



Case Report

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Use of Cannabinoid Oil in a Patient with ADHD



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Abstract

We report on an adolescent boy who was assessed in neurodevelopmental clinic because his parents have become increasingly concerned about his behaviour and learning. He always had difficult time concentrating and his mind has a tendency to wander. ADHD diagnosis was made according to DSM-V following a comprehensive multidisciplinary assessment. Psychoeducation and use of ADHD medications was offered to parents but rejected in order to avoid any potential side effects of either stimulants or non-stimulant ADHD medications. Instead, a trial of Cannabinoid oil has been conducted by parents on their own responsibility. Changes were reported by the child, his family and teachers which included improvements of both academic and behaviour outcomes. The child insisted to continue using the cannabinoid oil despite the advice by the pediatrician's that there was no evidence to support its use. In conclusion, there is not enough research data for the therapeutic use of cannabinoids in children and adolescents with ADHD in terms of efficacy and safety and for this reason it should not be encouraged for treatment of ADHD. Current practice, using stimulants and or non-stimulants in conjunction with psychoeducation should remain first line treatment for children with ADHD.

Keywords: ADHD; Cannabinoid oil; Cannabis; Medical cannabis; Stimulant drugs; Non-stimulant drugs; Drug misuse; Psychoeducation; Complementary therapy

Abbreviations ADHD: Attention Deficit Hyperactivity Disorder, ASD: Autism Spectrum Disorder, CBO: Cannabinoid Oil, CYP: Children and Young People, MC: Medicinal cannabis

Introduction

According to the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5), attention deficit hyperactivity disorder (ADHD) is a neurodevelopmental disorder defined by impairing levels of inattention, disorganization and or hyperactivity-impulsivity [1]. The disorder begins in childhood and often persists into adulthood and must be present in more than one setting. The prevalence of ADHD is estimated to occur at about 5% to 9% for children and adolescents and about 3% to 5% for adults [2,3]. Diagnosis of ADHD is traditionally based on subjective assessment of behaviour by clinicians and carers in different settings, but this approach is prone to biases. However,

recent advances in computerised Continuous Performance Task (CPT) test as well Quantified Behaviour Test (QBT) have greatly improved their clinical utility as objective diagnostic and monitoring aid [4,5]. ADHD is associated with negative impacts including reduced school performance and being at higher risk for developing antisocial personality disorders, which increases the chances of developing substance use disorders and being incarcerated later on [1]. A large cross-sectional study involving 2811 adults, aged between 18- 74 years old showed an association between the frequent use of cannabis and the subtype of ADHD. A greater proportion of affected daily users reported meeting

symptom criteria for the combined/hyperactive-impulsive subtype of ADHD rather than the inattentive type [6]. Other comorbidities such as autism [7], tics [8], and sleep problems [9] are common in children and adolescents with ADHD.

Case Report

The parents of a 14 years old boy took him to the general practitioner because they have become increasingly concerned about his behaviour and learning not only at home but also in school. The doctor decides more information is required before any treatment is indicated. No other previous medical history was reported. His parents and teachers indicate that he is restless and often requires reminders to stay on task. He is described as constantly presenting with difficulty listening and following instructions. He indicates that he always had difficult time concentrating in the class and his mind has a tendency to wander. He always has difficulty settling to sleep and he sometimes wakes up at night. At this point the GP decided to refer him to the Child Development Centre for assessment as the possibility of him having ADHD was raised. Full medical and developmental assessment was performed by neurodevelopmental paediatrician and showed him to be a bright and articulate boy with normal physical examination. The ADHD screening tools such as Connors Questionnaires as well as SNAP Questionnaires from home and school indicated high scores for ADHD symptoms and showed consistency across both setting. ADHD diagnosis was made according to DSM-V criteria. The diagnosis of ADHD and its course of treatment to include psycho-education and ADHD medications was explained to parents. Parents were not keen using the ADHD medications in order to avoid any potential side effects. Teachers implemented support within the school setting in order to improve his ability to manage instructions, ask for help when he needs it. Since his diagnosis, a trial of Cannabinoid oil which was bought over the counter has been conducted by parents as there was no improvement in his concentration and hyperactive behaviour. When reviewed in clinic he stated that the cannabinoid oil helps to calm his mind and to decrease the restlessness of his thoughts. The child and his parents insisted to continue using the cannabinoid oil despite the advice by the Paediatric team that there was no strong evidence and or research to support its use.

Discussion

Management of ADHD patients, including medication treatment and psychoeducation [10], requires pro-active service development, engagement of commissioning and service managers for addressing primary and secondary care involvement in order to optimise patients care and have a comprehensive individual care plan for ADHD patients [11,12]. In a recent observational cohort survey in the UK, it was identified that families of children with ADHD are using a wide variety of main and non-main treatments, which are both publicly and privately funded to help with ADHD management. Nearly 70% of those surveyed, reported using pharmaceutical medications, 74% had participated in

a parenting class and 45% reported use of non-mainstream treatment. The most popular non-mainstream treatments used were nutrition, homoeopathy, massage, and cranial osteopathy. Out of 175 families surveyed, only one child with ADHD symptoms were managed using cannabidiol [13].

Researching medicinal cannabis and/or cannabinoid oil in neurodevelopmental disorders, specifically ADHD, is undoubtedly controversial. There is only one controlled study on cannabis-based medication in adults with ADHD. Researchers reported reduced hyperactivity/impulsivity symptoms as well as improved emotional ability [14]. In a cross-sectional study on adult ADHD patients who were licensed for medical cannabis use, it was revealed that the high consumption of medicinal cannabis was associated with ADHD medication reduction and improved ADHD Self Rating Scores [15]. An observational descriptive study, with an average age 10 years old found that there was an improvement in the symptoms of social communication and many co-morbid mental disorders in patients with ASD including symptoms of ADHD. Behaviour disorders, motor deficits, autonomy deficits, communication and social interaction, cognitive deficits, sleep disorders and seizures, with mild adverse effects such as sleepiness, irritability, diarrhoea, conjunctival hyperaemia and increased body temperature were reported [16].

A longitudinal study in New Zealand children showed a clear dose-dependent association between ADHD symptoms at 25 years of age and cannabinoid abuse. This association was found to be mediated through abuse of other substances, including Ecstasy (MDMA) and methamphetamines, suggesting the possible existence of a causal chain process in which cannabis use led to increased rates of other forms of drug use, with these being associated with increased symptoms of adult ADHD [17]. In a series of clinical cases with 30 treatment-resistant adults with ADHD, it was found that MC was helpful for a variety of symptoms, including improved concentration and sleep as well reduced impulsivity [18]. On the other hand, there have been several case reports on the use of Cannabinoids in patients with ADHD. Hupli described the therapeutic use of cannabinoids for a 33 years old male with a combined-type adult ADHD who reported relief of the patient's ADHD symptoms with reduced hyperactivity as well as improved focus and impulse control. Before using cannabinoids, the patient was tried for several years on several medications including Ritalin but with poor results [19]. In a single case study of a cannabis use on 28 adult male with ADHD while off stimulants, it was also reported that the consumption of cannabis had a positive impact on performance, behaviour and mental state of the subject. However, on blood testing, very high concentrations of cannabinoids were found in view of the patient smoking cannabis instead of taking the prescribed dronabinol [20].

In conclusion, from our current study, the evidence does not support the use of cannabinoids in the management of children with ADHD. There was only one double blind randomised controlled study which was conducted in adults with small number

of participants and the results can't be generalised to children and adolescents. There have been limited single-case reports in adults with ADHD and evidence of self-medication reporting variable extent of symptom control. In general, there is not enough research data for the therapeutic use of cannabinoids in children and adolescents with ADHD in terms of efficacy and safety and for this reason it should not be recommended for treatment of ADHD.

References

1. (2013) Diagnostic and statistical manual of mental disorders, (5th Ed), American Psychiatric Association 21.
2. Polanczyk G, de Lima MS, Horta BL, Joseph Biederman, Luis Augusto Rohde (2007) The worldwide prevalence of ADHD; a systematic review and meta regression analysis. *Am J Psychiatry* 164(6): 942-948.
3. Witchen HU, Knapper S, Schumann G (2014) The psychological perspective on mental health and mental disorder research: Introduction to the ROAMER work package 5 consensus document. *Int J Methods Psychiatr Res* 23(Suppl 1): 15-27.
4. Ogundele MO, Ayyash HF, Banerjee S (2011) Role of computerised continuous performance task tests in ADHD. *Progress in Neurology and Psychiatry* 15(3): 8-13.
5. Hollis C, Hall CL, Guo B, Marilyn James, Janet Boadu, et al. (2018) The impact of a computerised test of attention and activity (Qb Test) on diagnostic decision-making in children and young people with suspected attention deficit hyperactivity disorder: Single blind randomised controlled trial. *J Child Psychol Psychiatry* 59(12): 1298-1308.
6. Loflin M, Earleywine M, De Leo J, Andrea Hobkirk (2014) Subtypes of attention deficit-hyperactivity disorder (ADHD) and cannabis use. *Subst Use Misuse* 49(4): 427-434.
7. Ayyash H, Ogundele M, Lynn R, Schuum T, Ani C (2021) Involvement of community paediatricians in the care of children and young people with mental health difficulties in the UK: Implications for case ascertainment by child and adolescent psychiatric, and paediatric surveillance systems. *BMJ Paediatrics Open* (5) 1: e000713
8. Ogundele M, Ayyash H (2018) Review of the Evidence for the Management of Co-morbid Tic Disorders in Children and Adolescents with ADHD. *World J Clin Pediatr* 7(1): 36-42.
9. Ayyash HF, Preece P, Morton R, Cortese S (2015) Melatonin for sleep disturbance in children with neurodevelopmental disorders: retrospective observational naturalistic study. *Expert Rev Neurother* 15(6): 711-717.
10. National Institute for Health and Care Excellence (2018). Attention Deficit Hyperactivity Disorder: Diagnosis and Management.
11. Ayyash HF, Sankar S, Merriman HC, Vogt, T Earl, et al. (2013a) Engagement of commissioners, primary and secondary care for developing successful ADHD services. *Eur Child Adolesc Psychiatry* 22(1): 45-46.
12. Ayyash H, Sankar S, Merriman HC Vogt, T Earl, et al. (2013b) Multidisciplinary consensus for the development of ADHD services: the way forward. *Clinical Governance: An International Journal* 18(1): 30-38.
13. Fibert P, Relton C (2020) What families in the UK use to manage attention deficit hyperactivity disorder (ADHD): a survey of resource use. *BMJ Paediatrics Open* 4 (1): e000771.
14. Cooper RE, Williams E, Seegobin S, Charlotte Tye, Jonna Kuntsi, et al. (2017) Cannabinoids in attention-deficit/hyperactivity disorder: A randomised-controlled trial. *Eur Neuropsychopharmacol* 27(8): 795-808.
15. Hergenrather JY, Aviram J, Vysotski Y, Salvatore Campisi-Pinto, Gil M Lewitus, et al. (2020) Cannabinoid and terpenoid doses are associated with adult ADHD status of medical cannabis patients. *Rambam Maimonides Med J* 11(1): e0001.
16. Fleury-Teixeira P, Viegas Caixeta F, Cruz Ramires da Silva L, et al. (2019) Effects of CBD-enriched cannabis sativa extract on autism spectrum disorder symptoms: an observational study of 18 participants undergoing compassionate use. *Front Neurol* 10: 1145.
17. Fergusson DM, Boden JM (2008) Cannabis use and adult ADHD symptoms. *Drug and alcohol dependence* 95(1-2): 90-96.
18. Milz E, Grotenhermen FS (2015) successful authorised therapy of treatment resistant adult ADHD with Cannabis: experience from a medical practice with 30 patients. [Poster] International Cannabinoid in Medicine and Research Conference, in Sestri Levante (GE) Italy.
19. Hupli A (2018) Medical cannabis for adult attention deficit hyperactivity disorder: sociological patient case report of cannabinoid therapeutics. *Med Cannabis Cannabinoids* 1(2): 112-118.
20. Strohbeck-Kuehner P, Skoop, G, Mattern R (2008) Cannabis improves symptoms of ADHD. *Cannabinoids* 3: 1-3.



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