49 - THE USE OF ELECTROMORFOTHERAPY RESOURCES IN AGED PERSONS - REVISION ARTICLE

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INTRODUCTION

The normal aging or senescence is a progressive process that reduces

the physiological reserves of organs, making the aged vulnerable to chronical diseases that may cause negative functional repercussions. The results of these repercussions in the body can be observed in alterations of organic and physiological systems. The intention of this study is to discuss, through a short

revision, the utilization of electromorfotherapy resources in physiological changes of skeletal muscle and joint systems. It is important to dive into the discuss about the use of electric thermal phototherapeutic agents because the use of these kinds of treatments in aged patients needs more caution than in young persons.

METHODOLOGY

The study was developed from theses, dissertations, indexed scientific articles, virtual library collects (BIREME/ MEDLINE/ LILACS/ SCIELO), periodicals and scientific magazines recently published. To identify the published articles, it was used the keywords “electrotherapy”, “phototherapy”, “thermotherapy” and “aged people”. After this first step, a new research were made, more specific, to select indexed articles related to therapeutics resources, by the presence of some descriptors in the keywords of register. In LILACS was utilized the follow descriptors: electromorfotherapy and aged.

THE USE OF ELECTROMORFOTHERAPY IN REHABILITATION THE OF AGED PEOPLE

One of the damages to the organism during the aging process could be found in the skeletal muscle system and in the joint system, responsible to maintain the functional independency in the third age.

The absence of functional independency or a low threshold of muscular strength and resistance drives the aged to a more dependent lifestyle. The decrease of the functional capacity leads to a higher risk of falls, decrease of bone density, more chances of hip fractures and orthopedics lesions in aged ones. (TINETTI et al., 1988)

There are some muscular and skeletal changes related to the age that causes morphological and structural dysfunctions. This changes leads to the decrease of aspects like: muscular mass, fibers type I and II, number of motor units and conduction speed. Promoting functionally in the aged the decrease of strength, movement, coordination and excitability. (GUCCIONE, 2002). The rehabilitation of the skeletal muscle and joint systems, in a geriatric patient involve many therapeutic resources.

The electric thermal phototherapeutic agents (electrical, thermical, electromagnetic radiation, etc) are used in the treatment of muscular, articular and neurological dysfunctions of aged persons. It is important to highlight that the use of hot and cold as a therapeutical resource in muscular and skeletal disorders provokes a main dilemma of the physiotherapist professional. This happens because it remains lots of controversies about the application of this modalities and many works point to non-scientific affirmations as the use of ice in the twenty four first hours and hot in the following fourth eight hours.

Nowadays, the physiotherapists adopts the application of hypothermia in the acute stages of an inflammatory reaction, before wide movement exercises and after the patient physical activity. On the other hand, the hyperthermia are used by this professional in chronic stages to improve the movements before the physic activity and the rehabilitation. However, the decision process related to the therapeutic resource that must be used in the rehabilitation needs to be based on the changes founded in the tissues, the healing stage and in the physiologic answers wished to the inflammatory and chronic phases. (STARKEY, 2001)

The cold modalities (frozen compresses, cryomassage, frozen baths) are used with effectiveness during all stages of the inflammatory answer and orthopedic lesion in aged people. Effects of the cold application includes the vasoconstriction, decrease of metabolic taxes, of local blood flow, of inflammation and the decrease of pain. The indication to use the cryotherapy is common in cases of lesion or acute inflammation, pain and muscular spasm. Although some professionals use hot compresses or the swirling before the kinesiotherapy to promote a muscular relax, decrease off hardness, facilitation of strength exercises and of the allonge. (LLOYD, 1999; CHIARELLO et al., 2005)

In this context, is important to remind that rheumatologic disorders in aged persons are extremely common, affecting a huge part of this population. Some conditions as immobility, physical dependence and life quality reduction are frequently found in geriatric patients affected by ostheoarthrosis and rheumatoid arthritis (CHIARELLO, 2005).

In cases of aged with ostheoarthrosis, the forms of superficial hot (for example, infrared and paraffin hot) and deep hot (for example, ultrasound) are less harmful to the joints in chronic stages, without exuberant inflammation and with a few chances of cartilage repairing. In those cases the use of hyperthermia is viable in pain control and joint hardness. However in the inflammatory stages is interesting to adopt the cryotherapy, because the cold does not allow the raise of intrajoint enzymatic activity, controls the pain and the muscular spasm. (GREVE et al, 1992; RODRIGUES, 1995).

The electrotherapy also provides to the aged patients some therapeutic benefits that go from the introduction of medicated ions to the control of pain. (KAHN, 1994)

The transcutaneous electrical nervous stimulation, also knew as electroanalgesia, selectively stimulates broad diameter tactile fibers without activating nociceptive fiber with less diameter, promoting the relief of pain. The relief of pain is directly connected to the functional gains to the patient with ostheoarthrosis. Decrease the perception of pain is a therapeutic priority in aged people affected by rheumatic disorders. (TEIXEIRA e OLNEY , 1995; KITCHEN, 2003)

The physiotherapists haves a great preference in the use of ultrasound in their conducts. This preference happens due to diverse benefits of the ultrasonic therapy in the healing of varicose and pressure ulcers (FYFE e CHAHL, 1985; BYL et al., 1992), in the healing of soft tissue lesions (JAKSON et al., 1991), in the raise of bone consolidation, in the neurogenic relief and chronic pain (EVANS, 1980), in the collagen fibers reorganization (FERNANDES et al., 2002), in the inflammatory process (SNOW e JOHNSON, 1988) and others (LOW e REED, 2001; GARCIA, 1998).

It is important to highlight that pulsed ultrasound is recommended in the acute inflammatory phase of arthritis to facilitate the introduction of anti-inflammatory medicaments. This resource could also be used in the aim to help in the reduction of joint hardness and in the repair of harmed tissues (CHIARELLO et al., 2005).

To rehabilitation of aged persons with ulcers is recommended the use of low powered laser. Many studies relate benefits of this phototherapeutic resource in the healing of wounds. Although the laser radiation increases the tissue oxygenation and the

localized microcirculation, also stimulates many reactions during the process of tissue repairing. (ANNEROTH et al., 1998)

The laser healing effect in ulcers of geriatric patients is caused by many factors, among then: the stimulation to the microcirculation promotes a increase in the arrive of nutritional elements related to the raise of mitotic speed, facilitating the cellular multiplication and the formation of new vessels from the pre-existing ones. (BIBIKOVA et al., 1994, GREVE e RAULIN, 2003)

PRECAUTION IN THE USE OF PHYSICAL THERAPEUTIC AGENTS IN AGED PEOPLE

Some precautions must be taken in application of physical therapeutic agents, known as electric thermal phototherapeutic resources, in aged patients. In the use of electrotherapy some parameters of the electrical stimulation must be adapted to the changes of the aging process. An important point is that the aged skin is dehydrated and pinstriped, the circulation in the elderly is reduced, there is a few muscular strength and a limited movement capacity in many of the aged people. The thin and dried skin offers more resistance to the electrical chain, demanding a higher voltage in order to obtain the needed amperage. The decreased circulation also prevents the ideal electric chain transmission and is contra-indicated the use of electrotherapy in aged with active hemorrhage, phlebitis, pacemaker and recent fractures (KAUFFMAN, 2001).

The high voltage currents are not favorable, because in this modality the pulse length is short and the frequency is high (2.500 Hz), demanding higher voltages during the application, that may be uncomfortable to the aged patient. (KAHN, 1994)

Certain conditions as cardiopathy, arthritis, Peripheral vasculopathy, diabetes are common in the third age and provokes changes in the corporal physiology, particularly in nervous and circulatory systems, being able to reduce the body capacity to answer the temperature changes. (DOERING et al, 1996)

In this mode, the cryotherapy in aged people incapable to stand the low temperature due to allergy, hypersensitivity, hypoesthesia, diabetic neuropathy and circulatory insufficiency should not be used. (STARKEY, 2001)

In the acute phase of the rheumatoid arthritic is indicated the cryotherapy to do analgesia, despite of maintain the joint hardness, but the cold must be avoided in all phases of the sickness if the patient presents vasculitis, cryoglobinemia or the Raynaud phenomenon associated. (LLOYD, 1999; KITCHEN, 2003). It is important to reminde that the short wave diathermia in this phase of pathology is not recommended, because the hyperthermia raises the intra-joint temperature, stimulating the catabolic activity of chondrocytes and speeding the degenerative process (FALCONER, 1992; BRANDT, 1998).

It is also not indicated the use of hot in the acute stage of any skeletal muscle or joint disturb, because the increase of temperature powers up the cellular metabolism, increasing the pain, the temperature and the redness of inflammatory phase.

The thermical effects of ultra-sound are not so interesting to the aged people with ostheoarthrosis. This happens due to the raise of the intra-joint temperature in up to 3º C may promote a rise in the level of collagenolysis up to four times. The hot in joint leads de release of collagenotic enzymes, because the enzymatic activity responsible by the cartilaginous degeneration rises as the temperature rises. (GREVE et al, 1992; MARQUES E KONDO, 1998; HUANG et al., 1997; CHAHADE, 2000)

It is important to highlight that in phototherapy, the utilization of ultraviolet is contra-indicated in aged people with systemic lupus erythematosus, because of the effect is the same of solar light exposure, leading to outbreaks of the disease. (GREVE, 2003; CHIARELLO et al., 2005)

CONCLUSION

The electric thermal phototherapeutical resources in aged patients must be used with caution, observing the stages and limitations of the geriatric pathologies. Professionals that use these therapeutical modalities must evaluate the risks, the acceptability from the aged person and the resource effectiveness before chose any equipment to the treatment of the skeletal muscle and joint disturbs. It is essential to investigate the needs of each patient to adjust the dosages, the parameters and the needed treatment time, because the conduct success with thermal, electrical and phototherapeutic agents is conditioned to a good technical and scientific knowledge about these agents.

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THE USE OF ELECTROMORFOTHERAPY RESOURCES IN AGED PERSONS - REVISION ARTICLE

ABSTRACT

The electric thermal phototherapeutic agents (electrical, thermical, electromagnetic radiation, etc) are used in the treatment of muscular, articular and neurological dysfunctions of aged persons. It is important to highlight that the use of hot and cold as a therapeutical resource in muscular and skeletal disorders provokes a main dilemma of the physiotherapist professional. The intention of this study is to discuss through a short revision, the utilization of eletromorfotherapy resources in physiological changes of skeletal muscle systems. The study was developed from theses, dissertations, indexed scientific articles, virtual library collects (BIREME/ MEDLINE/ LILACS/ SCIELO), periodicals and scientific magazines recently published. The experts relates that the electric thermal phototherapeutic resources in aged patients must be used with caution, observing the levels and limitations of the geriatrical pathologies, because the behavior success with termic, electric and phototherapeutic agents are depending on a good technical and scientific knowledge of this agents.

KEYWORDS: Thermotherapy, Phototherapy, Electrotherapy, Aged.

L'UTILISATION DES APPAREILS ÉLECTRO THERMO PHOTO-THÉRAPEUTIQUES SUR DES PERSONNES ÂGÉES - ARTICLE DE RÉVISION

RÉSUMÉ

Les appareils électro thermo photo-thérapeutiques (électriques, thermiques, radiations électromagnétiques, etc...) sont utilisés au traitement des dysfonctions musculaires, articulaires et neurologiques chez les personnes âgées. Il faut dire que l'application du chaud et du froid comme moyen thérapeutique dans les affections musculo-squelettiques provoque un des principaux dilemnes du physiothérapeute professionnel. Notre étude entend discuter sur l'utilisation des appareils d'électro thermo photo-thérapie après une brève révision des changements physiologiques du système musculo-squelettique et articulaire chez une personne âgée. Ce travail est le fruit de thèses, dissertations, articles scientifiques indexés, collections de bibliothèques virtuelles (BIREME/ MEDLINE/ LILACS/ SCIELO), magazines et revues scientifiques publiés récemment. Les experts disent que les appareils électro thermo-photo-thérapeutiques doivent être utilisés avec précaution, chez les personnes âgées, tout en observant phases et limitations des pathologies gériatriques car, le succès des conducteurs avec appareils thermiques, électriques et photo-thérapeutiques est dû à une bonne base technique et scientifique desdits appareils.

MOTS-CLES: Thermothérapie, Photo-thérapie, Electrothérapie, personnes âgées.

EL USO DE LOS APAREJOS DE ELECTRO TERMO FOTERAPIA SOBRE LOS SENILES - ARTÍCULO DE REVISIÓN

RESUMEN

Los aparejos electro termo fototerapeuticos (eléctricos, térmicos, radiaciones electromanéticas, etc...) son utilizados en el tratamiento de las disfunciones musculares, articulares y neurológicas de las personas mayores. Es importante resaltar que la aplicación del calor y del frío como recurso terapeutico en las afecciones musculoesqueléticas provoca uno de los principales dilemas del profesional fisioterapeuta. El propósito del presente estudio es discutir a través de una breve revisión la utilización de los aparejos de electro termo fototerapia en las alteraciones fisiológicas del sistema musculoesquelético e articular en la persona mayor. El presente trabajo fui desarrollado a partir de tesis, disertaciones, artículos científicos indexados, recaudaciones en bibliotecas virtuales (BIREME/ MEDLINE/ LILACS/ SCIELO), periódicos y revistas científicas publicadas recientemente. Los estudiosos dicen que los aparejos electro termo fototerapeuticos en pacientes de edad mayor deben ser utilizados con precaución, observando-se las etapas y las limitaciones de las patologias geriátricas, pues el éxito de las conductas con aparejos térmicos, eléctricos y fototerapeuticos está condicionado a un buen embasamento técnico y científico a respecto de estos aparejos.

PALAVRAS LLAVES: Termoterapia, Foterapia, Electroterapia, Seniles.

O USO DOS RECURSOS DE ELETROTERMOFOTERAPIA EM INDIVÍDUOS IDOSOS - ARTIGO DE REVISÃO

RESUMO

Os agentes eletrotermofototerapêuticos (elétricos, térmicos, radiações eletromagnéticas, etc) são utilizados no tratamento das disfunções musculares, articulares e neurológicas de indivíduos idosos. É importante ressaltar que a aplicação do calor e do frio como recurso terapêutico nas afecções músculoesqueléticas provoca um dos principais dilemas do profissional fisioterapeuta. O propósito do presente estudo é discutir através de uma breve revisão a utilização dos recursos de eletrotermofototerapia nas alterações fisiológicas do sistema músculoesquelético e articular no idoso. O presente trabalho foi desenvolvido a partir de teses, dissertação, artigos científicos indexados, coletados em bibliotecas virtuais (BIREME/ MEDLINE/ LILACS/ SCIELO), periódicos e revistas científicas publicadas recentemente. Os estudiosos relatam que os recursos eletrotermofototerapêuticos em pacientes idosos devem ser utilizados com cautela, observando-se os estágios e as limitações das patologias geriátricas, pois o sucesso das condutas com agentes térmicos, elétricos e fototerapêuticos está condicionado a um bom embasamento técnico e científico a respeito destes agentes.

PALAVRAS CHAVES: Termoterapia, Foterapia, Eletroterapia, Idosos.