Sleep Assessment in Critically Ill Adults

Sleep in adult patients in the ICU is severely disturbed and typically short, light and fragmented. In addition, interventions in the ICU such as sedation, ventilation and illness can alter sleep characteristics. Some of the most common causes of sleep disruption include environmental factors such as noise and light; physiologic factors, such as pain, immobility, discomfort and coughing; care-related factors, such as nursing care and medication, psychologic factors, and the severity of illness.

Disturbed sleep is associated with cognitive impairment, delirium, increased duration of mechanical ventilation, altered immune function and long-term psychological comorbidities. All these factors can contribute to increased morbidity and mortality.

In a recent analysis, researchers provide a detailed characterisation of sleep disruption in critically ill patients and explore its effects on patient outcomes in the ICU. They offer an overview of sleep assessment methods to characterise sleep disruption in ICU patients compared to normal sleep and assess the impact of additional ICU factors such as mechanical ventilation and sedation on sleep.

The reference standard to assess sleep quality is polysomnography (PSG), but its use can be costly and logistically challenging. Other sleep assessment tools such as biosignals and sleep questionnaires are often used in the ICU. Actigraphy is also a reliable alternative to PSG and could be a more feasible tool to measure sleep quality. The Richards Campbell Sleep Questionnaire (RCSQ) also provides information that correlates with PSG, but this tool is more reliable when assessed by the patient.

Researchers included 132 studies (with 8797 patients) and identified 15 sleep assessment methods. Only two of these methods were validated. Patients included in the analysis had significant sleep disruption with low sleep time and a low proportion of restorative rapid eye movement.

The researchers compared their pooled data to normal data using PSG, RCSQ and actigraphy. PSG data showed that critically ill patients had a significantly lower sleep quality. Actigraphy values also found that patients in the ICU had a lower total sleep time, sleep efficiency and a higher wake after sleep onset. A score of <50 on the RCSQ was found for the total RCSQ score, sleep depth, awakening, and quality (an RCSQ socre of 0-25 qualifies as very poor sleep, 26-50 as poor sleep, 51-75 as good sleep and 76-199 as very good sleep).

The analysis showed that sedation was associated with higher sleep efficiency and better sleep time. Medical patients had better sleep quality compared to surgical patients. Similarly, patients on ventilation had a higher amount of light sleep. Sedation, mechanical ventilation and type of ICU admission (surgical, medical or trauma) significantly affected sleep characteristics.

Overall, sleep in critically ill patients in the ICU is severely disturbed. Actigraphy and RCSQ are reliable alternatives to PSG.

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