

Case Report**Ketamine Infusion Therapy for Recurrent Depressive Disorder: A Case Report**

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Corresponding author: Prajna J Prabhu**Email** – prajnajprabhu562@gmail.com**ABSTRACT**

Recurrent depressive disorder is a common and highly prevalent mood disorder with chronic and debilitating symptoms. Ketamine has emerged as an important treatment option for mood disorders and depression. The following case report presents the case of 44 year old female with recurrent depressive disorder who had depressive symptoms and suicidal ideation and was successfully treated with ketamine therapy.

Keywords: recurrent depressive disorder, Ketamine, mood disorders, depression.

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INTRODUCTION

Recurrent Depressive Disorder (RDD) is a well-defined and highly prevalent mood disorder characterized by a history of at least two depressive episodes, with intervals of several months without significant mood disturbances [1]. According to the International Classification of Diseases (ICD-11), a diagnosis of RDD requires that individuals do not experience periods of elevated energy, hypomania, or mania between depressive episodes [2]. Those with a history of depression have a 50% increased likelihood of experiencing a recurrence [3].

Ketamine, traditionally used as an anesthetic, analgesic, and sedative, has garnered attention for its unique pharmacodynamic properties in treating depression [4]. It acts as a non-competitive inhibitor of N-Methyl-D-Aspartate (NMDA) glutaminergic receptors and interacts with opioid receptors at higher plasma concentrations. Additionally, it has inhibitory effects on norepinephrine and serotonin transporters [4]. Oral ketamine has limited bioavailability (17%-20%), making intravenous administration the preferred method, although the intranasal route has recently been approved [5].

In recent years, an increasing number of studies have explored the use of ketamine in treating suicidal ideation. Several investigations have demonstrated the rapid efficacy of multiple ketamine infusions in reducing suicidal thoughts [6-7]. A meta-analysis indicated that a single intravenous dose of ketamine leads to a swift reduction in suicidal ideation, with effects typically noticeable within 24 hours [7].

Therefore, this report presents a case of a patient with Recurrent Depressive Disorder who responded positively to ketamine infusion therapy.

CASE REPORT

Mrs. Y, a 44-year-old female, presented to the Psychiatry outpatient department with a one-month history of low mood, diminished interest in daily activities, suicidal ideation, generalized aches and pains, reduced sleep, decreased appetite, and weight loss. She reported experiencing interpersonal relationship difficulties

within her family. The patient had a history of three prior depressive episodes, each with complete symptom remission in between.

During the Mental Status Examination, the patient exhibited reduced psychomotor activity, decreased speech with prolonged reaction time, low mood, and a depressed affect. She expressed feelings of guilt, worthlessness, and hopelessness, along with suicidal thoughts. A diagnosis of Recurrent Depressive Disorder, current episode severe without psychotic features, was made. The patient was prescribed Duloxetine 30 mg and Clonazepam 0.25 mg.

To assess the severity of her depressive symptoms, the Hamilton Depression Rating Scale (HAM-D) with 17 items was administered, yielding a score of 24. Given the severity of her symptoms and presence of suicidal ideation, the option of ketamine infusion therapy was presented to the patient. After obtaining informed consent from both the patient and her family, a pre-infusion workup was conducted.

The patient received an intravenous ketamine infusion at a dose of 0.5 mg/kg over 40 minutes. Her vital signs were monitored before, during, and one hour after the infusion, with no side effects reported. One-hour post-infusion, the HAM-D was reapplied, showing a score of 11. A total of six ketamine infusion sessions were administered on alternate days. Following each session, the HAM-D scores were recorded as follows: 11, 9, 8, 6, 6, and 4, respectively.

The patient demonstrated significant improvement in her symptoms and was subsequently discharged on Duloxetine 60 mg and Clonazepam 0.25 mg.

DISCUSSION

Ketamine infusion has emerged as a groundbreaking treatment for alleviating depressive symptoms in patients with Recurrent Depressive Disorder (RDD). While numerous clinical trials have focused on the effects of ketamine in treatment-resistant depression and Major Depressive Disorder (MDD), there remains a relative scarcity of studies specifically examining its impact on RDD. This gap highlights the need for more targeted research in this area, given the unique challenges associated with recurrent episodes of depression. Several key studies underscore the rapid antidepressant effects of ketamine. A notable placebo-controlled, double-blind study involving seven subjects with MDD demonstrated significant improvement in depressive symptoms within just 6-8 hours following a single sub-anesthetic dose of ketamine (0.5 mg/kg administered over 45 minutes). The results showed a mean reduction of $14 \pm SD 10$ points on the 25-item Hamilton Depression Rating Scale (HAM-D). This rapid response is particularly crucial in clinical settings where immediate intervention can reduce the risk of suicide and improve patient outcomes. Furthermore, the study indicated that the antidepressant effects may peak around 72 hours post-infusion and can last up to seven days, suggesting a potential therapeutic window for subsequent treatments [3].

Complementing these findings, a systematic review and meta-analysis conducted by Wilkinson et al. involving 167 subjects with MDD also highlighted the efficacy of ketamine. The study found a significant reduction in suicidal ideation, measured by the HAM-D suicidal ideation item score, within 72 hours following ketamine infusion. These results are particularly relevant for clinicians seeking rapid interventions for patients at heightened risk of suicide, as they emphasize ketamine's potential to mitigate acute suicidal thoughts swiftly [8].

In an open-label infusion trial, 33 subjects diagnosed with MDD exhibited significant improvements in both depressive symptoms and suicidal ideation within four hours after ketamine infusion, resulting in HAM-D scores falling below 4. This finding reinforces the notion that ketamine can provide immediate relief, which is invaluable in acute care settings [9].

Further supporting the rapid efficacy of ketamine, a preliminary study conducted involved 86 subjects with Unipolar Depression who received six cycles of ketamine infusion over a 12-day period. The results revealed significant improvements in both suicidal ideation and depressive symptoms within 24 hours following each infusion cycle, with HAM-D scores gradually declining. This sustained efficacy across multiple infusions may indicate the potential for ketamine to stabilize mood in patients with recurrent episodes [10].

In a study, five inpatients received ketamine as part of a series of eight infusions. Remarkably, four patients achieved remission after the first series, while three did so after the second series. Importantly, the reported adverse reactions were mild and transient, with no lasting effects. This suggests that ketamine not only

provides significant therapeutic benefits but also has a favorable safety profile, even in patients with complex medical histories [11].

In our own case report, we did not observe any side effects associated with ketamine treatment. This finding aligns with those from the case series which also reported no significant side effects, despite including elderly patients with multiple somatic comorbidities. However, it is noteworthy that two out of six patients in that study experienced a recurrence of addictive behavior, highlighting the need for careful monitoring in vulnerable populations [12].

Finally, a study demonstrated significant improvements in depression, anxiety, and disease severity after just one hour of ketamine administration. The rapid decrease in HAM-D scores underscores the overall enhancement in depressive symptoms and supports the notion of ketamine as a fast-acting antidepressant [13]. In summary, the accumulating evidence supports the effectiveness of ketamine infusion in treating depressive symptoms and suicidal ideation, particularly in patients with Recurrent Depressive Disorder. The rapid onset of action and favorable safety profile make ketamine a compelling option for clinicians.

However, further research is warranted to explore its long-term effects, optimal dosing strategies, and safety in larger, more diverse populations. As the landscape of depression continues to evolve, ketamine may play a pivotal role in reshaping therapeutic approaches for patients grappling with recurrent depressive episodes. In conclusion, ketamine infusion represents a significant advancement in the treatment of Recurrent Depressive Disorder, offering rapid relief from depressive symptoms and suicidal ideation. The available evidence indicates that ketamine can produce substantial improvements within hours of administration, with effects that may last several days, making it a vital option for patients at risk of acute depression and suicide. Despite the promising results, further research is essential to fully understand the long-term efficacy, optimal dosing, and safety of ketamine, especially in diverse populations with varying clinical presentations.

As we continue to explore innovative treatments for depression, ketamine may serve as a critical component in a comprehensive approach to mental health care, particularly for individuals who have not responded to traditional therapies.

Ultimately, this emerging therapeutic strategy highlights the need for ongoing investigation into rapid-acting antidepressants, as they hold the potential to transform the landscape of depression treatment and improve outcomes for patients suffering from recurrent depressive episodes.

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