

ESTROGEN RAISES THE SWEATING THRESHOLD IN POSTMENOPAUSAL WOMEN WITH HOT FLASHES

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Hot flashes (HFs) are the most common symptom of menopause and consist of profuse sweating, peripheral vasodilation, and sensations of intense heat. Recent research has shown that HFs are triggered by small fluctuations in T_c acting within a reduced thermoneutral zone. Although estrogen ameliorates HFs in most symptomatic women, its mechanism of action is not known. Here we sought to determine if estrogen reduces T_c fluctuations and/or raises the sweating threshold in postmenopausal women with frequent HFs. Twenty women were randomly assigned to receive 17 β -estradiol (1mg/day, p.o.) or placebo for 90 days. Before treatment they had T_c (rectal) and T_{sk} (4 weighted sites) recorded in a 26°C, 50% RH room for 3 hours. Data were sampled every 15 sec by computer. T_c fluctuations were estimated by computing the standard deviation (SD) for each subject's 3 hr recording. On a separate day the T_c and T_{sk} thresholds for sternal sweating (capacitance hygrometry) were measured using 42°C circulating water pads on the legs and torso. HFs were recorded for 2 weeks in diaries. After treatment all procedures were repeated. Data were analyzed with 2-way repeated measures ANOVAs and are shown in the table.

		Estrogen	Placebo
T_c (mean \pm SD)	Pre	37.9°C \pm .2	37.9°C \pm .2
	Post	38.0°C \pm .3	37.9°C \pm .2
T_{sk} (mean \pm SD)	Pre	34.0°C \pm .4	34.0°C \pm .5
	Post	34.1°C \pm .5	34.3°C \pm .6
T_c Swt.Th. (mean \pm SD)	Pre	37.9°C \pm .3	38.0°C \pm .2
	Post	38.1°C \pm .2*	37.8°C \pm .4
T_{sk} Swt.Th. (mean \pm SD)	Pre	36.2°C \pm 1.0	35.8°C \pm .7
	Post	35.9°C \pm .4	36.2°C \pm .8
HFs/day (mean \pm SD)	Pre	7.9 \pm 2.6	8.3 \pm 5.4
	Post	2.3 \pm 1.9**	5.7 \pm 3.3

* $p < .05$ Pre vs. Post

** $p < .001$ Pre vs. Post

Mean T_c and T_{sk} did not significantly change in either group nor did the SD of T_c (estimate of T_c fluctuations). Estrogen significantly raised the T_c sweating threshold and reduced HF frequency in the treated group but not the placebo group. We conclude that estrogen therapy ameliorates HFs by raising the T_c sweating threshold, but does not affect T_c fluctuations.

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