVENTION D'HYDROTHÉRAPIE AVEC LA MÉTHODE DE BAD RAGAZ.

RÉSUMÉ

L'accident vasculaire encéphalique (AVE) est une des principaux causes de séquelles neurologiques. Le patient peut

présenter des positions et mouvements anormaux, défauts de forme structurels et limitation dans les activités de vie quotidienne (AVQ). À travers l'application de l'Indice de Barthel (IB) et d'intervention de la Méthode d'Anneaux de Bad Ragaz (MABR), la recherche a été l'objectif de vérifier les réponses rapportées à l'alignement biomécanique de tronc et le degré de fonctionalité de patient avec AVE après l'intervention de physiothérapie aquatique. Cette recherche se caractérise par une étude de cas du type de la cause-effet, de coupe longitudinale, avec caractère exploratoire. A été sélectionné un patient du sexe féminin, 55 ans d'âge, avec diagnostique d'AVE il y a 17 mois. Comme procédure d'évaluation et réévaluation a été utilisé le simetrografo et le questionnaire IB. Ont été réalisés quatorze soins de 45 minutes chaqu'un, dans la période de deux mois. Les résultats obtenus dans IB dans la pré et après teste ont été identiques en atteignant un pourcentage global simple de 90 points. Bien que l'Indice de Barthel soit très utilisé dû à la fidélité et praticité d'application il y a peu de graduation de points dans les différents items, en cessant envisager, de manière raffinée l'état de dépendance du patient. Déjà le MABR a rendu possible à la patiente une amélioration de la symétrie postural.

MOTS-CLÉS : Accident Vasculaire Encéphalique (AVE), Activités de Vie Quotidienne (AVD), Indice de Barthel (IB), Hydrothérapie et Méthode d'Anneaux de Bad Ragaz (MABR).

EVALUACIÓN DEL GRADO DE FUNCIONALIDAD EM VÍCTIMAS DEL ACCIDENTE VASCULAR CEREBRAL ENCEFÁLICO POR MEDIO DEL ÍNDICE DE BARTHEL DESPUÉS DE LA INTERVENCIÓN HIDROTERAPIA CON EL MÉTODO DE BAD RAGAZ.

RESUMEN

El accidente vascular encefálico (AVE) es una de las principales causas de secuelas neurológicas. El paciente puede presentar posturas y movimientos anormales, deformidades estructurales y limitaciones en las actividades de vida diaria (AVD). Por medio de aplicaciones del índice de Barthel (IB) e intervención del Método de Anillos de Bad Ragaz (MABR), el objetivo del estudio fue verificar las respuestas relacionadas a la alienación biomecánica del paciente con AVE después de la intervención de fisioterapia acuática. Esta búsqueda se caracteriza por un estudio de caso del tipo causa efecto, de corte longitudinal, con carácter exploratorio. Fue seleccionado un paciente del sexo femenino, 55 años de edad, con diagnóstico de AVE hace17 meses. Como procedimiento de evaluación y revaluación se utilizó el simetrógrafo y el cuestionario IB. Fueron realizados catorce atendimientos de 45 minutos cada, en el periodo de dos meses. Los resultados obtenidos en el IB en el pre y pos teste fueron idénticos alcanzando un porcentaje de puntuación simple de 90 puntos. Aunque el índice de Barthel sea muy utilizado debido la confiabilidad y practicidad de la aplicación hay poca graduación de puntos en las diferentes cuestiones dejando de contemplar, de modo refinado el estado de dependencia del paciente. Ya el MABR posibilitó a la paciente mejora de la simetría postural.

PALABRAS CLAVES: Accidente Vascular Encefálico (AVE), Actividades de Vida Diaria (AVD), Índice de Barthel (IB), Hidroterapia y Método Anillos de Bad Ragaz (MABR).

AVALIAÇÃO DO GRAU DE FUNCIONALIDADE EM VITIMAS DE ACIDENTE VASCULAR CEREBRAL ENCEFÁLICO ATRAVÉS DO ÍNDICE DE BARTHEL APÓS INTERVENÇÃO HIDROTERAPIA COM O MÉTODO DE BAD RAGAZ.

RESUMO

O acidente vascular encefálico (AVE) é uma das principais causas de sequelas neurológicas. O paciente pode apresentar posturas e movimentos anormais, deformidades estruturais e limitação nas atividades de vida diária (AVD). Através da aplicação do Índice de Barthel (IB) e intervenção do Método de Anéis de Bad Ragaz (MABR), a pesquisa objetivou verificar as respostas relacionadas ao alinhamento biomecânico de tronco e o grau de funcionalidade de paciente com AVE após a intervenção de fisioterapia aquática. Esta pesquisa caracteriza-se por um estudo de caso do tipo causa efeito, de corte longitudinal, com caráter exploratório. Foi selecionado um paciente do sexo feminino, 55 anos de idade, com diagnostico de AVE há 17 meses. Como procedimento de avaliação e reavaliação utilizou-se o simetrógrafo e o questionário IB. Foram realizados quatorze atendimentos de 45 minutos cada, no período de dois meses. Os resultados obtidos no IB no pré e pós-teste foram idênticos atingindo um escore percentual simples de 90 pontos. Embora o Índice de Barthel seja muito utilizado devido à confiabilidade e praticidade de aplicação há pouca graduação de pontos nos diferentes itens, deixando de contemplar, de modo refinado o estado de dependência do paciente. Já o MABR possibilitou à paciente melhora da simetria postural.

PALAVRAS-CHAVES: Acidente vascular Encefálico (AVE), Atividades de Vida Diária (AVD), Índice de Barthel (IB), Hidroterapia e Método Anéis de Bad Ragaz (MABR).

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