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The role of psychotherapy in chronic pain management

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Abstract

Introduction

As chronic pain occurs in about 20% of the population, pain management is becoming a more and more crucial branch of medicine and its importance in many fields of medicine increases and is more appreciated [1]. Pain is not only a physical experience, but also has a sensory and emotional component so the modern approach to pain treatment should not be limited to pharmacological treatment alone, but also should provide appropriate multifaceted psychological support to the patient and his relatives.

State of knowledge

Pathophysiological mechanisms of developing pain can not be unmentioned while analyzing the pain management and effectiveness of psychotherapy, because physiological and psychological aspects of the human body's functioning are inextricably connected. Knowledge of pain assessment methods is always crucial to lead the psychotherapy in a proper and effective way. The mainstay of pain management is pharmacotherapy, using drug groups such as opioids and non-opioid analgesics , but the role of psychotherapy is also very important and there is much research, which proves it.

Summary

Multidisciplinary treatment of patients with chronic pain is widely recommended, as well as paying attention not only to the somatic aspect, but also to the need for psychological management of these patients. It plays an extremely important role in palliative medicine and the treatment of cancer patients, as well as in neuropathic pain and neurological diseases

Keywords :chronic pain, pain management, psychotherapy, cognitive-behavioral therapy, CBt

1. Introduction

Nowadays pain management is becoming a more and more crucial branch of medicine and its importance in many fields of medicine increases and is more appreciated. As chronic pain occurs in about 20% of the population, pain management is no longer associated exclusively with surgery and postoperative pain management [1]. The most common types of chronic pain are: chronic headaches, lower back pain, joint pain and also neck pain. What is interesting, neuropathic pain is much less common and occurs with a frequency of 1.5-3% [1,2]. Definition of pain created by the International Association for the Study of Pain (IASP) is "pain is a sensory and emotional experience, subjectively perceived as unpleasant, associated with actual or potential tissue damage or described in terms of such damage", which means that pain is a subjective and multifaceted experience and can be experienced in different way in every single patient [17,18]. Pain includes a sensory and emotional component [17, 6], so the modern approach to pain treatment is not limited to pharmacological treatment alone, but also to provide appropriate multifaceted psychological support to the patient and his relatives [17,19,20]. As chronic pain can last for many years, it is a source of great suffering and a significant reduction in the patient's quality of life. That is why pain is considered a disease in itself. The symptoms that accompany it are for example:

sleep and appetite disturbances, irritability, depression, increased fatigability and motor impairment [1]. The mainstay of pain management is pharmacotherapy, using drug groups such as opioids and non-opioid analgesics such as paracetamol, non-steroidal anti-inflammatory drugs (NSAIDs), and metamizole. In addition, the use of coanalgesics in pain management is growing. Non-pharmacological methods, which include local analgesia, peripheral nerve blocks and central blocks, are also important. [3]. The whole other part of pain management is psychotherapy [1]. It is usually used as an additional path of treatment, although in some cases it helps to reduce the medication intake. Importance of the role of psychotherapy in this field of medicine should not be overlooked since we know all of the side effects that could be caused by pharmacotherapy. For example opioid drugs could not only cause nausea, vomiting, peristalsis disorders, immunosuppression, but also may lead to hyperalgesia and then to addiction. [4,5,6,7].

2.1. Purpose and method

The purpose of this article is to present reports on the role of the use of psychotherapy in the treatment of various types of pain based on a review of PubMed and Google Scholar database from 2000 to 2022.

2.2. Physiology of pain

Pathophysiological mechanisms of developing pain are not only the basis of pharmacotherapy, but are also important in analyzing the effectiveness of psychotherapy. A very large role is played here by pain receptors located in the human body, the primary function of which is to inform about the state of danger caused by tissue damage with or without a violation of its continuity, or the existence of a threat of such damage. According to the basic classification based on the role of pain receptors, the following types of pain are distinguished: - nociceptive (receptor) pain: mechanical, inflammatory, visceral - it occurs as a result of stimulation of the receptors or as a result of a decrease in the threshold of their excitability - neuropathic (non-receptor) pain - it develops when the structures of the nervous system are damaged; -psychogenic pain - pain whose basis is not tissue damage [8].

Pain can also be classified according to the criterion of time, here we distinguish acute pain and chronic pain, lasting more than 3 months, despite the completion of the healing process of tissues [9]. The onset of a pain stimulus triggers a series of reactions to protect the damaged area from further tissue injury by limiting mobility and allowing effective regeneration. Pain stimuli are conducted via C-type and A-δ -type nerve fiber pathways [9]. Pain conducted by type C fibers is difficult to localize, and has a wrenching, pulsating character and pain conducted by A-δ fibers is well-localized pain [10]. Among the most important pain receptors present at the ends of C-type fibers are opioid receptors (μ,κ,δ) [11]. In order to better characterize the receptors that receive pain stimuli, which are the points of action of analgesics, it is necessary to distinguish two groups among them: presynaptic receptors and postsynaptic receptors. Presynaptic receptors include μ,κ,δ opioid receptors, alpha2-adrenergic receptors, GABA B receptors and 5-HT3 and 5-HT2 serotonin receptors. On the other hand, postsynaptic receptors are NMDA (N-methyl-D-aspartate), AMPA (modified by GABA system), NK-1 (receptors for substance P). Stimulation of these receptors by glutamate triggers an intracellular influx of calcium ions which in turn promotes pain impulsation. NMDA receptors are also associated with the onset of central sensitization, responsible for the phenomena of hyperalgesia and allodynia [12]. Transmission of the pain stimulus begins with

excitation of receptors present at the ends of sensory fibers. The excitation then spreads toward the posterior horns of the spinal cord and eventually reaches the synaptic termination, where presynaptic receptors are stimulated. As a result, pain transmitters stored in presynaptic vesicles, such as glutamine and substance P, are released into the synaptic space. These transmitters then bind to postsynaptic receptors, stimulating them [10]. From the midbrain and the medulla oblongata originates the descending inhibitory pathway, which, with the help of neurotransmitters such as serotonin and norepinephrine, blocks the conduction of pain impulses to the central nervous system [13].

2.3. Pain assessment methods

Correct and effective assessment of a patient's pain is another extremely important aspect related to pain management. The use of validated scales makes it possible to observe the response to implemented management and allows for adequate adjustment of doses or type of substances and methods used. The preferred scales for subjective assessment of the level of pain sensation in adult patients include:

-NRS - a numerical scale, consisting of six ranks (0-5) or eleven ranks (0-11);

-VRS - a verbal scale containing four items;

-VAS - a visual-analog scale (0-10 cm and 0-100 mm) [3]. Assessment of pain intensity should be performed both at rest and in situations that may intensify pain sensations, such as any movement, deep breathing, coughing, consumption of fluids and meals, and the like. Pain should also be assessed before the intervention is applied, such as before the drug is administered and at a certain time after administration.

2.4. Psychotherapy

As the years go by and science advances, the role of psychotherapy in pain management is growing. Psychotherapeutic methods used to treat pain include: psychoeducation, behavioral therapy, cognitive therapy, hypnotherapy and relaxation techniques (including mind-body- - medicine), meditation or relaxation treatments as a techniques that allows strengthening stress resistance [1]. The assumptions of psychotherapy are primarily modifying ways of thinking about pain (misconceptions about pain) that cause prolonged suffering and disability and developing strategies to adequately and effectively cope with pain. The other advantage of this method of treatment is the ability to replace feelings of helplessness with a sense of control over pain and one's own life. By undertaking effective chronic pain management, many patients are able to return to work and develop an active lifestyle. The role of behavioral therapy in this field of medicine is mainly reducing the frequency of pain behaviors and increasing the frequency of health behaviors as well as reducing the use of medications and overuse of health services. As a result, improving physical fitness and social and occupational activation can be achieved [8].

Cognitive-behavioral therapy (CBT) is an effective way of leveling the psychological crisis, leading to changes in pain perception. It also can meaningly improve the functioning of patients with chronic pain. What is more, the therapeutic effect is not affected by the length of the program and also both individual and group treatment have the same efficiency. [8,16]

Nonetheless if these types of psychotherapy are not sufficiently satisfactory, there is an opportunity to take part in marriage or family therapy. Hypnosis is also used additionally in pain management as it helps to improve the mood and allows better control of chronic pain in some patients [16]. CBT is effective especially in patients struggling with mood and anxiety

disorders and that is a very important issue, since numerous studies show that severe pain fosters a growing sense of insecurity and deliberation, and induces a conviction of inability to cope. It is directly associated with the occurrence of physical and psychosocial disorders, even after the pain is controlled [19,20]. There is a model stress - cognitive appraisal - coping with pain, created by Thorn, which refers to Lazarus and Folkman's transactional theory of stress, according to which the subject makes a primary evaluation of his or her relationship with the environment, perceiving it as irrelevant, having a positive or negative [22]. According to Thorn's model, there are primary and secondary assessments, which are connected with a patient's reaction for pain experience. The primary assessment is the patient's perception and thoughts about pain and related stresses and the secondary assessment is the patient's ability to successfully cope with pain [21].

Patient can assess the pain as a threatening factor, causing severe stress and feeling of suffering, hurt, sadness and sorrow. The consequence is a fatal effect on a behavior by increasing passivity and decreasing activity. The patient focuses attention on the pain and the factors that cause it [22]. Pain can be also experienced in different way, as a kind of challenge, which is accomplishable and possible to manage with. This attitude helps to assess stressing factors more realistic and less dramatic and give the patient more energy to take up activities helping with the reduction of pain or the process of healing [21]. As a result, the patient is able to undertake daily activities and is definitely more agile. CBT has applications in treating conditions such as rheumatic pain, back pain, fibromyalgia as well as in headaches. There are studies that proves that CBT increase the quality of life and decrease risk of depression in patients with chronic back pain [23]. In addition, elements of psychotherapy such as biofeedback and relaxation techniques are applicable to migraine and tension headaches [24]. Patients who experience prolonged pain of significant intensity tend to form a catastrophic image of the world and of themselves. They are unable to realistically assess their situation and chances of recovery. Therefore, cognitive-behavioral therapy plays an undeniably important role in the treatment of anxiety disorders accompanying chronic pain syndromes - it helps reduce anxiety levels, which directly results in the patient's well-being, enabling them to undertake healthy activities that reduce the intensity of pain. However, it should be noted that CBT in this form should not be used with cancer patients, as their concerns about progression and unfavorable course of the disease are realistic. In this situation, the main role of psychotherapy should be to provide support to patients. [22].

3. Summary

The role of psychotherapy, especially cognitive-behavioral therapy, in the treatment of chronic pain cannot be overstated. It has applications in supporting the treatment of many disease entities, but it plays a special role where patients suffer from chronic pain that significantly impairs the quality of life. Of course, pharmacotherapy is also important, so the best effect can be achieved by combining these two treatments. Unlike pharmacotherapy, it has no side effects. The only problem with this type of treatment may be its low availability. To some extent, this may be solved by the current development of telemedicine. In conclusion, multidisciplinary treatment of patients with chronic pain is widely recommended, as well as paying attention not only to the somatic aspect, but also to the need for psychological management of these patients. It plays an extremely important role in palliative medicine and the treatment of cancer patients, as well as in neuropathic pain and neurological diseases, such

as chronic headaches and spinal discopathy, and in rheumatoid diseases. Very important in the therapeutic process is the patient's active participation in controlling and overcoming pain.

Bibliografia

[1] Jan Dobrogowski Niefarmakologiczne metody leczenia bólu Polski Przegląd Neurologiczny 2007, tom 3, 4, 272–278

[2]von Korff M.R., LeResche L. Epidemiology of pain. IASP Press, Seattle 2005: 283–297.

[3] Misiołek H, Zajączkowska R, Daszkiewicz A, et al. Postoperative pain management — 2018 consensus statement of the Section of Regional Anaesthesia and Pain Therapy of the Polish Society of Anaesthesiology and Intensive Therapy, the Polish Society of Regional Anaesthesia and Pain Therapy, the Polish Association for the Study of Pain and the National Consultant in Anaesthesiology and Intensive Therapy. Anaesthesiology Intensive Therapy. 2018;50(3).

[4]Plein LM, Rittner HL. Opioids and the immune system — friend or foe. Br J Pharmacol. 2018; 175(14): 2717–2725, doi: 10.1111/bph.13750, indexed in Pubmed: 28213891. 123.

[5]Weber L, Yeomans DC, Tzabazis A. Opioid-induced hyperalgesia in clinical anesthesia practice: what has remained from theoretical concepts and experimental studies? Curr Opin Anaesthesiol. 2017; 30(4): 458–465, doi: 10.1097/ACO.0000000000000485, indexed in Pubmed: 28590258.

[6]Ziemann-Gimmel P, Goldfarb AA, Koppman J, et al. Opioid-free total intravenous anaesthesia reduces postoperative nausea and vomiting in bariatric surgery beyond triple prophylaxis. Br J Anaesth. 2014; 112(5): 906–911, doi: 10.1093/bja/aet551, indexed in Pubmed: 24554545.

[7]Cata JP, Bugada D, De Andrés J. Opioid less perioperative care. Minerva Anestesiol. 2017; 83(3): 315–320, indexed in Pubmed: 27824241.

[8]Wordliczek J., Dobrogowski J. Leczenie bólu. PZWL, Warszawa 2007: 11–27.; 271-283.;

[9]Jan Dobrogowski, Renata Zajączkowska, Julian Dutka, Jerzy Wordliczek Patofizjologia i klasyfikacja bólu Pol. Przegl. Neurol 2011;7(1):20-30.

[10] Zbigniew Żylicz1, 2, Małgorzata Krajnik2 1 Hospice Rozenheuvel w Rozendaal, Holandia 2 Katedra i Zakład Opieki Paliatywnej Akademii Medycznej im. Ludwika Rydygiera w Bydgoszczy Jak powstaje ból? Neurofizjologia bólu dla początkujących The mechanisms of pain. Pain neurophysiology for beginners Polska Medycyna Paliatywna 2003, 2, 1, 49–56 Copyright © 2003 Via Medica, ISSN 1644–115X

[11] Shang Y, Filizola M. Opioid receptors: Structural and mechanistic insights into pharmacology and signaling. Eur J Pharmacol. 2015 Sep 15;763(Pt B):206-13. doi: 10.1016/j.ejphar.2015.05.012. Epub 2015 May 14. PMID: 25981301; PMCID: PMC4584181.

[12] Gonda X. Basic pharmacology of NMDA receptors. Curr Pharm Des. 2012; 18(12): 1558–1567, indexed in Pubmed: 22280436

[13] Stucky CL, Gold MS, Zhang X. Mechanisms of pain. Proc Natl Acad Sci U S A. 2001 Oct 9;98(21):11845-6. doi: 10.1073/pnas.211373398. Epub 2001 Sep 18. PMID: 11562504; PMCID: PMC59728..

[14] Ren K, Dubner R. Descending modulation in persistent pain: an update. Pain. 2002 Nov;100(1-2):1-6. doi: 10.1016/s0304-3959(02)00368-8. PMID: 12435453.

[15] Songer D. Psychotherapeutic approaches in the treatment of pain. Psychiatry (Edgmont). 2005 May;2(5):19-24. PMID: 21152145; PMCID: PMC3000182.
[16] Wytyczne postępowania w bólu przewlekłym Polskiego Towarzystwa Badania Bólu i Kolegium Lekarzy Rodzinnych. Wydawnictwa Lekarskie PZWL, Warszawa 2003.
[17] Krawczyk A. Kontrola bólu u pacjentów z chorobą nowotworową leczonych przyczynowo i objawowo. Psychoonkologia 2015; 1: 12-18.
[18] De Walden-Gałuszko K. Jakie są psychologiczne reakcje na niektóre objawy somatyczne. Ból. W: Psychoonkologia w praktyce klinicznej. Wydawnictwo Lekarskie PZWL, Warszawa 2011; 29-33
[19] . Kotlińska-Lemieszek A, Łuczak J. Problemy opieki paliatywnej w praktyce lekarza rodzinnego. W: Medycyna rodzinna. Latkowski JB, Lukas W (red.). Wydawnictwo Lekarskie PZWL, Warszawa 2004; 937-942
[20] De Walden-Gałuszko K. Jakie są psychologiczne reakcje na niektóre objawy somatyczne. Ból. W: Psychoonkologia w praktyce klinicznej. Wydawnictwo Lekarskie PZWL, Warszawa 2011; 29-33
[21] Skowrońska M. Terapia poznawczo-behawioralna bólu przewlekłego. Psychoonkologia 2011; 1: 25-35.
[22]Renata Machowska, Bożena Marciniak Terapia poznawczo-behawioralna bólu w przebiegu choroby nowotworowej – podejście spersonalizowane, Psychoonkologia 2016; 20 (3): 142–153 DOI: 10.5114
[23] Hoffman BM, Papas RK, Chatkoff DK, Kerns RD. Meta-analysis of psychological interventions for chronic low back pain. Health Psychol 2007; 26: 1-9.
[24] Nestoriuc Y, Martin A. Efficacy of biofeedback for migraine:
a meta-analysis. Pain 2007; 128: 111-127.