

## Case report: Sleep deprivation presenting as acute psychosis

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### ABSTRACT

Sleeping is a basic human need and plays a key role in good health and well-being. Sleep deficiency can lead to physical and mental health problems, injuries, loss of productivity, and even a greater risk of death. Sleep deprivation is seen in several psychiatric disorders, and there may be a cause or effect relationship. Sleep-deprived individuals may have trouble making decisions, solving problems, controlling their emotions and behavior, and coping with stress or change. We report a case who started having sleep deprivation over 15 days following a stressor, which resulted in an acute psychosis-like condition with associated disorientation and perplexity. However, the patient responded to benzodiazepine medication given for the restoration of her sleep cycle and did not require any antipsychotics. There was also complete amelioration of her behavioral and thought disturbances.

**Key words:** *Benzodiazepines, Sleep deprivation, Psychosis*

Sleep plays a key role in good health and well-being in one's life, and a good night sleep ensures mental and physical health. Sleep deprivation is the condition of not having enough sleep and can be either acute or chronic. A chronic sleep-restricted state can cause fatigue, daytime sleepiness, clumsiness, and weight loss or weight gain [1] and may also adversely affect the brain and cognitive functions [2]. However, sleep deprivation can also paradoxically lead to increased energy, alertness, and enhanced mood and has even been used as a treatment for depression [3,4]. Sleep disturbances are often seen in various psychiatric disorders or are also known to precede the psychological disorders resulting in their exacerbations [5-7]. We report a case presented with psychosis-like symptoms due to chronic sleep deprivation over 15 days.

### CASE REPORT

A 38-year-old illiterate housewife from Uttar Pradesh was brought to the emergency services section of a tertiary care hospital for the complaints of decreased sleep, difficulty standing, fearfulness, and irrelevant talk for 2-3 days. Symptoms were noticed after her daughter's wedding was called off about 15 days prior. Her family noticed subtle changes in her behavior in the form of appearing anxious, refusing to eat and drink, and decreased duration of sleep (3-4 h/night) from her usual 7-8 h of sleep, which further decreased to only about an hour. She even refused to talk with family and neighbors, was withdrawn and had ideas of reference. She felt that due to the wedding being called off, people were now discussing her family.

Her family decided to send her to Mumbai to her husband. Thus, the patient undertook her first train journey. During travel, the patient slept for only a couple of hours, and on awakening, she expressed

that the passengers would attack and rob them and demanded to call the police. She failed to recognize her family members and had also not passed urine or stools during the train journey for nearly 40 h. When she reached Mumbai, she had to be carried out of the train, and she passed urine in her clothes at the station.

She was brought to the hospital and admitted after psychiatric referral. Her vital parameters were stable, and her blood reports (hemogram, serum electrolyte levels, and renal function tests) and neuroimaging (computed tomography-scan) revealed no abnormality. Her family members denied any history of hallucinatory behavior or any disorganized features. She had no prior psychiatric, medical, or surgical illness. No abnormalities were detected in the general and systemic examination. On mental status examination, the patient was conscious but uncooperative and uncommunicative. She occasionally looked fearful and muttered incomprehensibly. She was given a provisional diagnosis of acute and transient psychotic episode.

Fluid and electrolyte balance was ensured. The patient was started on intramuscular injection lorazepam (2 mg) twice a day as she refused to take anything orally. The patient slept for about 6 h after which her eye contact was initiated but not maintained. Active attention was also aroused, but it was ill-sustained. A rapport was established with some difficulty, and her speech and thought were found to be non-spontaneous with increased latency and poverty of speech. She was also occasionally incoherent and irrelevant. She was found to be disoriented in time, place, and person. The primary management was to restore her sleep cycle, and the next day, the patient was shifted to oral lorazepam (6 mg) in divided doses. The patient slept through the day and by evening she completely improved and was oriented and

spoke relevantly. She claimed not to remember the episode and had faint recollection of the train journey and also her hospital stay. She expressed unhappiness about her daughter's fate but did not give depressive features. She did not give any ideas of reference or persecution, which she had expressed in the train. Her oral lorazepam was tapered off, and she was discharged after improvement in her sleep cycle. On follow-up, after 1 week of discharge, the patient was still completely asymptomatic.

## DISCUSSION

Our patient presented with emotional stressors could have caused sleep deprivation in her. There were some behavioral changes and referential thinking, but no persistent perceptual or thought disturbances due to which we considered a diagnosis of acute and transient psychotic episode. The sleep deprivation could have also caused features suggestive of mild delirium as the patient was confused. There were also significant stressful events like the daughter's wedding being called off and also taking the train journey for the 1<sup>st</sup> time, which probably caused anxiety leading to sleep deprivation. It is often seen that sleep disturbance is a well-documented symptom of schizophrenia and hallucinatory disorders [5]. Researchers have found that the severity of sleep disturbance is also associated with the severity of psychotic symptoms and reduces when the patient is treated with antipsychotic medications [6]. It is also seen that severe insomnia occurs during exacerbations of schizophrenia and may precede the appearance of other symptoms [6,7].

We considered sleep deprivation as an important symptom due to patient's emotional state and symptoms of disorientation and hence treated our patient with sedative medication like only benzodiazepines to ensure proper sleep. We did not give any antipsychotic medications as patient seemed more perplexed than psychotic. The patient showed excellent recovery with the restoration of the sleep cycle over the next 2 days and complete resolution of her emotional and behavioral symptoms. Furthermore, the patient was symptom-free on follow-up and was not on any medications. Thus, sometimes, the presenting symptom is important as the patient responded completely to the regulation of her sleep disturbances. Hence, giving antipsychotics for the transient psychotic episode were avoided. The patient came for observation for a month after which she went back to her village.

Sleep deprivation can adversely affect the brain and cognitive function, which was documented using functional magnetic resonance imaging scans. They showed that sleep deprivation causes the brain to become incapable of putting an emotional event into the proper perspective and incapable of making a controlled, suitable response to the event, which could also be seen in our case [8]. Petrovsky *et al.* [9] reported in their study of healthy volunteers that sleep deprivation-induced psychosis-like phenomenology, namely, perceptual distortions, cognitive disorganization, and anhedonia though there were no significant symptoms of delusional thinking, mania, or paranoia. The effects of acute sleep deprivation on cognition are reversible, and several researchers

have put forth different hypothesis-like sleep loss specifically affect cognitive processes mediated by the prefrontal cortex [10], and sleep deprivation induces an escalating "state instability" that is particularly evident in experimental tasks requiring sustained attention [11]. There is also a debate on the consequences of chronic sleep restriction-like sleep debt [12] and whether losing one night of sleep (i.e., total sleep deprivation) leads to greater neurobehavioral deficits than when the same total amount of sleep is lost across multiple nights of sleep restriction [13]. This suggests that either some adaptation to chronic sleep restriction occurs or that it is not the amount of cumulative sleep lost that predicts waking neurobehavioral functions.

## CONCLUSION

The case highlights how just restoration of sleep improves the perceptual and fleeting thought disturbances, thus improving the prognosis as compared to psychosis. It also emphasizes the need for adequate sleep to have a healthy life and how rejuvenated sleep improves mental well-being. As clinicians, it is, therefore, important to assess the patient's mental state and higher functions to decide the treatment options.

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