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PERSPECTIVE

Cannabis shenanigans: advocating for the restoration of an effective treatment of pain following spinal cord injury

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Abstract
Cannabis is an effective treatment for pain following spinal cord injury that should be available to patients and researchers. The major argument against the rescheduling of cannabis is that the published research is not convincing. This argument is disingenuous at best, given that the evidence has been presented and rejected at many points during the political dialog. Moreover, the original decision to criminalize cannabis did not utilize scientific or medical data. There is tension between the needs of a society to protect the vulnerable by restricting the rights of others to live well and with less pain. It is clear that this 70-year war on cannabis has had little effect in controlling the supply of cannabis. Prohibition can never succeed; "it is a tyranny from which every independent mind revolts." People living with chronic pain should not have to risk addiction, social stigma, restrictions on employment and even criminal prosecution in order to deal with their pain. It is time to end the shenanigans and have an open, transparent discussion of the true benefits of this much-beleaguered medicine.

Cannabis and some of its derivative components are effective pain relievers that should be available to patients and researchers [1–3]. Because of the international conventions, cannabis is currently listed as a Schedule I drug, indicating that it has no medical value and a high risk of abuse and dependence. These conventions were politically expedient and largely driven by the United States against the advice of the physicians present [4–6]. At no time during these conventions was there any attempt to investigate the commercial or medicinal properties of cannabis. It was politically expedient to utilize propaganda [7–9] and racial fear [10] to forge a political wall that impedes access and forms a major barrier to medical research into cannabis use. The major argument against the rescheduling of cannabis is that the research is not convincing [11]. This argument is disingenuous at best, given that the evidence has been presented and rejected at many points during the political dialog [5, 12] thus restricting funding for research. Moreover, there was no scientific or medical data utilized in the decision to criminalize cannabis.

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Human beings have used cannabis for at least 10,000 years [13]. Trade in cannabis as a food, fiber and medicine [14] is evident long before the first written record of medical use (around 2700 BC) [15]. During the nineteenth century, western medicine rediscovered the medicinal properties of cannabis [16, 17]. However, international alarm over an opium epidemic created a global political storm that led to a reaction against opium and "Indian hemp" cultivation and exportation in the early 20th century [4]. This was influenced by the activities of the temperance movement in the nineteenth century [18]. As we struggle with the current opioid epidemic, it is ironic that some of the first recorded uses of cannabis in western medicine showed its effectiveness in treating persons with opioid addiction [17].

The 1912 International Opium Convention and the 1925 International Commision on Dangerous Drugs pressed countries to restrict import and export of opium and cannabis; signatories' instituted laws restricting the trafficking of opium and cannabis by way of taxation and certification. The United States, China and Japan requested that the medical and scientific properties of cannabis and opium be investigated, while other countries voted the request down [4]. The United States response was the 1937 Marijuana Tax Act that levied exorbitant taxes for the prescription of cannabis in the United States [19].

Cannabis remained in medical use until it was removed from the US pharmacopoeia in 1941 [15]. Subsequent

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legislative action of criminalizing marijuana possession in the Boggs act in 1951 which introduced mandatory minimum sentencing for cannabis possession [20, 21]. Cannabis, having been used for over 10,000 years, became a criminal activity in the United States < 70 years ago, based on absolutely no evidence [22]. The final political victory was found in the Single Convention on Narcotic Drugs 1961 and 1972 [23]. This Convention mandated that the 100 signatory countries would classify cannabis as having no medical value, despite a great deal of evidence to the contrary [5, 6].

Published research has completely eroded the claim that cannabis has no medicinal value. The discovery of the endocannabinoid system provides a biological basis for action of the observed medicinal properties of cannabis [24]. The National Academies report that there is conclusive evidence of the effectiveness of cannabis for controlling chronic pain [1], nausea, and spasticity [2]. Additionally, its withdrawal symptoms are very mild [25] when compared with alcohol, opioids or benzodiazepines.

Chronic pain affects up to 83% [26–28] of persons living with spinal cord injury (SCI) and 58% of these report the pain as excruciating [29, 30]. Chronic pain limits activities of daily life [31, 32], leads to poorer overall health, lower satisfaction with quality of life [33] and a greater risk of developing depression [34]. A Cochrane review found only poor quality evidence supporting the long-term efficacy of opioids and other analgesics in chronic pain [35], and that this contributes to the current crisis of misuse of prescription drugs [36, 37].

The patient's voice is clear. Patients with SCI and chronic pain report that cannabis was the single most effective medication out of 26 pain treatments and the fourth longest acting pain reliever [27, 38]. Eighty-one percent of patients strongly agreed that cannabis alone was more effective for pain than cannabis and opioids [37]. Others report relief of pain in 75–83% medical cannabis patients [39–42] and 92% of the patients reported improved quality of life [43] after other treatment have failed. There is no difference in the occurrence of serious adverse events compared with control [44]. With an overall adult lifetime dependence rate of 9% of cannabis users [45], drug researchers have consistently listed cannabis as less addictive than caffeine, nicotine and alcohol; placing cannabis last or near the last in a list of addictive drugs [46].

This evidence shows that cannabis should not be considered a schedule I drug. It indeed has substantial medicinal value in a wide variety of conditions, is less addictive then other drugs and has a very low lifetime dependence rate. The misclassification of cannabis by international convention motivated by political bodies [47] has created a unique situation for researchers. The moratorium on federally funded cannabis research leaves clinicians with little scientific base when counseling patients who may be interested in using cannabis for medical reasons. It has led to a dearth of solid evidence to formulate clinical trials. We also have no standard dosing guidelines, nor warning labels such as on tobacco or alcohol.

The time has come to put the cannabis discussion in a human rights framework [48]. Ethically, it is unjust to withhold and restrict the use of a potentially effective medication, when the currently available medications can be ineffective, have a high risk of addiction and can lead to overdose [35]. "Seriously ill patients have the right to effective therapies. To deny patients access to such a therapy is to deny them dignity and respect as person" [49].

Persons with SCI should feel free to discuss cannabis use with physicians, regardless of the legality or method of acquisition, just as they would discuss supplement use or over-the-counter and alternative medications. They should also feel confident that physicians would have accurate and helpful information about the possible risks and benefits of cannabis to help make informed decisions that best suit that person's lifestyle. Currently, such information is not readily available for physicians.

There is tension between the needs of society to protect the vulnerable by restricting the rights of others to live well and with less pain. It is clear that this 70-year war on cannabis has had little effect in controlling the supply of cannabis. Prohibition can never succeed: "It is a tyranny from which every independent mind revolts [18]." People living with chronic pain should not have to risk social stigma, restrictions on employment and even criminal prosecution in order to deal with their pain [50].

Compliance with ethical standards

Conflict of interest The authors declare that they have no conflict of interest.

References

1. National Academies of Sciences E, Medicine. The Health Effects of Cannabis and Cannabinoids: The Current State of Evidence and Recommendations for Research. Washington, DC: The National Academies Press; 2017.
2. Whiting PF, Wolff RF, Deshpande S, Di Nisio M, Duffy S, Hernandez AV, et al. Cannabinoids for medical use: a systematic review and meta-analysis. JAMA. 2015;313:2456–73.
3. Baron EP. Comprehensive review of medicinal marijuana, cannabinoids, and therapeutic implications in medicine and headache: what a long strange trip it's been. Headache. 2015;55:885–916.
4. The International Opium Commision. BMJ 1910;1:93–7.
5. Bonnie RJ, Whitebread CH. The forbidden fruit and the tree of knowledge: an inquiry into the legal history of American marijuana prohibition. Va Law Rev. 1970;56:971–1203.

6. New York Academy of Medicine. The La Guardia Committee Report: The Marihuana Problem in the City of New York. Mayor's Committee on Marihuana, by the New York Academy of Medicine. City of New York: New York Academy of Medicine; 1944.
7. Gasner L. Refer madness. 1938.
8. Anslinger HJ, Cooper, CR. Marijuana, assassin of youth. The American Magazine. New York, 1937.
9. Bromberg W. Marihuana: a psychitric study. JAMA. 1939;113:1–12.
10. Gray M. Drug crazy:how we got into this mess and how we get out. New York: Routledge; 2000.
11. Andreae MH, Rhodes E, Bourgoise T, Carter GM, White RS, Indyk D, et al. An ethical exploration of barriers to research on controlled drugs. Am J Bioeth. 2016;16:36–47.
12. Medicine NYAo. The La Guardia Committee Report: the marihuana problem in the city of New York. Mayor's Committee on Marihuana, by the New York Academy of Medicine. City of New York: New York Academy of Medicine; 1944.
13. Long TW, M Demske D, Leipe C, Tarasov P. Cannabis in Eurasia: origin of human use and bronze age trans-continental connections. Veg Hist Archaeobotany. 2017;26:245–58.
14. Brand E, Zhao z. Cannabis in Chinese medicine: are some traditional indications referenced in ancient literature related to cannabinoids? Front Pharmacol. 2017;8:1–11.
15. Earleywine M. Understanding marijuana. New York: Oxford Univ. Press; 2002.
16. O'Shaughnessy WB. New remedy for tetanus and other convulsive disorders. Boston Med Surg J. 1840;23:153–5.
17. Birch E. The use of Indian hemp in the treatment of chronic chloral and chronic opium poisoning. Lancet. 1889;133:625.
18. B. Prohibition. Science. 1887;IX:105-6.
19. Medicine Io. Marijuana as medicine? The science beyond the controversy. Washington, DC: The National Academies Press; 2000.
20. ACLU. The war on Marijuana in Black and White. New York, NY: ACLU; 2013.
21. Cooper HLF. War on drugs policing and police brutality. Subst Use Misuse. 2015;50:1188–94.
22. Bauman WA, La Fountaine MF, Cirnigliaro CM, Kirshblum SC, Spungen AM. Administration of increasing doses of gonadotropin-releasing hormone in men with spinal cord injury to investigate dysfunction of the hypothalamic-pituitary-gonadal axis. Spinal Cord. 2017;56:247–58.
23. United Nations. Single Convention on Narcotic Drugs. Treaty Series, Vol. 1, Chapter VI, Title 15. New York: United Nations; 1961.
24. Devane WA, Dysarz FA 3rd, Johnson MR, Melvin LS, Howlett AC. Determination and characterization of a cannabinoid receptor in rat brain. Mol Pharmacol. 1988;34:605–13.
25. Joy J, Watson SJ, BEnson JA. Marijuana and medicine: assessing the science base. Washington, DC: National Academy Press; 1999.
26. Jensen MP, Hoffman AJ, Cardenas DD. Chronic pain in individuals with spinal cord injury: a survey and longitudinal study. Spinal Cord. 2005;43:704–12.
27. Cardenas DD, Jensen MP. Treatments for chronic pain in persons with spinal cord injury: a survey study. J Spinal Cord Med. 2006;29:109–17.
28. Atkins AM, Gonzalez F, Joyo B, Aisen ML, Atkins AM, Gonzalez F, et al. Tapering opioid prescriptions and reducing polypharmacy for inpatients with spinal cord injury at Rancho Los Amigos National Rehabilitation Center. J Rehabil Res Dev. 2014;51:vii–xiv.
29. Siddall PJ, Loeser JD. Pain following spinal cord injury. Spinal Cord. 2001;39:63–73.
30. Siddall PJ, McClelland JM, Rutkowski SB, Cousins MJ. A longitudinal study of the prevalence and characteristics of pain in the first 5 years following spinal cord injury. Pain. 2003;103:249–57.
31. Putzke JD, Williams MA, Daniel FJ, Bourge RC, Boll TJ. Activities of daily living among heart transplant candidates: neuropsychological and cardiac function predictors. J Heart lung Transplant. 2000;19:995–1006.
32. Turner JT, Lee V, Fletcher K, Hudson K, Barton D. Measuring quality of care with an inpatient elderly population. The geriatric resource nurse model. J Gerontol Nurs. 2001;27:8–18.
33. Ville I, Ravaud JF. Subjective well-being and severe motor impairments: the Tetrafigap survey on the long-term outcome of tetraplegic spinal cord injured persons. Soc Sci Med. 1982;52:369–84. 2001
34. Putzke JD, Richards JS, Kezar L, Hicken BL, Ness TJ. Long-term use of gabapentin for treatment of pain after traumatic spinal cord injury. Clin J Pain. 2002;18:116–21.
35. MTJR Nobel, Treagear SJ, Coates VH, Wiffen PJ, Akafomo C, Schoelles KM. Long-term opioid management for chronic noncancer pain. Cochrane Database Syst Rev. 2010;1: CD006605.
36. Parker-Pope. Times Health. New York Times. 2 May 2013.
37. Reiman A, Welty M, Solomon P. Cannabis as a substitute for opioid-based pain medication: patient self-report. Cannabis Cannabinoid Res. 2017;2:160–6.
38. Heutink M, Post MW, Wollaars MM, van Asbeck FW. Chronic spinal cord injury pain: pharmacological and non-pharmacological treatments and treatment effectiveness. Disabil Rehabil. 2011;33:433–40.
39. Meng H, Johnston B, Englesakis M, Moulin DE, Bhatia A. Selective cannabinoids for chronic neuropathic pain: a systematic review and meta-analysis. Anesth Analg. 2017;12:1638–52.
40. Wilsey B, Marcotte TD, Deutsch R, Zhao H, Prasad H, Phan A. An exploratory human laboratory experiment evaluating vaporized cannabis in the treatment of neuropathic pain from spinal cord injury and disease. J Pain. 2016;17:982–1000.
41. Wilsey BL, Deutsch R, Samara E, Marcotte TD, Barnes AJ, Huestis MA, et al. A preliminary evaluation of the relationship of cannabinoid blood concentrations with the analgesic response to vaporized cannabis. J Pain Res. 2016;9:587–98.
42. Piper BJ, DeKeuster RM, Beals ML, Cobb CM, Burchman CA, Perkinson L, et al. Substitution of medical cannabis for pharmaceutical agents for pain, anxiety, and sleep. J Psychopharmacol (Oxf, Engl). 2017;31:569–75.
43. Schmidt LA, Jacobs LM, Spetz J. Schmidt et al. Respond. Am J Public Health. 2016;106:e8–e9.
44. Ware MA, Wang T, Shapiro S, Collet JP. Cannabis for the management of pain: assessment of safety study (COMPASS). J Pain. 2015;16:1233–42.
45. Cook J, Lloyd-Jones DM, Ogden E, Bonomo Y. Medical use of cannabis: an addiction medicine perspective. Intern Med J. 2015;45:677–80.
46. Hilts P. Is nicotine addictive? It depends on whose criteria you use. New York Times. 2 August 1994;C 3.
47. Nutt DJKLAN DE. Effects of schedule I drug laws on neuroscience research and treatment innovation. Neuroscience. 2013;14:577–85.
48. Cohen PJ. Medical marijuana 2010: it's time to fix the regulatory vacuum. J Law Med Ethics. 2010;38:654–66.
49. Clark PA. The ethics of medical marijuana: government restrictions vs. medical necessity. J Public Health Policy. 2000;21:40–60.
50. Bone M, Seddon T. Human rights, public health and medicinal cannabis use. Crit Public Health. 2016;26:51–61.