

Modafanil as Adjunctive Medication in an Older Adult with Delirium

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Introduction

Older adults are predisposed to delirium, owing to multiple factors such as multiple medical illnesses and their treatment, deteriorating physical and mental health and sensory faculties, and poor nutrition [1].

Disturbance (or reversal) of sleep-wake cycle is a cardinal symptom of delirium, which place considerable burden on the care givers. Low dose antipsychotics, hypnotics, antidepressants, or melatonin and its agonist are typically used to enhance night-time sleep. An alternative strategy would be to decrease (or abolish) daytime sleep, which would then enhance night-time sleep. As there are no published controlled trials on this approach, we report a case where modafanil was used for this purpose.

Case Details

This 63 year old lady with diabetes mellitus type II presented with 20 days history of altered sleep-wake cycle, and fleeting visual hallucinations, and delusions of suspiciousness. The symptoms worsened in the evening, and disorientation, altered behaviour and disturbed sleep were prominent in the night. Blood test for common causes of delirium such as electrolytes, sugar, and renal and liver functions were normal. Further, blood counts showed raised polymorph cells, and increased pus cell in urine (4-7/hpf), thereby indicating urinary tract infection as possible cause for delirium; this was treated with oral nitrofurantoin and levofloxacin from day 5 of admission.

From day 1 of admission, with sedation at night - lorazepam (1 -2 mg po) with haloperidol (up to 5 mg im), sleep was about 2 hours in the night, and 6-7 hours in the day (8 am to 3 pm). To decrease daytime sleep, modafanil was initiated on day 3 as 50 mg at 9 am; and as there was no change in the sleep pattern on the day, the dose was increased to 100 mg at 9 am on the following day. On day 4, there significant reduction in daytime sleep (2 hours from 2-4 pm), and enhancement in the night time sleep from 12 to 6 am with lorazepam 2 mg po. On day 5, modafanil 100 mg at 9 am and lorazepam 1 mg po at night maintained the sleep pattern. There was significant reduction in psychotic symptoms from day 5 onwards. Thus, on day 6, lorazepam was discontinued with no reduction in sleep time at night.

Modafanil was stopped on day 8. The psychiatric symptoms had all but disappeared, except for mild irritability, and the patient was discharged on urinary antibiotics and diabetes mellitus medication.

Discussion

The therapy to improve altered circadian rhythms in delirium include both pharmacological [2] and non-pharmacological approaches such as light therapy [3], and a combination of both [4], the aim being to regularise the sleep cycle. However, the effectiveness of these approaches has been modest at best.

In this case, modafanil was successfully used to substantially reduced day-time sleep with concurrent increase in the night-time sleep. The effect was achieved at less than recommended dosage, and without any adverse effect. The improvement in clinical condition was not possibly due to urinary antibiotics, which were started only on day 5 of the admission; however, a possibility of self-remission cannot be excluded in cases of delirium.

The mechanism of sleep inhibition by modafanil is unknown, but is postulated to its activity of inhibiting the dopamine transporter protein. Its use as sleep-inhibiting agent in narcolepsy and sleep apnea is well documented; there are no published studies in delirium to the best of our knowledge. A search of Pubmed and Google Scholar showed only one other study, which is currently under progress [5].

The use of interventions - pharmacological and/or non-pharmacological, with aim to correct the altered circadian rhythm, needs further systematic investigation.

References

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