

## Case Report

# Ketamine for Rapid Improvement of Major Depression in a Debilitated 94-Year-Old Man: A Case Report

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## Abstract

Severe Major Depression (MD) in very elderly patients usually requires a rapid response due to an increase risk of suicide and a faster clinical deterioration. In this scenario, electroconvulsive therapy constitutes the treatment option available at present. Nevertheless, not every older depressive patient is fit for a procedure which involves anesthesia and possible cardiovascular side effects. In this context, ketamine provides a promising alternative. Here we present the first reported case of the use of ketamine in the treatment of severe major depression in a very elderly patient (94-year-old).

**Keywords:** Ketamine; Depression; Very elderly

## Case Presentation

A 94-year-old man was admitted to our Geriatric Unit complaining of asthenia and important weight loss in the last four months (10 percent of his body weight). His past medical problems included: asymptomatic COPD, prostate cancer treated surgically with success, colonic diverticulosis and B12 deficiency. Apart from B12 injections he was not on any medication. On admission he showed signs of dehydration and malnutrition. Lung, cardiac, abdominal, locomotor and neurologic examinations were otherwise unremarkable. He scored 26/30 on Mini-Mental State Examination (MMSE). A complete laboratory work up, electrocardiogram, chest-X-ray, upper gastrointestinal endoscopy and chest and abdominal tomography were normal. After ruling out significant clinical comorbidities as the cause of his admission, a severe Major Depression Disorder (MD), without psychotic's symptoms, was diagnosed. Geriatric Depression Scale (GDS) was 11/15 and Clinical Global Impression-Severity Scale (CGI-S) 6. He reported no past history of depression or any type of treatment. The symptoms started 3 years before hospitalization, after the death of his spouse. Deterioration was clear in the last 4 months. It's noteworthy that since then feelings of worthlessness and recurrent thoughts of death became clear, his appetite was severely reduced; interaction with family members decreased and a lack of interest in daily activities was noted, spending most of the time in bed. Considering the age of the patient and the severity of the depression symptoms a rapid response was necessary. Antidepressant therapy could take an unacceptable time to be effective and could not be tolerated. Due to the patient's fragility, ketamine was chosen

instead of Electroconvulsive Therapy (ECT). Our policy was to start Subcutaneous (SC) ketamine after fluid replacement and nutritional support. It was prescribed 3 SC ketamine doses (0.5 mg/kg) in alternate days. The only side effect noticed was an increase in systolic blood pressure (110 mmHg to 160 mmHg) with good tolerance. Vital parameters such as oxygen saturation and heart rate remained within normal values during infusions. He showed no signs of hallucinations, delusions or dissociation. After the first ketamine dose, he reported a sense of wellbeing and his mobility improved considerably (CGI-Global Improvement 2). After the second dose, a remarkable improvement in speech was noticed (CGI-GI 1). After the third dose, improvement was kept and feelings of worthlessness were no longer detected. His appetite improved substantially and he started gaining weight (CGI-GI 1). Antidepressant therapy was then started (Venlafaxine 75 mg) and increased as required. He was discharged from hospital after 20 days with a remarkable improvement in his depression.

## Discussion

The prevalence of MD increases among patients older than 85 years in hospital and nursing homes [1]. Depression in very elderly patients with comorbidities usually requires a rapid response. In addition to low response rate and the long delay in the onset of therapeutic action (up to 12 weeks) antidepressants could increase the burden of illness and risk of suicidal behavior [2]. Besides, most randomized controlled trials exclude older patients with comorbidities resulting in limited evidence to guide treatment [3]. ECT has been considered the most effective procedure in treating depression in older persons and constitutes a safe form of treatment. Approximately 20% of patients do not respond to ECT. In addition, older patients, especially very old patients, are more susceptible to the cognitive side effects (such as delirium) and cardiovascular complications [4]. Therefore, it is important to seek further treatment options for very old depressive patients who are not fit for ECT and needs a rapid response. Ketamine, a non-competitive N-methyl-D-aspartate glutamate receptor antagonist is a standard anesthetic drug that is administered for analgesia and sedation. It has been studied for the treatment of depression for the last 20 years. It provides a rapid and robust antidepressant effect in individuals with treatment-resistant MD [3]. Medline literature search (2000 to current) using

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key terms “depression”, “ketamine” and “very elderly (>85)” has not identified any case report connecting ketamine, depression and very elderly. Here we present the first reported case of the use of ketamine in the treatment of severe major depression in a very elderly patient (94-year-old).

## Conclusion

The use of ketamine for severe MD in this very old patient was effective, safe and well tolerated. Remission occurred with only three SC dosages. Nevertheless, future controlled studies with adequate samples are warranted to confirm safety and efficacy of ketamine for MD in very old patient. Written informed consent for publication of their clinical details and/or clinical images was obtained from the proxy.

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