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Letter to the editor

Applicability of the actigraphy for astronauts in spaceflight



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Pandi-Perumal and Gonfalone presented perspective on sleep in space by overviewing the past medical reports [3]. The authors made special emphasis on “normal sleep” in space, where no gravity exists. According to their review, sleep in space was mainly monitored by subjective sleep diaries and actigraphy (wrist-worn accelerometer). As sleep cycle was developed in response to the 24 h rotation of the earth, and refreshment by sleep seems not satisfactory, which would lead to adverse health effect. There is a difference between brain activity and physical movement during sleep, and the discrepancy of sleep parameters between polysomnography and actigraphy is obvious for insomniacs [2]. I want to make caution on sleep monitoring method, especially on actigraphy.

Barger and colleagues clarified the change of sleep problems in astronauts including period of spaceflights, and recognized sleep deficiency before spaceflight by actigraphy [1]. As they conducted their study in the earth and space with different level of gravity, validation study of actigraphy against sleep polysomnography in a weightless environment is needed.

In addition, Barger and colleagues presented the difference of total sleep time by subjective sleep diaries and actigraphy [1], which could be observed during spaceflight and in the earth. There is no evidence on the superiority of objective sleep parameter against subjective evaluation, and the methodological validity on actigraphy is important for the evaluation of sleep deficiency during spaceflight.

Finally, I suppose that sleep medication is sometimes needed for keeping good sleep in astronauts. Validation study of actigraphy is also needed for this situation [4].

Conflict of interest

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Ethics committee approval

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References

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