Menopause status is associated with circadian- and sleep-related alterations

Gómez-Santos C.

Saura C.B.

Lucas J.A.R.

Castell P.

Madrid J.A.

Garaulet M.

Objective: The aim of the study was to investigate whether postmenopausal women show differences in circadian-related variables and sleep characteristics compared with premenopausal women, and to analyze potential associations between these circadian-related variables and abdominal fat distribution or metabolic syndrome (MetS) components. Methods: A total of 177 women were studied (127 premenopausal, 50 postmenopausal). Sixty percent of the total population was overweight/obese, with no significant differences between premenopausal (60%) and postmenopausal women (62%) (P = 0.865). Wrist temperature (WT) and rest-activity cycles were measured during 8 consecutive days, and sleep and food diaries collected. MetS characteristics and daily patterns of saliva cortisol were analyzed. Sleep characteristics were assessed with domiciliary polysomnography. Results: Postmenopausal women showed a less robust rhythm in WT with lower amplitude (°C) (0.8 ± 0.4 vs 0.9 ± 0.5) (P < 0.05) and lower mean temperature values at the midpoint of sleep than premenopausal women. Postmenopausal women were also more morning-type than premenopausal women, showing a phase advance of approximately 1 hour in WT and rest-activity rhythms, and more morning-type habits (earlier sleep onset/offset and breakfast intake) (P < 0.05). Postmenopausal women showed higher levels of activity in the morning and lower in the evening compared with premenopausal women (P < 0.05). Daily variability in cortisol was significantly reduced in postmenopausal women compared with premenopausal women (P < 0.05). Postmenopausal women had increased frequency of sleep-related breathing abnormalities (P < 0.0001). In the women studied, abdominal fat and MetS

were associated with an increase in circadian alterations (high fragmentation and low amplitude of the rhythm) ($P < 0.05$). Conclusions: Postmenopausal women exhibit loss of circadian robustness and an increase in sleep abnormalities compared with premenopausal women.

Circadian

Cortisol

Menopause

Obesity

Polysomnography

Temperature

hydrocortisone

hydrocortisone

abdominal fat

abdominal obesity

adult

Article

circadian rhythm

circadian rhythm sleep disorder

controlled study

disease association

female

human

major clinical study

metabolic syndrome X

oxygen saturation

physical parameters

polysomnography

postmenopause

respiratory disturbance index

rest activity cycle

sleep quality

temperature

wrist temperature

abdominal obesity

analysis

body composition

chemistry

circadian rhythm

diet

glucose blood level

metabolic syndrome X

middle aged

obesity

pathophysiology

physiology

postmenopause

premenopause

saliva

sleep

sleep disorder

Spain

Abdominal Fat

Adult

Blood Glucose

Body Composition

Circadian Rhythm

Diet

Female

Humans

Hydrocortisone

Metabolic Syndrome

Middle Aged

Obesity

Obesity, Abdominal

Overweight

Postmenopause

Premenopause

Saliva

Sleep

Sleep Wake Disorders

Spain