Effect of Post-Menopausal Hormone Therapy on Disease Progression in Systemic Lupus Erythematosus: A Systematic Review

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Objective: A systematic review of the existing published literature was conducted to evaluate the effect of post-menopausal hormone therapy (HT) on disease progression in menopausal patients with systemic lupus erythematosus (SLE). **Design:** We searched PubMed, Embase, and the Cochrane Central Register of Controlled Trials from January 1990 to October 2012 for observational studies and randomized clinical trials (RCT) that evaluated the effect of HT on the frequency and intensity of flares in menopausal patients with SLE. The screening of titles and abstracts, full text review, and risk of bias assessment were conducted by two independent reviewers. **Results:** Out of 12,532 records identified, after removal of duplicates and screening of titles and abstracts, 404 articles were eligible for full text review. After exclusion of irrelevant studies, five studies were assessed for qualitative synthesis. The characteristics of the included studies are summarized in table I. **Conclusion:** This systematic review demonstrates a trend towards an increased risk of developing minor SLE flares in menopausal patients receiving HT. However, HT was also associated with significant improvement in patients' menopausal symptoms and quality of life. One limitation was that these studies followed patients for a short period of time. To date, there are no recommendations regarding HT for women with SLE. Larger trials are needed to assess the long-term effects of HT on the course of SLE in menopausal patients.

Table I: Characteristics of included studies.

Study name	Study type	Study population	Results
Arden *et al.*, 1994	Retrospective chart review	30 HT users were compared to 30 never users followed for one year.	No siginificant difference was found between the two groups in medication change or hospital admission.
Kreidstein *et al.*, 1997	Retrospective cohort study	16 HT users were matched to 32 non-HT users followed for one year.	No significant difference in incidence of flares was found between the 2 groups.
Mok *et al.*, 1998	Retrospective chart review	11 HT users were compared to 23 non-HT users for 35 months.	No significant difference was found in the number of flares between the two groups.
Buyon *et al.*, 2005	RCT for 12 months	174 received HT. 177 received placebo.	Mild to moderate flares were higher in the HT group. No significant difference was found in severe flares between the two groups.
Sanchez-Guerrero *et al.*, 2007	RCT for 24 months	52 received HT. 54 received placebo.	No significant difference in the incidence of flares was found between the two groups.

Fitness improves sleep quality through improvement in sleep efficiency

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Objective: In 2011, the first baby boomers turned 65 years old. By 2028, this large cohort will contribute to an accelerated growth in the senior population with a near doubling in the proportion of people aged 65 years and older. Aging is associated with an increase in sleep dissatisfaction as indicated by over 80% of people over the age of 65. Sleep quality is known to decrease in older people; they experience frequent awakenings, as well as a decrease in the duration of rapid eye movement (REM) and slow wave sleep, which corresponds with an increase in lighter sleep stages I and II. Due to poor sleep quality, older people have increased daytime sleepiness which heightens their risk of falling and cognitive decline. Further, individuals with untreated sleep disorders such as obstructive sleep apnea (OSA) carry an increased risk of cardiovascular sequelae including hypertension, coronary artery disease, heart failure, and stroke. Given the risk factors associated with sleep disorders and decreased sleep quality, in addition to the limited long term efficiency and compliance of pharmacological treatments, nonpharmacological treatments are worthwhile exploring as alternative or adjunctive therapy. Physical exercise has been shown to improve sleep quality and may therefore mitigate such decline in older adults. However, despite its potential importance, how the underlying components of sleep quality are involved in this relationship is not well understood. Thus, the primary objective of this study was to determine the effects of aerobic fitness on sleep quality in older adults.
Design: In a cross sectional study of 49 healthy sedentary adults (30 post-menopausal women and 19 men; 69±6 years, mean±SD), we examined the relationship between maximal aerobic capacity (VO2max) and several underlying components of subjective sleep quality. VO2max was determined using a ramped treadmill protocol with continuous monitoring of cardiorespiratory variables (Parvo Medics, USA). Reported sleep quality was assessed using the Pittsburgh Sleep Quality Index (PSQI), composed of a global sleep quality score and seven component scales evaluating sleep latency, duration, habitual sleep efficiency, daytime dysfunction, use of sleeping medication, subjective sleep quality, and sleep disturbances. **Results:** Higher VO2max was associated with better sleep quality when controlling for age ($r = -.323$, $p = .025$). Mediated regression analysis revealed this association to be mediated by habitual sleep efficiency (Sobel's = -2.074, $p = .038$).
Conclusion: Results from this study suggest that higher aerobic fitness is associated with better overall sleep quality, primarily by improvements in sleep efficiency. A six-month aerobic exercise intervention study is currently underway to determine whether aerobic exercise will promote changes in sleep quality and architecture, and in turn improve cognition. The implications of this research are considerable and warrant future investigation given the aging population and the magnitude of the burden that this segment of the population has, and will increasingly have, on the health care system.

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