Journal of Psychopharmacology 7(4) (1993) 389–391

Effective treatment of Tourette's syndrome with marijuana

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A single case report is described where marijuana appears to have been an effective treatment modality for symptoms of Tourette's syndrome. Other possible treatment modalities are excluded. It is concluded that there is a need for further work examining the interactions between marijuana, nicotine and the symptomatology of Tourette's syndrome.

Key words: Tourette's syndrome; marijuana; cannabinoids; nicotine; haloperidol; case report

Introduction

Gilles de la Tourette first described the disorder which now carries his name in 1885. The disorder is typically characterized by multiple motor and vocal tics. The tics typically occur many times daily and may include obscenities as well as animal noises. The age of onset is typically before 21 years and there may be a change in the tics' anatomical location, their number, frequency, complexity and severity over time (American Psychiatric Association, 1987).

The prevalence of Tourette's syndrome is uncertain but is probably about one person per thousand. The disorder is assumed to have a primarily organic aetiology although there are clearly significant secondary psychological effects. Untreated, the disorder tends to be a life-long disease characterized by partial remissions and exacerbations.

Haloperidol is the drug of choice in the treatment of Tourette's syndrome. When given in dosages as small as 0.5 mg per week to 3 mg per day there is a 70–80% improvement rate (Licamele and Goldberg, 1988). Up to 50% of Tourette's patients experience significant side effects from haloperidol (Clementz, Lee and Barclay, 1988). It was thought that pimozide would be a preferable drug for this disorder but unfortunately this medication has now been found to be less effective than haloperidol (Shapiro *et al.*, 1989).

A literature is now developing regarding the possible effectiveness of both nicotine and marijuana in the disorder. Studies have shown that nicotine may potentiate the effects of haloperidol in improving motor tics (McConville *et al.*, 1991; Emerich, Norman and Sandberg, 1991) and another study has also suggested that nicotine and cannabinoids may increase the effectiveness of neuroleptics (Moss *et al.*, 1989). Nicotine chewing gum has also been shown to diminish tics not controlled by neuroleptics. The improvement was said to be the result of nicotine and not the act of chewing (Emerich, Vorman and Sandberg, 1991; Moss *et al.*, 1989). Cannabinoids appear to have an antidystonic effect and may be useful when combined with other conventional drugs (Consroe, Sandky and Snider, 1989).

Sandyk and Awerbuch (1988) have described three patients with Tourette's syndrome who have had incomplete responses to conventional medications and who then reported significant reductions in motor and verbal tics following recreational marijuana use. The symptom reduction was achieved by using half to one marijuana cigarette per day. One patient found that his tics were exacerbated within 12 h of ceasing marijuana. The authors noted that these patients may have used marijuana to reduce the stress and anxiety that occurred secondarily to the Tourette's symptoms as all three patients reported reduced levels of anxiety. We now report a case of a patient where the use of marijuana appears to be the only possible agent that could have caused a complete resolution of longstanding Tourette symptoms.

Case vignette

Mr. A was a 36 year old man referred to the Far West Mental Health Service in Broken Hill, Australia for an assessment of a worker's compensation claim. He had been off work from his job as a public servant for 3 years, having been retired on medical grounds because of Tourette's syndrome. During that time he had lived in relative isolation on a sheep station in the outback of New South Wales.

Mr. A had a well documented history of Tourette's syndrome. The first behaviour changes were noted at the age of 11 and became more apparent by the age of 14 at

which stage the diagnosis was made. At this time he had obvious motor tics and coprolalia. The motor tics occurred daily, although their locality would change and his illness persisted continuously over the years. He was treated at various times with both haloperidol and pimozide but was never symptom free. He learnt a series of tricks to cover up his outbursts of obscenities and managed to continue working in the public service. His symptoms were well known by his colleagues and he was able to pretend that he was clumsy with people who did not know of his symptoms. At the age of 33 he was, however, finally pensioned out of the public service on medical grounds. At that stage he moved to an outback region and a relatively stress-free life devoting his time to restoring steam engines and piano playing on a very isolated property. Since his retirement he has taken no medication for his symptoms and has not abused alcohol.

During the first 2 years following his retirement, his symptoms continued unabated and with no apparent change. At the age of 35 Mr. A learnt, from a Tourette's syndrome support group newsletter, that there was some evidence that marijuana might reduce the symptoms of Tourette's. Although he had been a long standing smoker of pipe tobacco he had never tried marijuana and was well aware that this was illegal. He then made a deliberate decision to take marijuana on a daily basis to see if this would in fact reduce his symptoms. He was able to obtain a regular supply of cannabis leaf and commenced taking a regular dose of one 'cone' per night. A cone is a thimble-sized cone-shaped container attached to a 'bong' or water pipe through which the cannabis is smoked. Within a week he found that he was completely symptom free, much to his surprise and delight. He remained well for the next year and continued taking his nightly dose of marijuana until seen for psychiatric assessment.

Mental state assessment 1 year after commencing marijuana was of a slim man who looked his years and who was dressed in typical bush gear. He was able to present himself fluently and appropriately during two separate 1-h examinations and displayed no evidence of any psychiatric or motor disorder whatsoever. He was however able to mimic the symptoms that he used to have and could give very convincing demonstrations of both the motor tics and coprolalia, but denied that these symptoms had occurred in the past year.

Hardly surprisingly Mr. A was determined to continue taking his regular dose of marijuana and was not prepared to come off the marijuana for a period of a couple of months to see if his symptoms returned to absolutely prove its efficacy in a natural single case drug trial. He was therefore advised to continue taking the marijuana. Efforts were made by the authors to obtain this legally through the New South Wales Department of Health but this was not possible.

Discussion

We believe that this case is convincing evidence of the effectiveness of marijuana in reducing and eliminating symptoms of Tourette's syndrome. Our patient had been on no medication for at least 2 years' prior to commencing marijuana, had a regular pipe tobacco intake which did not alter and had been living a relaxed life style which also did not alter. We do not know, and cannot prove, whether the effects of the marijuana were related to a reduction in anxiety levels and these did not seem to be high anyway, or to a clear-cut physiological effect. The actions of cannabis on the brain are still unclear. Moss *et al.* (1989) have suggested that nicotine and the cannabinoids may act through a common neurophysiological cholinergic mechanism in the extrapyramidal system. This is supported by the finding that the effects of either can be blocked by mecamylamine, a central nervous system active nicotinic antagonist (Moss *et al.*, 1988). We believe that this study demonstrates there has been some sort of effect of the marijuana on the Tourette's symptomatology and we believe that the reasons for this effect deserve further investigation.

The ethical issue of our clinical advice to this patient to continue using an illegal substance is obviously important and deserves consideration. This sort of clinical advice is commonly given in other settings particularly by doctors treating patients with AIDS or terminal cancer, and potentially places the doctors in a legally embarrassing position.

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