

The use of an E-pain technology in the management of chronic pain. Case report

O uso de uma tecnologia E-Pain para o manuseio da dor crônica. Relato de caso

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ABSTRACT

BACKGROUND AND OBJECTIVES: Chronic pain treatment includes nonpharmacologic therapies such as exercise, neuroscience pain education and behavioral interventions. It is necessary to reduce barriers to treatment and provide interventions in an accessible way to all individuals who may benefit. There is a significant interest in the potential of pain management programs administered via the Internet (E-pain technology). The objective of this case report was to assess the application of an online intervention (Caminho da Recuperação) in the management of a patient with chronic pain.

CASE REPORT: A 62-year-old male patient with chronic shoulder pain who underwent rotator cuff reconstruction. The Brief Pain Inventory (BPI), Pain Catastrophizing Scale (PCS), Tampa Scale of Kinesiophobia (TSK) and the Shoulder Pain and Disability Index (SPADI-Brazil) were collected on the first and second visits to the physiotherapy service. At the pre-intervention visit, the patient reported intensity of pain (60/100), TSK (39/64), PCS (26/52), SPADI disability (61.2) and SPADI pain (86). The post-intervention results showed improvements in all domains, pain intensity (10/100), TSK (33/64), PCS (5/52), SPADI disability (38) and SPADI pain (42).

CONCLUSION: The “Caminho da Recuperação” showed to be viable for clinical practice and may help patients in remote areas or with physical and financial constraints. The results of the present study should be interpreted with caution. We recommend the development of clinical trials to test the effectiveness and cost analysis of the intervention.

Keywords: Chronic pain, Health education, Internet, Pain, Patient education as a topic.

RESUMO

JUSTIFICATIVA E OBJETIVOS: O tratamento de pessoas com dor crônica inclui terapias não farmacológicas como exercícios, educação em dor e intervenções comportamentais. É necessário diminuir as barreiras ao tratamento e fornecer intervenções de forma acessível a todos os indivíduos que possam se beneficiar. Existe um interesse significativo no potencial de programas de gerenciamento da dor administrados via Internet (tecnologia E-pain). Este relato teve como objetivo avaliar a aplicação de uma intervenção online (Caminho da Recuperação) no manuseio de um paciente com dor crônica.

RELATO DO CASO: Paciente do sexo masculino, 62 anos de idade, com dor crônica no ombro submetido à reconstrução do manguito rotador. Foram coletados o Inventário Breve de Dor (BPI), a Escala de Pensamentos Catastróficos (PCS), Escala de Tampa para Cinesiofobia (TSK) e Índice de Dor e Deficiência no Ombro (SPADI-Brasil) nas primeira e segunda visitas ao serviço de fisioterapia. Os resultados pré-intervenção da intensidade da dor (60/100), TSK (39/64), PCS (26/52), SPADI incapacidade (61,2) e SPADI dor (86). Os resultados pós-intervenção mostraram melhoras em todos os domínios, intensidade da dor (10/100), TSK (33/64), PCS (5/52), SPADI incapacidade (38) e SPADI dor (42).

CONCLUSÃO: O Caminho da Recuperação apresentou viabilidade para uso na prática clínica podendo auxiliar pessoas em áreas remotas ou com restrições físicas e financeiras. Os resultados do presente estudo devem ser interpretados com cautela. Recomendamos o desenvolvimento de ensaios clínicos quanto à efetividade da intervenção e análise de custos.

Descritores: Dor, Dor crônica, Educação de pacientes como assunto, Educação em saúde, Internet.

INTRODUCTION

Chronic pain represents a challenge for health systems and it is a world socioeconomic problem being one of the conditions that most generate years living disability¹⁻⁴. In addition to the economic losses, chronic pain undermines the general health perceptions, interferes with daily activities and can be associated with psychological and behavioral factors as symptoms of anxiety, depression, catastrophic thoughts, fear related to pain, change in sleep and damages in social relations⁵.

The International Association for the Study of Pain (IASP) recently published a call for action recognizing the urgent need of all countries in improving access to pain management ser-

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vices⁶. However, it is recognized that this implementation is a great challenge due to several obstacles that limit the access to the specialized pain treatment services, like distance, cost, and availability. In this way, interventions based on *online* technologies (E-pain) can help people with pain to access educational and self-management pain programs⁷.

Face-to-face interventions that use neuroscience-based education pain and cognitive-behavioral therapy highlight their usefulness in pain-related outcomes and psychological variables (anxiety, depression, catastrophizing, self-efficacy, fear of movement)^{8,9}. *E-pain* interventions are promising in the handling of chronic pain helping in its reduction and modification of the negative psychological aspects and poor adaptive behaviors¹⁰⁻¹⁵.

The present study aimed at reporting the case of a patient with chronic pain in the shoulder who underwent an E-pain intervention developed for the Brazilian context¹⁶.

CASE REPORT

Male patient, white, 62 years old, right-handed, with complete superior education, married, retired professor and civil engineer. He was referred to the Clinic-School of the Physiotherapy course of the Federal Institute of Rio De Janeiro (IFRJ). The patient had a long history of shoulder pain with no injury or specific accident. A sequence of previous and complementary tests was performed, including shoulder radiography and MRI. The latter showed total rupture of the supraspinatus tendon, thickening of the infraspinatus tendon and signs of subscapularis tendinosis. The patient underwent an arthroscopically supraspinatus tendon reconstruction in February 2017. At the moment he was admitted for the physiotherapy treatment, the patient was in the third postoperative month and complained of pain in the right shoulder of average intensity 50 (visual analog scale (VAS)=0-100) during the day and 100 (VAS=0-100) during the night (self-report). The patient was taking an anti-inflammatory drug (3 times a day) to control the pain, with no improvement in the intensity or duration of pain.

During the assessment, the patient completed a series of instruments related to pain, function, fear, and catastrophizing. These questionnaires were selected based on the history, symptoms and clinical validity. The Brief Pain Inventory (BPI)¹⁷, the Tampa Scale of Kinesiophobia¹⁸, the Pain Catastrophizing Scale (PCS)¹⁹ and the Shoulder Pain and Disability Index (SPADI-Brazil)²⁰ were used.

Before the physical examination, the presence of “red flags” were ruled out. The observation of the shoulder showed scars resulting from the arthroscopy and hypotrophy of the shoulder girdle muscles. The assessment of the range of motion of the shoulder showed pain and restriction for flexion movements (109°), abduction (71°), internal rotation (42°), external rotation (20°), alterations in the scapulohumeral rhythm and reduction in the shoulder muscle strength. The evaluation of the cervical spine and the investigation of neurological signs showed no alterations. The patient’s history, the subjective and objective tests with associated signs and symptoms allowed to classify the pain as nociceptive. However, the patient presented some yellow flags

that might have influenced his beliefs and behavior regarding his pain²¹ (Table 1). It is recommended to provide education in pain and changes in behavior to address the yellow flags^{8,22}.

Table 1. List of yellow flags reported by the patient at the moment of evaluation

Yellow flag	Presence
History of failed treatments	X
Painful experience disproportionate to the condition	X
Poor adaptive beliefs about pain	X
Feelings of anxiety and anguish concerning the future	X
Fear of moving and new injury	X
Passive behavior (the belief that interventions will solve the problems)	X
The belief that it is necessary to eliminate the pain to resume activities	X

According to the results of the patient’s interview that included his beliefs about his health condition, the fear of moving and the negative thoughts, it was decided to start with education in pain as initial treatment, followed by joint mobilization techniques, and exercises for the shoulder in gradual exposure. The patient highlighted two definite objectives for his treatment: (1) decrease the intensity of his pain and (2) decrease his disability for daily activities and exercise resulting from the restrictions and the pain in the shoulder.

The patient was instructed to use the content available on the online intervention “Caminho da Recuperação” (Recovery Path) on the website of the Pesquisa em Dor group (Pain Research Group) (www.pesquisaemdor.com.br) for a week. The “Caminho da Recuperação” has 9 themes: (1) acceptance, (2 and 3) education on pain, (4) sleep hygiene, (5) recognition of stress and negative emotions, (6) positive coping in lifestyle, (7) exercises, (8) communication and (9) relapse prevention. During that first week, the patient should read the content of each of the steps, take notes of the factors present in his own life and the questions that could arise for the following week appointment. No minimum time per day was recommended to use the online intervention, and also how much time the patient dedicated to the intervention was not controlled. In the second visit, with the objective to avoid the influence of the education on actual pain, all the instruments were reapplied by a second surveyor before starting any intervention (Table 2). After the questionnaires were completed by the patient, the professional addressed the content of the “Caminho da Recuperação” based on the patient’s questions. The contents related to the neurophysiology of pain, psychological factors, the importance of the sleep hygiene, the return to daily activities and the practice of exercises were discussed. The exercises for the shoulder and the shoulder girdle complex were gradually introduced as of the third visit of the patient to the physiotherapy service.

This study followed the ethical rules of research in human beings and was previously submitted to and approved by the Research Ethics Committee of the Federal Institute of Rio De Janeiro (IFRJ) (CAAE: 51506015.4.0000.5268).

Table 2. Online pre and postintervention results regarding pain outcomes, kinesiophobia, catastrophizing and limitation of the activities

Brief Inventory Pain	Pre	Post	Δ%
Pain			
Worse pain in the last 24 hours	9.0	3.0	- 60.0
Pain average	6.0	1.0	- 50.0
Pain at the moment	2.0	1.0	-10.0
Pain interference			
General activity	5.0	2.0	-30.0
Mood	2.0	0	-20.0
Ability to walk	0	0	0
Work	7.0	1.0	-60.0
Relationship	1.0	0	-10.0
Sleep	10.0	2.0	-80.0
Ability to enjoy life	1.0	0	-10.0
Kinesiophobia	39.0	33.0	-15.4
Catastrophizing	26.0	6.0	-76.9
Rumination	10.0	3.0	-70.0
Magnification	6.0	1.0	-83.3
Helplessness	10.0	2.0	-80.0
SPADI			
Disability	61.2	38.7	-36.7
Pain	86	42	-51.2

SPADI = Shoulder Pain and Disability Index.

DISCUSSION

Currently, aiming at to provide the adequate access to specialized services and information of quality on pain, there is an increasing interest in the new technologies, mainly via the Internet and for telehealth. The “Caminho da Recuperação” was the first intervention on the Internet developed for Brazil that is based on neuroscience for education in pain and on the positive confrontation strategies¹⁶. The results of this study suggest the potential clinical usefulness of this intervention when handling people with chronic pain. It was observed that the use of “Caminho da Recuperação” contributed to changes like the reduction in pain intensity, the influence of pain in daily activities, as well as the reduction in catastrophizing, kinesiophobia and the improvement of the function. Kinesiophobia was the outcome that presented lower changes after the intervention. We believe that this result was due to the joint restriction presented by the patient at the moment of the assessment. The reduction in the range of motion could contribute to greater fear of moving and an attitude of higher protection.

Neuroscience-based education in pain shows consolidated evidences²³. However, there is no data yet about a program of education in pain, exclusively online and with no physician's intervention. The case report of a patient with chronic lumbar pain showed satisfactory results of the education in pain by email regarding pain intensity, fear-avoidance and reduction of the disability after four months²⁴.

The evidence of online psychological interventions has been previously reported in the literature. A systematic review conducted

by Eccleston et al.¹⁴ identified that the psychological therapies through the Internet improved the pain symptoms, reduced disability, and the symptoms of depression and anxiety in adults with chronic pain. Similar effects were reported by Fisher et al.²⁵ in another systematic review. The authors identified that the online intervention provided benefits in the reduction of the intensity of the pain in children and adolescents.

There are still some issues regarding interventions through the Internet, as, for example, the profile of the patient who will be able to benefit more from this type of approach. Dear et al.²⁶ examined the demographic, clinical, and psychological predictors related to the best response to the treatment via the Internet and highlighted that it was not possible to predict who will benefit or not from these interventions.

The results observed in the present study and the literature are promising, and the risk of adverse effects is considered small¹⁴, but we still don't know the size of the effect of this intervention. Therefore, the results observed in this study should be interpreted with caution. The reduction of pain intensity observed may have been influenced by several factors which were not possible to be controlled as the therapist-patient relationship, the placebo effect, the average regression, etc. However, the modification in other outcomes as the reduction in catastrophizing, kinesiophobia and the decrease of the limitations have been reported in other studies that evaluated the education in pain^{22,23,27,28}. The satisfaction with the online intervention has also been reported as positive²⁵. Thus, it is recommended that clinical trials be developed to estimate the effectiveness of “Caminho da Recuperação” as an intervention for education in pain and positive coping for people with chronic pain.

CONCLUSION

This case report presents “Caminho da Recuperação” as a feasible resource in the practical clinic contributing to the reduction in the intensity of pain, the influence of pain in the activities, kinesiophobia, catastrophizing and limitations of activities.

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