

Title:

EFFECT OF HORMONE REPLACEMENT THERAPY ON CARDIAC AUTONOMIC
REGULATION *WITH SPECIAL REFERENCE TO THE SLEEP STATE*

Author's Name:

Virtanen, Irina

Affiliation:

Dept of Obstetrics and Gynaecology, Turku University Central Hospital / Sleep Research Unit,
University of Turku, Finland

Postal Address:

Sleep Research Unit
University of Turku
Dentalia
Lemminkäisenkatu 2
20520 Turku
FINLAND

E-mail Address:

irina.virtanen@fimnet.fi

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Irina Virtanen:

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The Sleep Research Unit and the Departments of Obstetrics and Gynaecology and Pulmonary Medicine, University of Turku, Finland.

ABSTRACT

Objective: To evaluate the effects of short-term and long-term hormone replacement on cardiac autonomic regulation and cardiovascular health as well as the effect of sleep on cardiac autonomic regulation.

Designs: In healthy women, a seven-month prospective, randomised, placebo-controlled, double-blind, crossover study of transdermal oestradiol treatment and a five-year follow-up. In respiratory insufficiency, a single-blind, two-week placebo and a two-week oral medroxyprogesterone acetate (MPA) treatment, and a six-week follow-up; in asymptomatic hypoxaemic women, an open-label, two-week MPA study and a three-week follow-up.

Subjects and Methods: Seventy-one healthy postmenopausal women participated in the oestrogen study. Eighteen women with respiratory insufficiency and eight asymptomatic hypoxaemic women participated in the MPA study. Nocturnal heart rate variability (HRV) was assessed from 3-6 minute periods of stable sleep in all stages. In healthy women, whole-night HRV and movement-related heart rate changes were analysed, and 18 women attended cardiac autonomic function tests. Sixty-four healthy women attended the follow-up with a whole-night HRV analysis.

Results: In the daytime, oestrogen attenuated overt cardiac sympathetic responses. Oestrogen decreased nocturnal heart rate, but did not affect nocturnal stable or movement-related HRV. At follow-up, oestrogen did not affect HRV or cardiovascular morbidity; nor did baseline HRV affect cardiovascular morbidity. MPA increased the initially low HRV in respiratory insufficiency, but it only increased heart rate in hypoxaemic women.

Conclusions: In healthy women, neither acutely modulated nor steady state HRV is affected by transdermal oestrogen. In the long run, neither oestrogen replacement nor HRV predict cardiovascular morbidity, although the power of the study suffers from the small number of studied subjects. MPA has a slightly unfavourable effect on the heart in hypoxaemic women by increasing heart rate, but it improves HRV in respiratory insufficiency.

Key words: autonomic nervous system, cardiovascular disease, climacterium, heart, hormone replacement therapy, menopause, sleep, woman