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Delta-9-THC based monotherapy in fibromyalgia patients on experimentally induced pain, axon reflex flare, and pain relief

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Abstract

Objective: Fibromyalgia (FM) is a chronic pain syndrome characterized by a distinct mechanical hyperalgesia and chronic pain. Recently, cannabinoids have been demonstrated as providing anti-nociceptive and anti-hyperalgesic effects in animal and human studies. Here, we explored in nine FM patients the efficacy of orally administered delta-9-tetrahydrocannabinol (THC) on electrically induced pain, axon reflex flare, and psychometric variables.

Research design and methods: Patients received a daily dose of 2.5-15 mg of delta-9-THC, with a weekly increase of 2.5 mg, as long as no side effects were reported. Psychometric variables were assessed each week by means of the West Haven-Yale Multidimensional Pain Inventory (MPI), Pittsburgh Sleep Quality Index (PSQI), Medical outcome survey-short form (MOS SF-36), the Pain Disability Index (PDI), and the Fibromyalgia Impact Questionnaire (FIQ). In addition, patients recorded daily, in a diary, their overall pain intensity on a numeric scale. Each week, pain and axon reflex flare was evoked experimentally by administration of high intensity constant current pulses (1 Hz, pulse width 0.2 ms, current increase stepwise from 2.5-12.5 mA every 3 minutes) delivered via small surface electrodes, attached to the volar forearm skin.

Main outcome measures: Daily pain recordings by the patient, experimentally induced pain, and axon reflex flare recorded by a laser Doppler scanner.

Results: Five of nine FM patients withdrew during the study due to adverse side effects. Delta-9-THC had no effect on the axon reflex flare, whereas electrically induced pain was significantly attenuated after doses of 10-15 mg delta-9-THC ($p < 0.05$). Daily-recorded pain of the FM patients was significantly reduced ($p < 0.01$).

Conclusions: This pilot study demonstrated that a generalized statement that delta-9-THC is an analgetic drug cannot be made. However, a sub-population of FM patients reported significant benefit from the delta-9-THC monotherapy. The unaffected electrically induced axon reflex flare, but decreased pain perception, suggests a central mode of action of the cannabinoid.

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