Budding Psychosis: A Case of Tetrahydrocannabinol Precipitating Prolonged Psychotic Episode

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Abstract

This case report details a 14-year-old African-American male with ADHD who developed substance-induced psychosis and possible early-onset schizophrenia following cannabis use. After presenting with hallucinations, delusions, and aggressive behavior, he was diagnosed and treated in an inpatient psychiatric unit. His treatment included Risperdal, Vyvanse, Clonidine, and Propranolol, leading to some improvement in symptoms. The patient's unstable home environment, history of parental substance abuse and psychiatric illness, and recent traumatic experiences likely contributed to his condition. Despite ceasing cannabis use, the patient continued to experience mild paranoia and disorganization, indicating a complex interplay of genetic and environmental factors in the development of his psychosis. The case underscores the potential for cannabis to trigger psychosis in vulnerable adolescents and highlights the need for further research into these risk factors.

INTRODUCTION

Schizophrenia, a neurodevelopmental condition characterized by auditory and visual hallucinations, delusions, and negative symptoms, can have a deleterious impact on a patient's functional status. Symptoms typically emerge in the early 20s, with two-thirds of cases presenting between the ages of 20-40^[1]. The prevalence of this condition is rare, affecting 1-2 people in 10,000 with a lifetime prevalence of 1%. ^[1] Of all cases of schizophrenia, only 4% emerge before the age of 15 ^[1]. Cannabis use, particularly at a younger age, has been linked to doubling the risk of future schizophrenia development, with daily use of high-potency THC increasing the risk of psychotic disease development five-fold. ^[2] The prognosis of patients with early-onset schizophrenia is worse than adult-onset. However, an acute onset tends to be more favorable compared to an insidious course^[1].

While there have been numerous studies regarding cannabis-induced psychosis, there is a dearth of literature demonstrating cannabis use as a direct instigator for first-episode psychosis and schizophrenia development rather than a risk factor for the future development of the condition. Here, we present a case of prolonged substance-induced psychosis and possible early-onset schizophrenia with a timeline linking cannabis use and first-episode psychosis together.

CASE

A 14-year-old African-American male with a history of ADHD presented to the emergency department for concern for hallucinations and delusions. Initial interview revealed he last smoked marijuana seven days prior to his arrival at the emergency department. At that same time, his mother endorsed observing behaviors not typical of the patient developing, including believing someone is going to kill him, claiming to have seen the devil, and endorsing the need to "pay for his sins." His urine drug screen was noted to be positive for THC and amphetamines, which were reasonably explained by his home prescription of Vyvanse. He was uncooperative and aggressive toward emergency department staff, requiring several medications for agitation and restraints. After stabilization, he was then

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transferred to an inpatient adolescent psychiatric unit with a working diagnosis of substance-induced psychosis secondary to cannabis use, first-episode psychosis.

At admission, the patient was unable to give an accurate history. He was acutely anxious with pacing and demonstrated disorganized behavior, randomly pausing to pray and spontaneously doing pushups multiple times during the encounter. He was started on low dose Risperdal 0.5 mg nightly for psychosis with rapid titration to 2 mg twice daily by day 12. On subsequent interviews, his distractibility and impulsivity improved as his home dose of Vyvanse 40 mg daily and Clonidine 0.1 mg nightly was restarted on the second and third day of admission, respectively. With improvement and the ability to participate in interviews in a more organized manner, he was able to endorse symptoms of depression, anxiety with panic attacks, and intermittent suicidal and homicidal ideation without a plan. His delusions continued to vary daily, ranging from perseveration regarding people with cat stickers, breaking up with his "imaginary" girlfriend, and believing he is already dead and therefore does not need to eat. Propranolol 5 mg twice daily was added on day 15 of his hospitalization due to continued anxiety related to his psychosis.

During his admission, it was discovered that his home situation was unstable. The patient's mother had a history of drug abuse, and the patient had been staying intermittently with his godmother. Additionally, the mother had a history of psychiatric illness with a known prior prescription for Risperdal, though her specific psychiatric diagnosis remained unclear. The patient's father was reportedly absent as he had been repeatedly jailed for sex-related offenses.

Along with housing instability, recent traumatic events were revealed by the patient's family, including a friend of the patient dying from gun violence and a separate criminal activity completed by a group of children he knew. The family believed the patient may have been aware of information related to this criminal activity but was afraid of going to the police, fueling significant anxiety in the patient. This had been considered to potentially yield merit as the patient reported auditory and visual hallucinations of sirens and people pointing at him and calling him a "snitch" during his hospitalization.

At the end of his hospital course, he consistently denied having hallucinations but continued to have mild paranoia and disorganization. His final medication regimen at discharge included Risperdal 2 mg twice daily, Propranolol 5 mg twice daily, Clonidine 0.1 mg nightly, and Vyvanse 40 mg daily. Lab evaluation of the patient, including complete blood count, comprehensive metabolic panel, thyroid cascade profile, vitamin B12, antinuclear antibody, rapid plasma reagin, and HIV-1 and HIV-2 antibodies, were unremarkable. The patient was ultimately discharged after 22 days as he no longer demonstrated unsafe behavior on the unit with the coordination of continued care in the outpatient setting.

DISCUSSION

This case highlights a unique instance where cannabis use can be directly traced to the onset of psychosis without remitting symptoms when the substance is no longer being consumed. The patient is suspected to have been at higher risk of developing psychosis and potential schizophrenia due to multiple factors. Of specific interest, he had frequent and early use of cannabis, which has been previously linked to a significantly higher risk of developing schizophrenia, particularly when used before the age of $15^{[3]}$. He additionally has experienced housing instability with suspected other Adverse Childhood Events (ACEs), which approximately two-thirds of patients with schizophrenia have previously reported experiencing and has been linked to

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varying increased odds of developing the condition depending on exposure type ^[7, 8]. Exposure to gun violence, as the patient's family endorsed him experiencing, has been shown to double the odds of reporting future psychotic experiences ^[9]. Finally, a family history of schizophrenia has been previously established as the strongest single indicator of individual schizophrenia risk, with approximately half of patients with early-onset schizophrenia in a first or second-degree relative ^[10,11].

This case suggests that cannabis use puts adolescents at a higher risk of developing substantially long episodes of psychosis and potentially progressing to early-onset schizophrenia at young ages. As cannabis use does not precipitate psychosis and schizophrenia in all adolescent users, it would seem reasonable that there may be biological and social components that place certain individuals at heightened risk. In this case, the patient's combination of genetic risk factors, unstable home environment, and recent traumatic experiences combined with cannabis use are suspected to have increased his risk of experiencing his first psychotic episode. Further research is recommended to better identify which risk factors play a significant role in the development of psychosis and early-onset schizophrenia in the context of cannabis use.

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