

# Dronabinol Useful for Chronic Pain: A Case Report

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## ABSTRACT

**Background:** Increasingly, the prevalence and the economic burden of chronic pain has been recognized worldwide. In recent years, there has been growing interest in the use of cannabis and cannabinoid-based drugs to supplement traditional drugs used for the treatment of chronic pain. Due to the prevalence of chronic pain both nationally and globally, effective pain relief is essential. Chronic pain patients who have unsuccessfully tried other medications including NSAIDs, antidepressants, and neuropathic medications indicated for pain relief may benefit from a trial of dronabinol—a cannabis-derived pharmaceutical that is a synthetic form of delta-9-tetrahydrocannabinol ( $\Delta^9$ -THC). Dronabinol is currently approved only for use in chemotherapy induced nausea and vomiting in cancer patients and anorexia in HIV patients. Therefore, the need to synthesize evidence in human clinical and randomized control trials to determine the effectiveness of dronabinol as a potential treatment for chronic pain is not only compelling but also critical.

**Case Presentation:** This patient has been on Dronabinol for chronic pain for almost 3 years, including a 7-month break. Patient is a 35-year-old male, active-duty soldier in the army who survived multiple severe bodily injuries during military operations. He experienced significant alleviation of chronic pain and improvement of mobility, mood, and sleep. He was able to quit all opioids in one day with one additional dose of Dronabinol. No significant side effects, withdrawal, or cravings were observed.

**Research Question:** Is Dronabinol, a synthetic THC derivative, useful for chronic pain?

**Objective:** The aim of the case report is to highlight a patient's experience with dronabinol and its usefulness in chronic pain management.

**Abbreviations CINV:** Chemotherapy-Induced Nausea and Vomiting; NSAIDs: Nonsteroidal Anti-Inflammatory Drugs; DVPRS: Defense and Veterans Pain Rating Scale; VA: Veterans Affairs

## Introduction

Dronabinol is FDA approved for "HIV/AIDs-induced anorexia and chemotherapy-induced nausea and vomiting ('CINV') [1]." However, a few studies have found its usefulness for chronic pain. Chronic pain, pain lasting longer than 3 months, is a common health problem that occurs in more than 1 in 5 adults in the U.S [2]. Chronic pain reduces the quality of life and costs the United States at least \$560 billion (about \$1,700 per person in the United States in pain management, "exceeding the cost of heart disease, cancer and diabetes [3]." In the face of an opioid epidemic, non-addictive or less addictive drugs for

chronic pain such as Dronabinol (Marinol), a synthetic THC-derivative, can be a solution. Dronabinol works on the endocannabinoid system involved with pain. Like THC, it is a partial agonist at the CB1 receptor; and works by reducing neuronal excitation [1]. Unlike marijuana, Dronabinol does not carry any of the other compounds found in the plant *Cannabis sativa*. Unlike opioids, Dronabinol does not have significant side effects or risk of abuse. "The most common adverse reactions ( $\geq 3\%$ ) include abdominal pain, dizziness, euphoria, nausea, paranoid reaction, somnolence, abnormal thinking, and vomiting [1]." It is given safely orally with a wide therapeutic index [1].

Earlier studies have shown Dronabinol’s potential to reduce chronic pain and the number of opioids or other necessary pain medications. “An exploratory retrospective analysis of 12-week data provided by the German Pain e-Registry (GPeR) on [1,145] adult patients with treatment refractory chronic pain” showed “treatment with Dronabinol was followed by a significant reduction of concomitant pain medications known to be associated with significant risk of organ failure (e.g., NSAIDs (nonsteroidal anti-inflammatory drugs)) or addiction (e.g., opioid analgesics).” Treatment was also “followed by a significant improvement in pain intensity, pain-related disabilities in daily life, quality of life, and sleep. No evidence of abuse, persistent patterns of deliberate overdose, misuse, or tolerance development was observed [4].” A 2021 meta-analysis found “Dronabinol showed a significant decrease in [chronic neuropathic] pain compared to placebo in one study, as well as significant improvements in quality of life [5].” A clinical trial of 240 multiple sclerosis patients with central neuropathic pain showed “that dronabinol is a safe long-term treatment option” with “no signs of drug abuse and only one possible

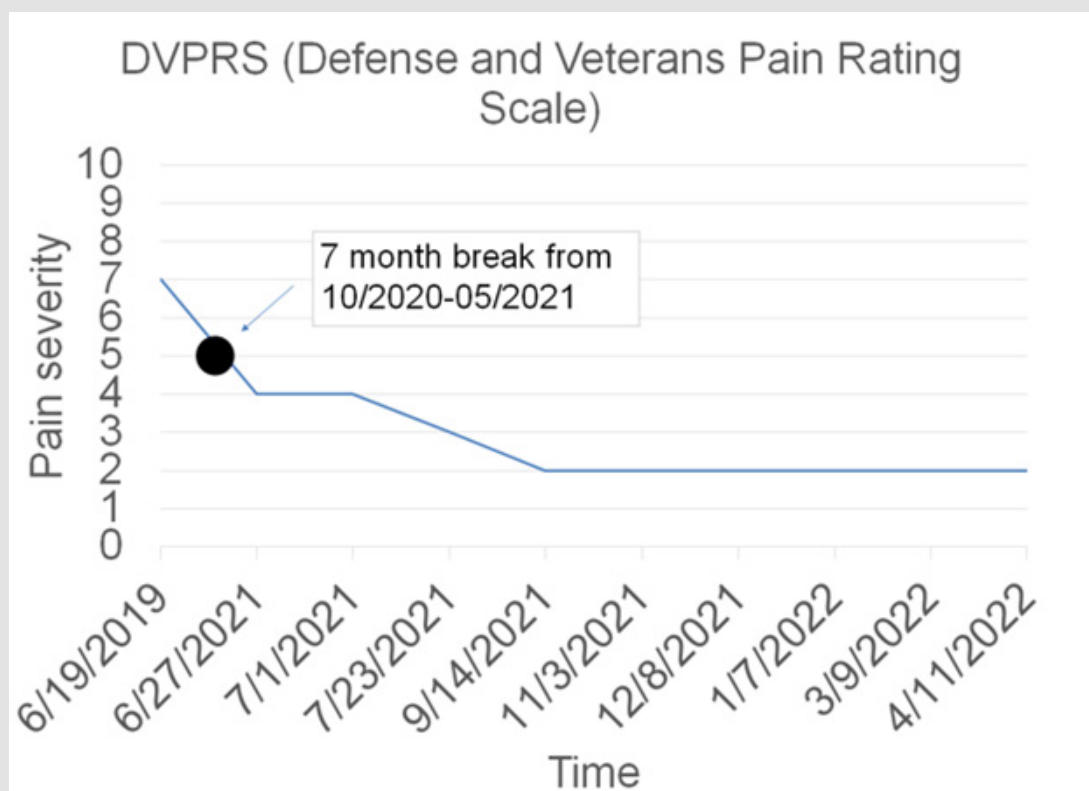
case of dependency.” The study also stated, “other therapeutic drugs recommended by guidelines for the condition chronic neuropathic pain are often no more effective in reducing pain than dronabinol [6].” Thus, Dronabinol displays opioid-sparing properties and should be considered as an option in chronic pain management.

**Rationale**

A few research studies and clinical cases have shown that Dronabinol is useful for chronic pain. However, it is not FDA approved nor commonly prescribed for chronic pain despite its possible benefits over other pain medications such as opioids. This case report showcases the effects of Dronabinol in its use for chronic pain.

**Material and Methods**

I interviewed a patient for the case report via telephone for approximately 45 minutes and reviewed his data. I created a linear plot based off a table of his Defense and Veterans Pain Rating Scale (DVPRS) scores from separate appointments over time.



**Figure 1:** DVPRS of Patient. The Pain Scale is from 0-10 with 0 being no Pain and 10 being the Most Severe Pain.

## Results

Patient is a 35-year-old male in the military who sustained multiple severe bodily injuries and fractures during military operations, requiring surgery. He started on Dronabinol (5 mg tablets x 3 per day, every 6 hours) a month later and has been taking it for over 3 years which included a 7-month break. Patients stopped taking the medication due to the risk of separation from the Army as the military only allows soldiers to take Dronabinol if they are retiring or medically discharged. 7 months later, he went back on the medication due to retirement. Approximately 4 months after his injury, an added dose of Dronabinol helped him to quit all opioids in one day and he found more pain relief from Dronabinol than opioids. He found Dronabinol to be more helpful for pain in certain parts of his body such as his pelvis, knees, and ankle. He reported being more flexible and thus was able to keep doing yoga and fitness classes to prevent his body from "locking up." He started feeling calmer and more relaxed. The patient experienced improved mood, sleep, and stress levels along with reduced chronic pain. The only side effect he experienced was drowsiness. Patient denied nausea, vomiting, abdominal pain, or psychoactive effects. During his 7-month break off Dronabinol, he experienced no withdrawal or cravings. Patient found Dronabinol works the best and longest when taken on an empty stomach and with caffeine. He did not feel its effects if taken with heavy carbohydrate foods such as hamburgers (Figure 1).

## Discussion

The patient's pain severity decreased from 7 to 2/10 from June 2019 to April 2022. Patient stated, "Dronabinol is all around very beneficial" and is "honestly better than most alternatives." However, he had difficulty obtaining access to the medication. He stated, "the majority of installations and the VA (Veterans Affairs) does not support Dronabinol." Although there are safety concerns over THC's psychoactive effects, the patient did not experience any "high," withdrawal, or «cravings» with Dronabinol. He felt more pain relief

from Dronabinol than opioids long term for chronic pain and was even able to quit all opioids in one day with an extra dose of Dronabinol. Future clinical studies should evaluate prescribing Dronabinol for chronic pain management. Limited research has been done in in pediatrics or pregnant women, but caution is advised due to THC's unknown impact on brain development [7].

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