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Mini Review

The Need for Integrative Approaches to Chronic Pain Management: A Reflection on the use and Efficacy of Invasive Procedures for Chronic Pain Conditions

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ABSTRACT

Chronic pain is a worldwide health problem that is not addressed well by the current medical system. The conventional means and methods of addressing illness and disease are not the best for long-term chronic pain management and alleviation of symptoms. In 2020, in the United States, it was estimated that 20.4% of adults had chronic pain. The 2012 National Health Survey also found that an estimated 11.5% (25.3 million) adults had experienced pain every day for three months. The annual cost of chronic pain on society in the United States alone may be as high as $635 billion. In Europe, one in five adults is suffering from chronic pain with an estimated annual cost of 441 billion Euros. Even with estimates this high, experts agree that any approximation of the number of people living with and the economic burden of chronic pain falls short of understanding the true impact of chronic pain on society.

Keywords: Pharmaceutical solutions; Surgical intervention; Interdisciplinary rehabilitation

INTRODUCTION

Chronic pain is a worldwide health problem that is not addressed well by the current medical system. The conventional means and methods of addressing illness and disease are not the best for long-term chronic pain management and alleviation of symptoms. In 2020, in the United States, it was estimated that 20.4% of adults had chronic pain. [1] The 2012 National Health Survey also found that an estimated 11.5% (25.3 million) adults had experienced pain every day for three months.[2] The annual cost of chronic pain on society in the United States alone may be as high as $ 635 billion [3].

In Europe, one in five adults is suffering from chronic pain with an estimated annual cost of 441 billion Euros.[4,5] Even with estimates this high, experts agree that any approximation of the number of people living with and the economic burden of chronic pain falls short of understanding the true impact of chronic pain on society [6].

The personal, societal, and economic burdens of chronic pain are high, and finding more effective ways to deal with its long-term impacts has been difficult for the medical community. Doctors and healthcare providers often resort to pharmaceutical solutions with an estimated 3%-4% (9.6 to 11.5 million) of United States adults currently undergoing long-term opioid therapy [7] Not only are pharmaceutical interventions and opioids ineffective in managing chronic pain and can have serious side effects and can also lead to misuse, addiction, and death, all problems that are getting worse during the pandemic.

THE USE AND EFFICACY OF INVASIVE PROCEDURES FOR CHRONIC PAIN CONDITIONS

Surgical and other invasive procedures have increased in popularity as the medical community attempts to find alternatives to long-term medication and opioid use for chronic pain patients. To understand whether these invasive procedures can safely and effectively treat chronic pain, a systematic review was performed comparing invasive procedures to identical sham procedures, evaluating their impact on pain, medication use, disability, health-related quality of life, and adverse events [8].

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Of the 25 trials (2000 participants) included in this review, there was little evidence supporting the effectiveness of invasive procedures beyond sham procedures for the treatment of chronic low-back pain (n=7), arthritis (n=4), angina (n=4), abdominal pain (n=3), endometriosis (n=3), biliary colic (n=2), and migraine pain (n=2). The evidence level against the use of invasive procedures for for knee pain (n=3) and back pain (n=7) is moderate. In addition, the study also found the adverse events in the active invasive surgical group were significantly higher than in the sham group (4%; risk difference=0.05).

Data from two subsets of studies identified were amenable to a metanalysis; seven studies on back pain (445 participants) and three studies on knee pain due to osteoarthritis (496 participants) were pooled using random-effects meta-analysis. For low back pain, the standard mean difference (SMD) for reduction in pain at six months was 0.18 (95% CI=0.14 to 0.51, P=0.26, I2=62%), which equates to a 4.5 point reduction in VAS-pain score. The proportion of improvement for low back pain due to the ritual of sham surgery was 73%. For osteoarthritis patients with knee pain, the SMD for reduction in pain was 0.18 0.04 (95% CI=0.11 to 0.19, P = 0.63, I2=36%), which equates to a one point reduction in VAS-pain score. There was a larger improvement for osteoarthritis knee pain in the sham group than the active invasive procedure group. Across all studies included in this review, 87% of the improvement in pain reduction was accounted for in sham groups when compared with their active invasive procedure group. Neither of the meta-analyses showed statistical or clinical significant benefit of the active procedures over sham procedures on pain at six months.

The evidence for the specific efficacy beyond sham for invasive procedures is minimal. Routine use of these invasive procedures is not recommended given that the specific benefit of employing these surgeries is unclear. More rigorous research is needed before continuing routine use of these invasive procedures can be recommended. However, before continuing to research the efficacy of invasive procedures compared sham controls, the methodological and ethical considerations must also be reevaluated. Do we need sham studies in surgery given the large placebo effect surgery produces for pain? Is it ethical to do those studies? Is it ethical not to do those studies and continue with approaches that may not work and produce more adverse effects?

Surgical procedures carry risks and are costly, and it is challenging to properly design and execute a rigorous research study to account for the true effect of a surgical intervention. Designing a believable elaborate sham procedure can be difficult and blinding the physician to the participant's group assignment is impossible. Also, whether it is ethically sound to continue to compare surgical interventions to a sham control, even when properly informing the research participant of the risks, is also something to be taken into consideration given the inherent risks of surgical procedures. Finally, is ethical to apply a double standard to pain treatments eliminating drug treatments yet retaining surgical approaches that do not perform better than placebo?

It is recommended that future studies on invasive procedures, when appropriate, employ active controls that have demonstrated efficacy and effectiveness for managing chronic pain before resorting to a sham control. Given the risks to the patients and the cost, the evidence and use of invasive procedures should continue to be evaluated and held to a similar standard as some non-pharmacological interventions that have a relatively low risk to patients and have shown specific benefits for certain types of chronic pain.

INTEGRATIVE APPROACHES TO TREATING CHRONIC PAIN: A WHOLE-PERSON APPROACH TO MANAGING SYMPTOMS

The current approaches employed to treat chronic pain such as prescription medicine (opioids and other analgesics) and invasive procedures are not effective long-term strategies for addressing chronic pain in a way that recognizes the many factors associated with a chronic pain diagnosis. Although chronic pain manifests in a particular area of the body due to injury, surgery, or long-term use of an area in the muscular-skeletal system, the more we learn about the factors associated with chronic pain, the more we understand the importance of a whole person approach to address the many components that affect its severity and impact. Studies have shown that childhood trauma, stress, anxiety, depression, exercise, sleep, nutrition, and socioeconomic and employment status, among other variables, are associated with a chronic pain diagnosis, the patient's functional status, and how they relate to their pain [9,10].

Research has also found that healthcare itself is only responsible for 15%-20% of an individual's health whereas social determinants of health, behaviors, and life-style factors account for the other 85-80% [11]. The World Health Organization has estimated that 60% of health is related specifically to lifestyle factors [12].

Organizations such as the American National Institutes of Health (NIH), the Centers for Disease Control and Prevention (CDC), and the American College of Physicians (ACP) have found that non-pharmacological approaches for chronic pain work and support their use within an integrated model. In a recent publication of clinical guidelines in the Annals of Internal Medicine, after performing a systematic review of systematic reviews and randomized control trials on the efficacy of non-pharmacological approaches to addressing chronic or subacute low backpain, it was concluded that there was good evidence of moderate efficacy for cognitive-behavioral therapy, exercise, spinal manipulation, interdisciplinary rehabilitation, yoga, and mindfulness-based stress reduction [13,14].

Recently, the United States Veterans Administration piloted at 18 sites a Whole Health program designed to help veterans address their health and wellness goals using an integrative approach. This program provides veterans receiving conventional care access to health coaching, peer support programs, and nine integrative modalities chosen through a review of their evidence base: acupuncture, chiropractic,

meditation, massage therapy, biofeedback, clinical hypnosis, guided imagery, yoga, and tai chi. Since piloting this program, veterans who used the Whole Health services, when compared with those who did not, had a threefold reduction in opioid medication use, a decrease of 38%.[15-17] Veterans also reported an overall increase in wellbeing and that they were better able to handle stress.

CONCLUSION

Integrative, whole-person approaches to pain management are designed to address the many factors that are associated with a chronic pain diagnosis and there is evidence to integrate their use into routine conventional care. Addressing the multifactorial nature of chronic pain and integrating non-pharmacological approaches into health care may prove to be the most effective way to treat chronic pain.

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