Individualized melatonin regimens & a MDT approach to insomnia during 2nd wave C-19

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Abstract

The manufacturers of melatonin advise a standard dose range of 2 to 6mg once at night in adults but in the critically ill, this does not always result in therapeutic benefit.

During the second wave of COVID-19, individualised melatonin regimens and a multidisciplinary targeted approach were used to manage insomnia.

Introduction

- Therapeutic benefits of sleep in the critically ill have been extensively studied(1)
- Chronic insomnia increases a patient's risk of delirium, cortical atrophy, diabetes, cancer, cardiovascular death from arterial hypertension, myocardial infarction and heart failure(2)
- Insomnia reduces interaction during video-calls with family and limits co-operation with physiotherapy, medical and nursing interventions, potentially delaying rehabilitation and recovery

Objective: To improve sleep by introducing an individualised melatonin regimen and a multidisciplinary team (MDT) targeted approach to managing insomnia in an adult intensive care unit (ICU).

Methods and Materials

•A retrospective analysis was conducted in a single centre UK adult ICU from September 2020 to March 2021

•Primary outcome: resolution of insomnia

•Additional data collected: causes of insomnia, referral to psychology for cognitive behavioural therapy (CBT), prevalence and resolution of delirium, adverse effects and death

•Each patient received a tailor made regimen based on Bellapart *et al's* original concept of mimicking the natural endogenous secretion of melatonin(3). However, unlike previous studies(3,4,5) dosing was modified and adjusted according to patient response. A loading dose of 0.75 to 3mg was administered at 21:00 followed by a smaller hourly dose of 0.25 to 0.5mg between 22:00 and 03:00.

•Sleep hygiene measures were introduced and standardised where possible

•Patients who expressed fear and anxiety as a cause of insomnia were referred for CBT

Chart 1. Reasons for exclusion

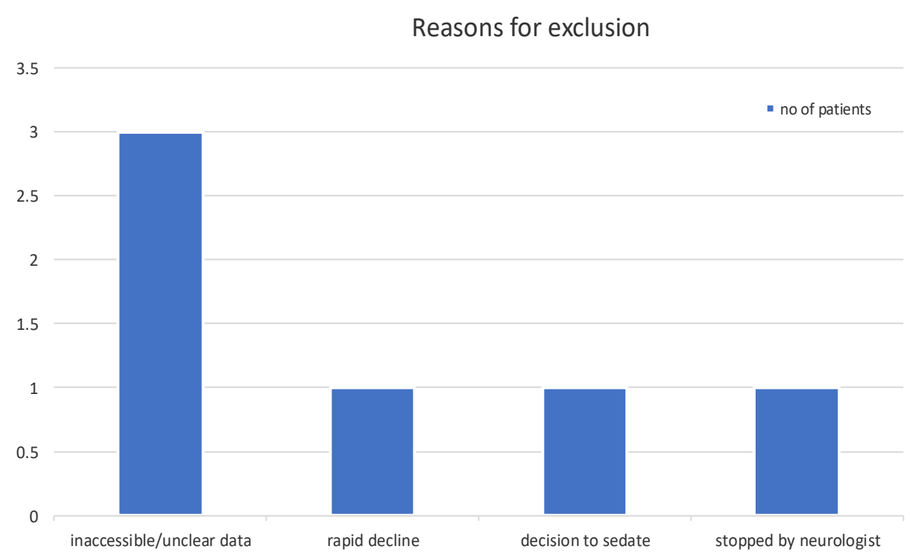


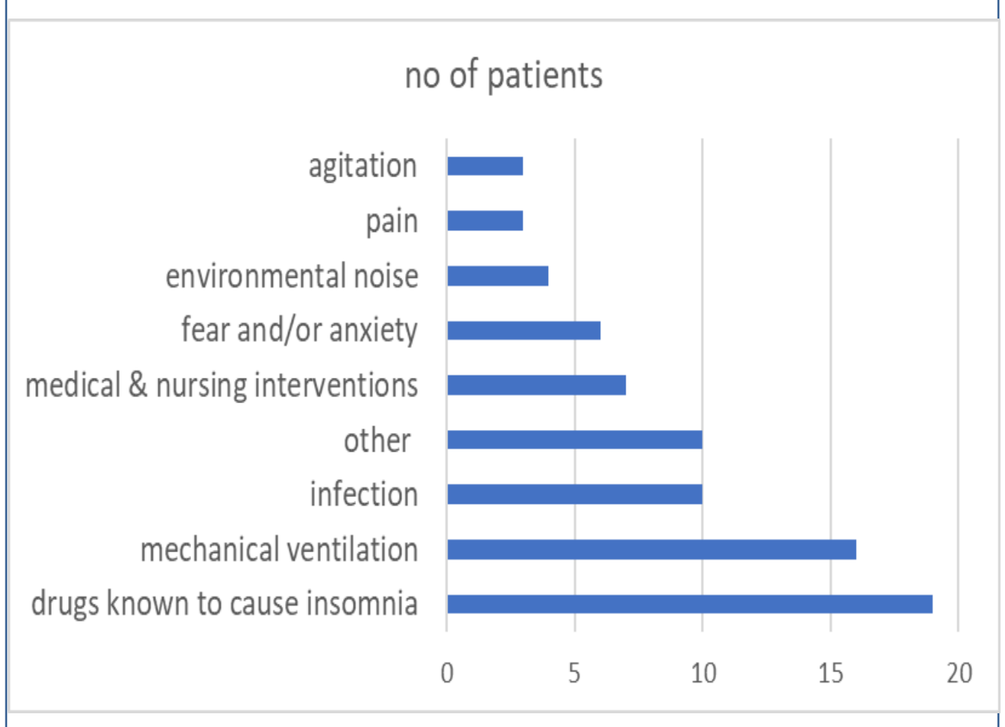
Table 1. Baseline characteristics

	Value	PMH	Percentage %
Male : female	78% : 22%	Diabetes	35%
Median age	76 yrs	Asthma/COPD	26%
CAM +ve	65%	Psychiatric	17%
Median inpatient stay	22 days	EtOH	8.70%
Median duration of treatment	14 days	>55 yr old	61%

Results

- 132 patients were admitted
- 29 (22%) patients received tailor made melatonin regimens
- 6 (20.7%) patients were excluded from the study (see chart 1)
- See chart 2 for causes of insomnia
- 6 afraid or anxious patients were referred for adjunctive CBT
- Resolution of insomnia occurred in 19 out of 23 (82.6%) patients
- Delirium occurred in 15 (65.2%) patients, resolved in 10 (66.7%) patients, 3 (20%) patients remained intermittently delirious, one remained continuously delirious and one patient died
- One patient experienced excessive daytime drowsiness, which resolved with dose regimen adjustment

Chart 2. Causes of insomnia



Please note patients belonged to more than one category

Discussion

- Study revealed the causes of insomnia in our ICU which facilitated a pharmacy led MDT approach to targeting management
- An individualised melatonin regimen may be used to facilitate resolution of insomnia but is by no means a stand alone intervention in a condition with multifactorial etiology

Limitations:
- Small sample size
- Standardisation of sleep hygiene measures proved difficult as our ICU was undergoing expansion building works. A quiet environment was difficult to achieve as half of the patients were placed in an open bay overflow ward.
- A high proportion of patients required necessary medical and nursing interventions throughout the night e.g. suctioning of respiratory secretions, rolling, washes due to soiling
- Baseline sleep patterns could not be established in the majority of patients

Interesting findings:
- Prior to study, causes of insomnia were rarely investigated to facilitate management
- Age and length of ICU stay did not appear to influence response to melatonin
- Medicines were most likely the main cause of insomnia

Conclusions

- Identifying the causes of insomnia can be key to successful management
- An individualised melatonin regimen combined with a MDT targeted approach can result in resolution of insomnia in ICU patients, with minimal risk of adverse effects
- Further larger scale studies are required to confirm findings

Conflicts of interest

Nil funding. Nil conflicts of interest.

References

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