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CHRONIC CANNABIS USE PRESENTING WITH NEUROCOGNITIVE IMPAIRMENT AND CANNABIS-INDUCED PSYCHOSIS: A CASE REPORT AND INTEGRATED TREATMENT APPROACH

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ABSTRACT

Cannabis-induced psychosis is a serious psychiatric condition and is associated with chronic and prolonged cannabis use. The chronic use of cannabis often results in significant cognitive, behavioural and psychosocial impairment. The present case study examined the case history of SM. He was a 45-year-old married male with a twenty-year history of cannabis dependence. He was presented with recurrent psychotic episodes characterized by aggression, irritability, grandiose delusions, self-talk, insomnia, mood instability and impaired social functioning. Clinical assessment was conducted through comprehensive interviews, behavioural observations, psychometric testing and laboratory investigations. Assessment tools included the Mini-Mental State Examination (MMSE), DSM-5-TR Checklist for Cannabis Use Disorder, House-Tree-Person Test (HTP), Rotter Incomplete Sentence Blank (RISB), Thematic Apperception Test (TAT) and drug screening tests. Findings indicated severe Cannabis Use Disorder accompanied by recurrent psychotic symptoms, emotional dysregulation, impaired insight and significant personality vulnerabilities. The patient demonstrated a pattern of symptom exacerbation following cannabis use and medication non-adherence. A substantial improvement was observed with consistent pharmacological treatment and psychosocial intervention. A structured treatment approach incorporating antipsychotic medication, psychoeducation, relapse prevention strategies, motivational enhancement and family involvement was implemented to address both substance dependence and psychotic symptoms. The findings further underscore the need for early identification and comprehensive management of cannabis-related psychiatric complications within the Pakistani clinical context.

Keywords: *Cannabis-induced psychosis, Cannabis use disorder, Psychosis, Substance abuse, Cognitive impairment, Relapse prevention, Case study*

INTRODUCTION

There are many substances are being used worldwide amongst different age groups by using different methods. Cannabis is found to be the most widely consumed psychoactive substances as its authorization and legalization is also receiving social acceptance. A large ratio of diverse population is consuming this substance regularly. The growing acceptance of Cannabis is the result of perception that it is relatively harmless as compared to other illicit substances. However, it is evident that a heavy and chronic use of cannabis can cause substantial psychiatric and neurocognitive consequences at any point (Volkow et al., 2014).

It has been identified through different researches that prolonged consumption of cannabis can adversely affect multiple cognitive domains. This impairment can impact attention, processing speed, working memory, learning, executive functioning and decision-making abilities of individuals (Broyd et al., 2016). These changes and impacts are most commonly occurred among individuals with long term and high dose of cannabis consumption. These changes may also occur even after stopping its consumption in the abstinence period (Lorenzetti et al., 2020).

Aside from cognitive impairments, one of the most serious clinical consequences of chronic cannabis use is the increased risk of psychotic disorders. Cannabis-induced psychotic disorder (CIPD) is recognized in the Diagnostic and Statistical Manual of Mental Disorders Fifth Edition Text Revision (DSM-5-TR) as a substance-induced psychotic disorder characterized by hallucinations and/or delusions that develop during or shortly after cannabis intoxication or withdrawal (American Psychiatric Association [APA], 2022). Several longitudinal studies have found that cannabis use can increase the risk of psychosis in a dose-dependent manner. Additionally, frequent users may demonstrate significantly higher rates of psychotic symptoms as compared to non-users (Murray et al., 2017).

Some in-depth literature assessed the relationship between cannabis and psychosis. It was found that the cannabis use involves dysregulation of the endocannabinoid system and dopaminergic neurotransmission within mesolimbic pathways. A dysregulation in these systems may result in abnormalities in perception, cognition and emotional regulation (Bloomfield et al., 2016). A repeated cannabis exposure may sensitize individuals to future psychotic episodes that may contribute to recurrent relapses even after symptom remission (Di Forti et al., 2019).

The severity and abnormality of its consequences make treatment of cannabis-induced psychosis clinically challenging. Antipsychotic medications are prescribed to deal with psychotic symptoms. But, an ongoing substance use, lack of insight, cognitive deficits and side effects may result in poor treatment adherence (Patel et al., 2020). Long-acting injectable antipsychotics have increasingly been recommended for patients who consult for recurrent relapses. Injectables are preferred as these relapses are mostly associated with medication non-compliance. These antipsychotic injectables may improve treatment adherence and reduce hospitalization rates (Kishimoto et al., 2021).

The present case is representing the clinical complexities associated with chronic cannabis use. This case is also shedding light on recurrent psychosis, neurocognitive dysfunction, antipsychotic-induced extrapyramidal symptoms and comorbid neurological vulnerability as a consequence of cannabis use. It further highlights the importance of integrated pharmacological and psychosocial interventions in achieving long-term clinical stability.

CASE STUDY

SM was a 45-year-old married male living in a nuclear family system with his wife and three children. He belonged to a lower middle class socio-economic status. He received education till grade 10th and was employed as a waiter in the hotel industry. The patient and his family both provided information regarding his clinical history through. Family members were considered reliable informants due to the patient's limited insight during periods of acute psychiatric disturbance. SM was referred for psychiatric evaluation and treatment by his family because of increasing behavioural issues, chronic cannabis use,

recurrent psychotic symptoms and increasing aggression that had become difficult to manage within the home environment. His symptoms had significantly impaired his interpersonal relationships, occupational functioning and overall quality of life. The severe impairment in his social and occupational functioning required a comprehensive psychiatric assessment and intervention.

SM exhibited a longstanding history of cannabis abuse accompanied by severe psychological and behavioural disturbances. The presenting complaints included physical and verbal aggression, abusive language, marked irritability, grandiose delusions, self-talk, flight of ideas, mood instability, insomnia and tremors. Family further reported that these symptoms intensified considerably whenever he resumed cannabis consumption or became non-compliant with prescribed psychiatric medication. His aggressive outbursts frequently created distress within the family and occasionally resulted in physical confrontations.

According to his family, SM had been functioning adequately prior to the onset of substance use. They reported that SM started cannabis use 20 years back when he was employed in the hotel industry. He became associated with colleagues who regularly used cannabis in hotel. Repeated exposure and peer influence contributed to the initiation of cannabis use. A gradual progression in the substance use was noticed by the family from recreational experimentation to chronic dependence. The frequency and quantity of cannabis consumption increased substantially with the passage of time is last few years. Noticeable changes emerged in his personality, emotional functioning and behaviour with n increase in substance use. He became increasingly irritable, emotionally unstable and socially withdrawn. The family also notices that gradually grandiose beliefs, inappropriate self-talk, suspiciousness and disorganized thinking were also appeared which indicated the onset of psychotic symptoms. Sleep disturbances also became a persistent concern and often resulted in prolonged periods of insomnia accompanied by heightened agitation and aggression.

Several years prior to the current presentation, SM experienced his first major psychiatric decompensation characterized by severe psychotic symptoms which included grandiose delusions, flight of ideas, profound irritability, sleeplessness, verbal and physical aggression and significant behavioural dysregulation. At that time, hospitalization was required due to the severity of his symptoms. He received antipsychotic medication and mood-stabilizing treatment during that admission. Substantial clinical improvement was observed during admission which resulted in stabilization and discharge from inpatient care. However, family members reported that on the night of discharge he engaged in heavy cannabis smoking and remained awake throughout the night consuming the substance. He experienced a dramatic relapse characterized by severe aggression, psychotic symptoms, insomnia and marked behavioural disturbance within hours. The intensity of his symptoms resulted in immediate re-admission to psychiatric hospital the following day.

According to the family, a recurrent pattern has been consistently observed since after his last relapse. Now it has become a pattern that whenever antipsychotic treatment is discontinued, SM rapidly develops psychotic symptoms. It has also been mentioned by the family that adherence to pharmacological treatment results in a substantial improvement in psychotic symptoms, behavioural patterns and overall functioning. This repeated pattern strongly suggests a significant interaction between chronic cannabis use, medication non-compliance and the recurrence of psychotic symptomatology.

The medical history of SM was also explored which suggested for the presence of a neurological condition. SM has been prescribed Sinemet (Carbidopa/Levodopa) 25 mg/250 mg twice daily for the treatment of his neurological symptoms. These symptoms included tremors while a prolonged dopaminergic treatment suggests an underlying movement disorder. It could be most likely Parkinsonism or a related extrapyramidal condition. No significant surgical history was reported by the client or his family. Previous psychiatric admissions were primarily associated

only with psychotic episodes due to cannabis use and non-adherence to prescribed psychiatric treatment.

The history of his illness revealed that SM has a chronic history of cannabis use constantly escalating since over approximately two decades. Cannabis was initially introduced through workplace peers and gradually became integrated into his daily routine. He continued using cannabis and experienced frequent relapses despite experiencing repeated psychiatric complications, family conflict, occupational difficulties and multiple hospital admissions. The close temporal relationship between cannabis consumption and the exacerbation of psychotic symptoms strongly suggests that substance use played a substantial role in both the development and maintenance of his psychiatric condition.

As far as his premorbid functioning is concerned, his family reported that SM was previously regarded as cooperative, responsible and social person. He maintained stable employment throughout his career and demonstrated satisfactory occupational functioning. He was also engaged appropriately in interpersonal relationships and fulfilling all the responsibilities. There was no reported history of significant behavioural disturbances, psychotic symptoms, personality pathology or major psychiatric illness prior to the initiation of chronic cannabis use. His premorbid functioning suggests that the emergence of psychiatric symptoms was closely associated with the development and progression of long-term cannabis dependence. However, his social and family relationships have been very much disturbed due to prolonged episodes of aggression, irritability, emotional instability and behavioural dysregulation. Family members didn't give up on him and remained actively involved in his treatment process despite of these challenges. The family is supportive and available to provide emotional and financial support to SM.

Formal Assessment

A Formal assessment was done to assess the client psychologically to examine his cognitive functioning, substance use frequency and severity, personality traits, emotional wellbeing, interpersonal dynamics and underlying association between chronic cannabis use and psychotic symptoms. Clinical interviews, behavioural observations, psychometric testing, projective techniques and laboratory investigations were done. The following assessment tools were administered to obtain information in all domains:

Mini Mental State Examination (MMSE)

The Mini Mental State Examination (MMSE) was administered to assess the cognitive functioning of client. MMSE examined his orientation, attention, concentration, memory, language and visuospatial abilities. Assessment of cognitive status was considered essential for evaluating the extent of possible cognitive impairment due to the given history of prolonged cannabis use and reported neurocognitive difficulties.

DSM-5-TR Checklist for Cannabis Use Disorder

The DSM-5-TR Checklist for Cannabis Use Disorder was administered to determine whether the client met the diagnostic criteria for Cannabis Use Disorder. This checklist also assessed the severity of cannabis-related impairment. All examination was done according to the diagnostic guidelines outlined in the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition, Text Revision (DSM-5-TR).

House-Tree-Person Test (HTP)

The House-Tree-Person Test (HTP) was administered as a projective assessment technique. It was used to explore the personality functioning, emotional conflicts, self-perception, interpersonal relationships and unconscious psychological processes of client. The test was particularly useful in identifying underlying emotional difficulties that may not have been fully expressed during clinical interviews.

Rotter Incomplete Sentence Blank (RISB)

The Rotter Incomplete Sentence Blank (RISB) was administered to assess the client's psychological adjustment, emotional functioning, self-concept, attitudes towards significant life areas and underlying concerns. The measure provided

valuable information regarding the personal conflicts, coping patterns and overall adjustment of client.

Thematic Apperception Test (TAT)

The Thematic Apperception Test (TAT) was administered to explore the client's underlying emotions and feelings, needs, interpersonal perceptions and personality dynamics. The test facilitated an in-depth understanding of the psychological themes that were associated with the client's substance use, psychotic experiences and life circumstances.

Laboratory Drug Screening

Laboratory drug screening was conducted to verify recent substance use and support diagnostic formulation objectively. Toxicological testing provided biological evidence regarding the presence of psychoactive substances in his body. It also assisted in treatment planning and monitoring of client's condition.

Results

A complete psychological battery was used to assess SM's psychological functioning. The findings from these tests provided a comprehensive understanding of his cognitive functioning, psychological problems, personality traits, emotional difficulties and substance use-related behaviours. Multiple assessment methods were employed to obtain a holistic understanding of his presenting problems. The findings of these methods and examinations are given below.

The Mini Mental State Examination (MMSE) revealed a total score of 26 out of 30. The interpretation at this score indicated an intact cognitive functioning. It suggested that at the time of administering this test, the client was adequately oriented to time, place and person. He also exhibited satisfactory attention, memory, language and visuospatial abilities. Only some minor difficulties were observed in concentration during clinical interview. That could be possibly associated with chronic cannabis use and psychiatric symptomatology. Overall findings of MMSE examination suggested no significant cognitive impairment in client's mental state.

The client scored 122 at the Rotter Incomplete Sentence Blank (RISB) which falls below the clinical cut-off score. The results suggested an overall adequate psychological adjustment. However, some concerns related to self-worth, family relationships, future uncertainty and emotional difficulties were reported by the client during his clinical interview. Themes of guilt, regret, dissatisfaction with life circumstances and helplessness were also evident in qualitative analysis. The overall results of this test indicated underlying emotional conflicts despite relatively preserved overall adjustment.

Projective assessment was done through the House-Tree-Person (HTP) Test. The results revealed significant indicators of emotional insecurity, psychological distress, interpersonal difficulties and impaired emotional expression. The drawings of client suggested feelings of isolation, anxiety, vulnerability, dependency needs, aggression and difficulties with self-concept. Themes of emotional deprivation, social withdrawal, insecurity, poor impulse control and distorted perceptions of interpersonal relationships were evident. Certain features also reflected impaired reality testing and possible psychotic processes. The interpretation was consistent with the client's clinical presentation.

The Thematic Apperception Test (TAT) revealed underlying themes of rejection, loneliness, emotional deprivation, unresolved conflicts and a strong need for acceptance and validation. The stories generated by the client reflected low self-esteem, fear of criticism, emotional repression, difficulty coping with stress and concerns regarding social relationships. Recurring themes of helplessness, insecurity and dependence on external approval were identified. The narratives also demonstrated a desire for recovery, personal growth and restoration of meaningful interpersonal relationships despite so many difficulties.

The DSM-5-TR Checklist for Cannabis Use Disorder indicated that the client fulfilled multiple diagnostic criteria for Cannabis Use Disorder. He endorsed symptoms including persistent cannabis use despite adverse consequences, unsuccessful attempts to reduce

consumption, significant time devoted to obtaining and using cannabis, cravings, withdrawal symptoms, impaired role functioning and continued use despite psychological and social difficulties. These findings supported a diagnosis of Severe Cannabis Use Disorder.

Laboratory drug screening further confirmed the presence of cannabis metabolites. This screening provided objective evidence of recent cannabis use and supported both the clinical history and diagnostic formulation.

Overall, the findings of all assessments indicated that SM presented with severe Cannabis Use Disorder. The disorder was accompanied by significant emotional distress, personality vulnerabilities, impaired impulse control, interpersonal difficulties and psychotic symptomatology. The results further suggest a strong association between chronic cannabis use and the onset, maintenance and recurrence of his psychiatric symptoms.

Table 1: Assessment Summary

Assessment Tool	Findings	Interpretation
MMSE	26/30	Normal cognitive functioning with no significant cognitive impairment
RISB	122/135	Overall adequate psychological adjustment with underlying emotional conflicts
HTP	Themes of insecurity, aggression, emotional deprivation, social withdrawal, poor impulse control and impaired reality testing	Suggestive of emotional distress, personality vulnerabilities and psychotic features
TAT	Themes of rejection, loneliness, low self-esteem, emotional repression, need for validation and unresolved conflicts	Indicates significant emotional difficulties and maladaptive coping patterns
DSM-5-TR Checklist for Cannabis Use Disorder	Multiple criteria endorsed	Consistent with Severe Cannabis Use Disorder
Laboratory Drug Screening	Positive for cannabis metabolites	Confirms recent cannabis use

Diagnostic Impression

Cannabis Use Disorder, Severe

Substance/Medication-Induced Psychotic Disorder (Cannabis-Induced Psychosis), recurrent episodes

The findings of all assessments suggested that chronic cannabis use has played a significant role in the development and maintenance of psychotic symptoms, emotional dysregulation, behavioural disturbances and functional impairment. It was recommended that continued psychiatric management, relapse prevention strategies, psychoeducation and long-term monitoring is needed to manage client's symptoms and well-being.

DISCUSSION

SM was presented with a complex clinical picture characterized by chronic cannabis dependence. It was accompanied by recurrent psychotic symptoms which included grandiose delusions, self-talk, flight of ideas, severe irritability, aggression and significant disturbances in social and occupational functioning. His presentation was consistent with DSM criteria of Cannabis Use Disorder, Severe, with Cannabis-Induced

Psychotic Disorder. The intensity of his cannabis use was based upon approximately two decades. The client was presented together with repeated episodes of psychiatric decompensation following cannabis consumption and medication discontinuation. This severe condition highlights the significant role of substance use in the onset and maintenance of his psychiatric condition.

A treatment plan was developed by keeping in mind SM's current condition and multiple episodic patterns. The treatment plan was based on a biopsychosocial framework that addressed the biological, psychological and social factors. Psychiatric management mainly focused on reducing psychotic symptoms, improving behavioural control, stabilizing mood and preventing relapse. Pharmacological intervention included antipsychotic medications and mood stabilizers prescribed by the treating psychiatrist. The patient was also maintained on Sinemet (Carbidopa/Levodopa) for his pre-existing neurological condition. Clinical observations indicated that adherence to prescribed medication was associated with significant reductions in aggression, psychotic symptoms and emotional instability. It was also reported that medication discontinuation consistently resulted in symptom recurrence.

Table 2: Week-wise Intervention Table

Week	Focus Area	Key Components
Week 1	Assessment and Rapport Building	Clinical interviews, history taking, psychological assessment, treatment goals
Week 2	Psychoeducation	Cannabis dependence, psychosis, disease concept of addiction
Week 3	Insight Development	Relationship between cannabis use and psychotic symptoms
Week 4	Medication Adherence	Benefits of compliance, consequences of discontinuation
Week 5	Stress and Anger Management	Identification of triggers and coping mechanisms
Week 6	Family Psychoeducation	Understanding psychosis, supportive communication
Week 7	Relapse Prevention	Craving management, high-risk situations
Week 8	Rehabilitation Planning	Daily routine, occupational functioning, abstinence maintenance
Week 9	Follow-Up and Review	Progress evaluation and symptom monitoring
Week 10	Termination and Future Planning	Long-term recovery plan and psychiatric follow-up

A structured psychological rehabilitation plan was implemented to increase the insight of client regarding substance use and its consequences. Psychoeducation was provided regarding Cannabis Use Disorder, the disease model of addiction and the relationship between cannabis use and psychosis during the initial phase of treatment. Particular emphasis was placed on helping the patient understand the recurrent pattern of his illness. This education was done so that the client can understand the onset of cannabis use precipitated psychotic episodes and associated behavioural disturbances. This psychoeducational approach facilitated the gradual development of insight in client about the harmful impact of continued substance use.

Multiple reinforcing factors were also targeted from a psychological perspective which were making him inclined towards longstanding cannabis dependence. These factors included peer influence, habitual use, impaired coping mechanisms and poor illness awareness. His employment in a hotel environment exposed him to peers who regularly used cannabis. He initially started using cannabis as an experimentation and later became dependent on substance use.

The findings from psychological assessment suggested that the client experienced significant

emotional distress, insecurity, poor impulse control and difficulties in interpersonal functioning. Projective assessments revealed underlying feelings of vulnerability, emotional isolation, anxiety, aggression and impaired self-perception. These psychological vulnerabilities may have contributed to the maintenance of substance use as a maladaptive coping strategy. The frequent use and high dosage increased his susceptibility to psychotic decompensation during periods of stress.

However, family involvement emerged as a critical component of treatment. Psychoeducation sessions were conducted with family members to increase their understanding of Cannabis Use Disorder and cannabis-induced psychosis. Family members were informed about warning signs of relapse, the importance of medication adherence and strategies for managing behavioural issues in a supportive manner. Initially, family members reported considerable frustration and emotional exhaustion due to the aggressive behaviour and repeated relapses of client. However, they gradually developed a more informed understanding of his condition and became active participants in the recovery process.

The clinical history of SM demonstrated a clear pattern of relapse associated with continued cannabis use and non-compliance with psychiatric treatment. One of the most significant relapses occurred immediately after discharge from psychiatric hospitalization. He resumed heavy cannabis consumption and remained awake throughout the night at that time. This episode resulted in a rapid return of psychotic symptoms re-admission the following day. Such incidents emphasized the strong temporal relationship between cannabis use and psychotic symptom exacerbation.

Several protective factors were also identified during treatment. These included the continued involvement of family members, willingness to engage in treatment, periods of medication adherence and access to psychiatric and psychological services. The client demonstrated noticeable improvement during structured treatment periods despite the chronic nature of his condition. The presence of these factors suggested that recovery and symptom stabilization are achievable when appropriate interventions are consistently maintained.

Overall, this case highlights the complex interaction between chronic cannabis use and psychosis. It demonstrates the importance of integrated treatment approaches by combining pharmacological management, psychoeducation, relapse prevention strategies, family involvement and long-term follow-up care. The case further emphasized the need for increased awareness regarding the psychiatric consequences of prolonged cannabis use. Effective rehabilitation requires not only symptom management but also sustained efforts to address substance use behaviors, improve treatment adherence, strengthen family support systems and promote long-term recovery.

CONCLUSION

This case of our client SM highlights the complex relationship between chronic cannabis use and the development of persistent psychotic symptoms. His clinical presentation demonstrated the psychological, social and occupational deterioration as a result of a prolonged cannabis dependence. The findings revealed a clear association between cannabis use, medication non-adherence and the exacerbation of psychotic symptoms. A Comprehensive assessment indicated that the client experienced substantial emotional distress, impaired impulse control and difficulties in interpersonal relationships with no significant cognitive issues.

The case further emphasized the importance of an integrated treatment approach involving psychiatric management, psychological intervention, psychoeducation, relapse prevention and active family involvement. Sustained improvement was observed during periods of treatment adherence. It was highlighting the critical role of medication compliance and continued abstinence from cannabis in maintaining recovery. Family support emerged as a significant protective factor that facilitated treatment engagement and rehabilitation.

Overall, this case underscores the need for early identification of substance-related psychiatric

disorders and the implementation of comprehensive and long-term intervention strategies. It also contributes to the growing evidence regarding the adverse mental health consequences of chronic cannabis use and the importance of multidisciplinary care in promoting recovery and preventing relapse.

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