

CASE REPORT

TERMINAL LUCIDITY IN END-STAGE DEMENTIA: AN UNEXPECTED WINDOW OF MEMORY AND COMMUNICATION

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ABSTRACT

Background: Terminal lucidity refers to the uncommon and surprising resurgence of mental clarity and the ability to communicate in patients suffering from severe neurological or psychiatric conditions shortly before death. Despite being documented for over two hundred years, the underlying biological mechanisms remain poorly understood, with theories ranging from surges in neurotransmitters to temporary electrophysiological or inflammatory alterations. The limited reports available from India highlight the necessity for further documentation.

Case Details: We report on a 74-year-old woman with end-stage Alzheimer's dementia, long-term type 2 diabetes, and hypertension. Remarkably, the night before her death, she had a moment of clarity, recognising her son, conversing with family, encouraging her grandchildren, thanking her caregiver, and requesting her favourite meal, which she ate after days of refusing food. This episode lasted about 45 minutes before she returned to unresponsiveness and passed away peacefully a few hours later.

Discussion: International studies suggest clarity can occur 24 to 72 hours after death. An analysis of polypharmacy found no sedatives or antipsychotics, indicating that the absence of CNS depressants may have allowed for some neural activity. Possible explanations include temporary neurotransmitter release, reduced neuroinflammation, and a rebound in electrophysiological activity.

Conclusion: This pioneering Indian case report highlights the clinical, cultural, and pharmacological significance of terminal lucidity, reminding healthcare professionals, especially pharmacists, of their vital role in deprescribing, counselling, and supporting families during end-of-life moments.

KEY WORDS: Dementia; End-of-life-care; India; Paradoxical lucidity; Polypharmacy; Terminal lucidity.

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INTRODUCTION

Terminal lucidity refers to the sudden and unanticipated restoration of mental clarity, memory, or the ability to communicate in individuals suffering from significant neurological or psychiatric disorders

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during the final days or hours of their lives.^{1,2} It has been described across conditions such as dementia, schizophrenia, stroke, and other severe neurological disorders.²

In their review, Nahm et al. in 2012 compiled 83 cases over a span of 250 years, observing their manifestation even in patients suffering from advanced dementia who had not recognised their relatives for many years.² A retrospective study conducted in a hospital setting also identified episodes in 6 out of 338 deaths, with durations ranging from several hours to as long as four days.³ Surveys among healthcare professionals suggest that such episodes are encountered in clinical practice.⁴

Notwithstanding these findings, the biological or pharmacological rationale behind terminal lucidity remains unclear. Proposed mechanisms include

transient neurotransmitter changes and electrophysiological alterations.^{1,5} Demirkol and Tamam in 2016 highlighted the importance of elucidating the neurobiological foundations, suggesting that such clarification could provide significant insights into brain functionality.¹

The occurrence of this phenomenon is significantly under-reported in India, with no peer-reviewed case reports available to date. This issue is particularly pertinent in light of the increasing prevalence of dementia within the Indian population. Dementia prevalence in India is increasing, underscoring the relevance of documenting such cases.⁶ Given the extensive use of polypharmacy among elderly Indian patients who often present with multiple comorbidities, there exists an urgent necessity to document and analyse instances of terminal lucidity from both clinical and pharmacological viewpoints.

In this context, we present a case of terminal lucidity observed in an elderly Indian woman suffering from end-stage dementia. This report emphasises the clinical presentation, considerations regarding polypharmacy, and the implications for healthcare professionals and families within an Indian context.

CASE PRESENTATION

A 74-year-old woman hailing from a village called Rajavommangi, located near Rajahmundry in the East Godavari District of Andhra Pradesh, was brought to receive medical care primarily for end-stage dementia management. Her medical history was notable for a diagnosis of type 2 diabetes mellitus, which she had managed for 15 years with metformin at a dosage of 500 mg twice daily, alongside a long-standing case of hypertension that was controlled with amlodipine at 5 mg once daily. Seven years ago, she received a diagnosis of Alzheimer's-type dementia, which initially manifested as progressive forgetfulness, the misplacement of household items, and a tendency to ask the same questions repeatedly. Despite being treated early on with donepezil, her condition continued to deteriorate, leading to the discontinuation of the medication two years ago due to its minimal effectiveness. Over the past two years, her decline has been significant; she no longer recognises her children, communicates only through sporadic incoherent phrases, and has become entirely dependent on others for feeding, hygiene, and mobility.

In the six months leading up to her passing, the patient's health significantly declined. She spent the majority of her time in bed, experienced severe muscle atrophy, and was often in a drowsy state, and her oral intake was greatly diminished. She endured recurrent urinary tract infections, for which she underwent several brief courses of antibiotics. During her final week, her responsiveness was minimal; she kept her eyes shut for most of the time, communicated

only through low groans, and had almost entirely refused food and fluids for three consecutive days. The family, cognizant of her terminal condition, had already been advised by their local physician to prioritise comfort measures at home.

On the evening before her passing, at approximately 6:30 PM, while the family congregated in the living room, the patient unexpectedly opened her eyes wide and exhibited an unusual level of alertness. Her gaze was unwavering, and she appeared to actively survey the surroundings. To the astonishment of her family members, she called out the name of her eldest son, a person she had not recognised for nearly two years. Subsequently, she inquired about her grandchildren, specifically asking whether her grandson had completed his intermediate examinations and encouraging her granddaughter with the words, "Study well, you will become a doctor one day." In an even more extraordinary development, she expressed a desire to eat pulihora (tamarind rice), her favourite dish, and managed to consume several spoonfuls with ease, despite having refused food for several days. She then turned to her daughter-in-law, who had been her primary caregiver, and articulated her gratitude clearly, stating, "You have taken such good care of me. Don't cry when I go. I am happy."

This clear interaction continued for almost 45 minutes, after which she slowly became sleepy once more, shut her eyes, and ceased to communicate further. By 9 PM, she was again unresponsive, exhibiting shallow breathing and occasional pauses. The following morning, around 3:30 AM, she peacefully departed in her sleep, as reported by the Nursing Staff.

The family subsequently characterised the occurrence as a "miracle," stating that it provided them with emotional closure and solace after enduring years of witnessing her deterioration. Clinically, this incident aligns with terminal lucidity, a rare yet documented phenomenon observed in end-stage dementia and various neurological disorders, where patients unexpectedly regain mental clarity shortly before passing away. The precise mechanism remains inadequately understood, although theories suggest a temporary restoration of neuronal function, the release of neurochemical mediators, or even spiritual and psychosocial influences. For healthcare professionals, it is crucial to acknowledge such phenomena, not as indicators of recovery but as distinctive moments of significance for families, and to prepare caregivers for the potential of such events during the natural dying process.

DISCUSSION

Terminal lucidity is a rare but recognised phenomenon observed near the end of life, especially in individuals suffering from advanced dementia or

other severe neuropsychiatric conditions. Our case study focuses on a 74-year-old woman in the final stages of Alzheimer's dementia who unexpectedly demonstrated the capacity to recognise her family members, participate in meaningful conversations, express appreciation, and even make requests for food just hours before her passing. This observation is consistent with earlier accounts of paradoxical lucidity, wherein a resurgence of clarity in thought and communication occurs following extended durations of significant cognitive deterioration.^{2,7}

Our case bears a striking resemblance to earlier reports where lucidity manifested in the final 24–72 hours of life, with the majority of patients succumbing within a week following the occurrence.^{3,8} Hospital-based studies report brief episodes of lucidity shortly before death.⁷ A recent review has underscored the significant communicative function that such episodes serve, providing families with emotional closure and opportunities for a final connection, which is consistent with the responses articulated by the relatives of our patient.⁹

From a pharmacotherapeutic perspective, a thorough assessment of the patient's treatment plan is crucial. In this instance, the long-term therapy included metformin for diabetes management and amlodipine for hypertension, both of which lack recognised CNS-enhancing effects. Donepezil, an acetylcholinesterase inhibitor, was stopped two years prior because of insufficient efficacy, thereby removing any potential influence from cholinergic stimulation. Nevertheless, two important factors warrant attention:

Absence of CNS depressants: The patient was not administered opioids, benzodiazepines, or antipsychotics during the terminal phase. Research indicates that the discontinuation or lack of sedative medications might reveal remaining cognitive abilities, facilitating short intervals of clarity.⁴

Intermittent infection management: The patient experienced recurrent urinary tract infections, which were intermittently addressed with antibiotics. It is plausible that a temporary decrease in systemic inflammation, as indicated by a reduced cytokine load, might have fostered a brief neurochemical setting that was favourable for enhanced cognitive function.⁵

Consequently, although a specific pharmacological trigger was not recognised, this case underscores the significance of being vigilant about polypharmacy in end-of-life care. Thoughtful deprescribing approaches may not only avert unnecessary adverse effects but also enable families to engage in meaningful interactions during episodes of terminal lucidity.

Hypothetical Mechanistic Pathways

Several hypotheses, including transient neuroinflammatory reduction, neurotransmitter surges, and

electrophysiological rebound, have been proposed to explain terminal lucidity, though these remain speculative.^{1,5,10}

For healthcare professionals, this case highlights the importance of recognising, documenting, and sensitively communicating terminal lucidity to families. It is essential to stress that lucidity does not signify recovery, but is instead a natural aspect of the dying process.

Clinical Pharmacists and Pharm.D. students can assume a pivotal role by reviewing medications, deprescribing unnecessary CNS depressants, and counselling families about possible lucid episodes.

Limitations: Our case, similar to the majority of terminal lucidity accounts, is constrained by its dependence on eyewitness observations and the lack of real-time neurological information, including EEG or biomarker assessments. The exact timing of antibiotic treatment and the resolution of inflammation could not be linked to the lucid episode, which restricts pharmacological conclusions. Furthermore, cultural beliefs may affect how families understand these occurrences.

Future Directions: Future investigations ought to encompass prospective observational studies within palliative care environments that incorporate neurophysiological monitoring to document these occurrences. Studies focusing on pharmacological aspects, such as the effects of sedative withdrawal, anti-inflammatory modulation, and neurotransmitter dynamics, may elucidate the biological foundations involved. Significantly, broadening research efforts in non-Western settings, particularly in India, will enhance the worldwide comprehension of terminal lucidity and contribute to the development of culturally attuned end-of-life care methodologies.

CONCLUSION

Our case adds to the worldwide collection of evidence by presenting one of the initial reports of this kind from India, thereby enhancing both cultural and clinical significance. From the standpoint of a Pharm. The community, it emphasises the necessity of a thoughtful medication assessment, the elimination of sedatives, and the importance of family-oriented guidance in palliative care. Acknowledging and maintaining such lucid moments can elevate what might seem like a fleeting irregularity into a significant chance for closure, dignity, and meaning during the patient's final moments.

Patient Consent: Informed consent was secured from the caregiver of the patient for the publication of this case report, along with any related details. Measures have been implemented to guarantee anonymity, and any identifying information has been omitted to safeguard the patient's privacy.

Ethical Approval: Ethical approval was deemed

unnecessary for this case report in accordance with institutional policies and international guidelines, as it details the clinical course of a single patient without any experimental intervention. However, informed consent was secured, and the case has been documented in line with the established ethical standards for case reports.

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CONFLICT OF INTEREST

Authors declare no conflict of interest.
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Conception or Design: JK, SD
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All the authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.



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