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Case Report

The eye movement desensitization and reprocessing approach in pain management – A case report of a patient with paraparesis

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ABSTRACT

Introduction: Somatic symptoms such as pain from psychiatric cause may result from abnormalities in information processing mechanisms in the central nervous system. Bilateral stimulation of the brain by using alternating eye movements assists to unlock and reprocess experiences.

Aim: The aim of this article is the presentation of the eye movement desensitization and reprocessing (EMDR) method in pain treatment.

Case study: A 23-year-old patient with paraparesis due to traffic accident three years earlier resulting in incomplete transverse spinal cord damage reported severe pain in paralyzed lower limbs from about one year. Thorough physical and imaging examination had ruled out organic causes of the pain and the patient was diagnosed with psychogenic pain. The standard EMDR protocol was used. In order to determine the mental state of the patient, the following tests were applied: (1) beck depression inventory, (2) the pain disability index, (3) subjective units of distress, and (4) validity of cognition. Therapy was completed when the patient declared resolution of leg pain and returned to rehabilitation. Measurements were performed three times: before treatment, immediately after treatment completion and four months after treatment completion.

Results and discussion: During a six-week EMDR therapy, the patient achieved a significant improvement. The importance of eye movements in planning rehabilitation strategies in

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other approach, i.e. modulation of motor control, indicates new research directions of the contemporary comprehensive rehabilitation approach. This study is a single case report, and thus further larger scale studies are required.

Conclusions: The EMDR method could be helpful in psychogenic pain treatment.

1. Introduction

The eye movement desensitization and reprocessing approach (EMDR) is based on Shapiro's theory on processing information and experience and adaptive information processing (AIP) model. This theory assumes that every human being has innate information and experience processing mechanisms required for optimal adaptational responses. Disorders that are the mental effect of the lived experiences that manifest also on a somatic level result from blocked, or ''frozen'', information processing in the central nervous system.[1] Bilateral stimulation of the brain by using e.g. alternating eye movements assists to unlock and reprocess experiences (EMDR approach).[1] Pain, due to its psychophysical duality, is difficult to define. Definition adopted by the International Association for the Study of Pain (IASP) describes pain as ''an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage''.[2] In clinical practice, the most difficult are cases when no organic cause of pain can be established and pharmacological treatment does not provide satisfactory results. Regardless of the origin of pain – biological or psychological – both rehabilitation and psychotherapy may be long and not always provide the expected improvement. The purpose of this work was to present analgesic effects obtained with EMDR in a patient with paraparesis.

2. Aim

The aim of this article is the presentation of an application of EMDR method in pain treatment.

3. Case study

A 23-year-old patient with paraparesis due to traffic accident three years earlier resulting in incomplete transverse spinal cord damage reported severe pain in paralyzed lower limbs from about one year. Pain had a significant influence on decline in physical activity and appetite, as well as mood. Thorough physical and imaging examination (ultrasound, fMRI) had ruled out organic causes of the pain and the patient was diagnosed with psychogenic pain. Pharmacological analgesic treatment did not provide the desired effect.

3.1. *The eye movement desensitization and reprocessing*

In therapy, the standard eight-phase EMDR protocol was used:

1. History taking.
2. Preparation – psychoeducation.
3. Assessment – identification of patient's experiences stored in memory in an unprocessed form, which may manifest itself in image, beliefs, emotions and psychosomatic reactions.
4. Desensitization, bilateral stimulation – processing of information and desensitization of a memory, which was identified in an earlier phase.
5. Installation – installation of positive beliefs related to a memory identified earlier.
6. Body scan – mental body scan performed by a patient for potential tension points.
7. Closure – closure of canals linking main source memory with the actual problem.
8. Re-evaluation – re-evaluation of patient's response to the memory worked on in the previous stages.

Therapy usually focuses on patients' traumatic experiences identified during history taking. In the presented case, no direct relationship between patients' symptoms and her participation in an accident, which can be perceived as a traumatic event, was found. Due to inability to determine the source of the problem, float back technique was additionally used – therapeutic tool, which is an important technique in EMDR therapy, that allows proper conceptualization of the problem. This technique allows to elicit connections of an actual problem with the event or memory being the primary source of the problem, through emotions or beliefs about the self. Therapy revealed that the primary source of the problem was an event form school – exclusion from a sport team.

The duration of therapy was six weeks, i.e. six sessions for 60–90 min, three of which were devoted to processing through bilateral stimulation – phase 4 of the protocol.

First effects of therapy were observed after the first meeting, during which bilateral brain stimulation through eye movements was used. Patient declared that immediately after the first session, she experienced days, when she was occupied with another activity and forgot about the pain, with no need to take analgesic agents. Undertaking activity proved not only pain level reduction, but also mood improvement. Therapy was completed when the patient declared resolution of leg pain and returned to rehabilitation.

Table 1 – Results of diagnostic tools.

Tool	Before therapy	Immediately after therapy	Four months after therapy
BDI	27	5	4
PDI	65	0	0
SUD	8	0	0
VoC	1	6.05	7

3.2. *Clinical evaluation*

In order to determine the mental state of the patient, the following tests were applied:

- beck depression inventory (BDI),
- the pain disability index (PDI),
- subjective units of distress (SUD),
- validity of cognition (VoC).

Measurements were performed three times: before treatment, immediately after treatment completion and four months after treatment completion (Table 1).

After therapy completion, the patient was no longer in pain and returned to previous physical and social activities. She developed a positive self-belief and belief in her abilities. This effect persisted after therapy completion.

4. Results and discussion

During a six-week EMDR therapy, the patient achieved a significant improvement. Therapeutic practice experience has an explanation in studies, which show that external stimulus such as bilateral stimulation induces reorganization of brain structures on neurophysiological level. It was observed that bilateral stimulation decreased activity in the limbic system and induced reorganization of cortical activity.[3–6] Ray and Zbik suggest that EMDR may act through desensitizing emotional aspects of pain experiences.[7] Grant demonstrates that this hypothesis is consistent with memory researches, which demonstrated the neurophysiological involvement of the limbic system in nociception.[8] EMDR therapy separates the connections between traumatic memories and painful associations, which allows individuals to experience their memories with less distress. Pain is thus remembered again with less emotional dimension. This focus of EMDR on emotional experience, beside somatic and cognitive components of experience, distinguishes it from other therapies, which do not directly address the affective dimension of pain. Unresolved remains the question regarding common representation of physical pain and mental suffering in the brain. Dependencies seem circular, i.e. reduction of first may reduce the second and vice versa. Reduction of psychological distress resulting from e.g. the feeling of rejection may cause the reduction of physical pain. Such dependence would explain the relationship between pain therapy and mood and self-esteem increase, as well as self-esteem building therapy increasing pain threshold.

Despite numerous reports on the positive impact of EMDR therapy on the level of phantom pain[9–12] and migraine,[13] indications, contraindications and standards of treatment still remain to be determined. High efficiency of therapy and lack of adverse effects encourage further research. It seems obvious that psychological aspect of pain management should be included in rehabilitation strategies, which should be comprehensive.[14–16] The importance of eye movements in planning rehabilitation strategies in other approach, i.e. modulation of motor control, indicates new research directions of the contemporary comprehensive rehabilitation approach.[17]

This study is limited as it is based on a single case report, and thus further larger scale studies are required.

5. Conclusions

The EMDR method could be helpful in psychogenic pain treatment.

Conflict of interest

None declared.

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