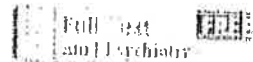


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1: Am J Geriatr Psychiatry. 2001 May;158(5):704-11.



Sundowning and circadian rhythms in Alzheimer's disease.

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OBJECTIVE: The goal of this study was to determine changes of circadian rhythms induced by Alzheimer's disease and to explore relationships among rhythm disturbances, sundowning, and sleep disturbances in patients with Alzheimer's disease. "Sundowning" is the occurrence or exacerbation of behavioral symptoms of Alzheimer's disease in the afternoon and evening.

METHOD: Circadian rhythms of core body temperature and motor activity were measured in 25 patients with diagnoses of probable Alzheimer's disease and in nine healthy individuals. The subjects with Alzheimer's disease were divided according to the occurrence of sundowning as determined by staff reports. **RESULTS:** The subjects with Alzheimer's disease had less diurnal motor activity, a higher percentage of nocturnal activity, lower interdaily stability of motor activity, and a later activity acrophase (time of peak) than did the healthy individuals. They also had a higher mesor (fitted mean) temperature, higher amplitude of the fitted cosine temperature curve, and later temperature acrophase than did the healthy subjects. The severity of sundowning was associated with later acrophase of temperature, less correlation of circadian temperature rhythm with a 24-hour cycle, and lower amplitude of temperature curve.

CONCLUSIONS: These data indicate that Alzheimer's disease causes disturbances of circadian rhythms and that sundowning is related to a phase delay of body temperature caused by Alzheimer's disease.

PMID: 11329390 [PubMed - indexed for MEDLINE]