

THE EFFECTS OF HORMON REPLACEMENT THERAPY ON THE SKIN OF THE POST-MENOPAUSAL WOMEN

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Summary

The study was performed to compare skin pH, transepidermal water loss (TEWL), skin surface lipids and hydration in postmenopausal women receiving hormone replacement therapy (HRT) and those not. Two parallel age-matched groups (each 24) of 48 postmenopausal women evaluated by tewameter, sebumeter, pHmeter and corneometer. The assessments were performed on the forehead, nose, cheeks and chin. Exclusion criteria were diabetes mellitus, systemic illnesses, malignancies and longer duration of menopause (more than ten years). Group-I who received HRT showed increased sebum secretion and decreased TEWL when compared with Group-II, the untreated women. There was no significant difference between the two groups for pH of the skin and hydration. HRT may be effective against skin aging, but may have a negative effect on seborrheic disorders.

Riassunto

È stato ideato uno studio per porre tra loro in paragone il pH cutaneo, la perdita d'acqua transepidermica (TEWL), i lipidi di superficie e l'idratazione cutanea in donne in menopausa che assumevano una terapia ormonale di sostituzione (HRT) rispetto ad un gruppo di donne senza terapia.

I dati dei due gruppi, di 24 donne ciascuno, sottoposte a studio sono stati verificati mediante l'uso del tewameter, sebumeter pHmeter e del corneometer sulle aree cutanee di fronte, naso, guance e mento.

Sono state esclusi dallo studio tutti i soggetti con diabete mellito, patologie sistemiche, forme tumorali o in menopausa da più di 20 anni.

Il gruppo 1 dei trattati ha rivelato un incremento dei lipidi di superficie con una riduzione della TEWL rispetto al gruppo 2 di controllo. Il pH e l'idratazione cutanea sono rimasti invariati.

La terapia ormonale sostitutiva (HRT), può essere utile per l'invecchiamento cutaneo svolgendo però un effetto negativo nei confronti della seborrea.

INTRODUCTION

Significant hormonal alterations occur at the time of menopause, leading to physiological disorders of multiple organ systems and skin. Menopausal changes in hormones may alter the biomechanical properties of the body. Hormone replacement therapy (HRT) may have a profound influence not only on bones but also on skin (1). The aim of this study is to determine the effect of HRT on skin of postmenopausal women.

MATERIAL AND METHODS

This study was performed in Erciyes University Department of Dermatology between the dates of November 2001 and March 2002. Two parallel age-matched groups of 48 postmenopausal women were evaluated by computerized tewameter, sebumeter, pHmeter and corneometer (Courage+Khazaka, Köln-Germany) (2-4). Exclusion criteria were diabetes mellitus, systemic illnesses, malignancies, longer duration of menopause more than ten years and less than one year. Topical moisturizing creams and all cosmetics were stopped before 48 hours the evaluation. All patients were waited 20 minutes before tests. Temperature was 20-22 °C during the measurement. The assessments were performed on the forehead, nose, cheeks and chin. 24 women received combined estrogen-progestin replacement therapy not less than six cycles. Second group didn't receive HRT. We compared the results of postmenopausal women with or without HRT treatment. Statistical evaluation was based on paired student's t test. A p value < 0.05 was considered statistically significant.

RESULTS

The ages of patients were between 40 and 65 in-

group I, and between 37 and 70 in-group II. The mean age of group I and group II were 51.29 and 55.66 respectively. There was no statistically significant difference between the ages of two groups ($p > 0.05$). In group I, eleven patients had surgical and 13 of them had physiological menopause; and only two patients had surgical menopause in group II (Table I).

Group I have received combined estrogen-progestin replacement therapy not less than six cycles. Second group didn't receive HRT.

Sebum levels in group I was $96 \mu\text{g}/\text{cm}^2$ (average of forehead, nose, cheek and chin) and $78 \mu\text{g}/\text{cm}^2$ in group II. The difference was not statistically significant not only for each area but also for average values. However in HRT group four patients suffered from an increase of seborrheic condition of skin and hair. Skin hydration (corneometer) was slightly higher in group I but the difference was not significant also. pH was between 4.6-4.9. TEWL (g/cm^2) was slightly higher in group II but the difference wasn't significant (Table II).

However TEWL of forehead and cheeks were significantly decreased in HRT group ($p < 0.05$).

DISCUSSION

Genetic, hormonal, environmental factors are involved in cutaneous aging. Decreased sebaceous gland activity and hydration, roughness, hyper-hypopigmentation, telangiectasies, slackness are characteristic features of postmenopausal skin. HRT improves the woman's quality of life and plays an important role in the prevention of cardiovascular disease and osteoporosis (5). Its effects on skin and connective tissue are of remarkable interest, but its clinical and therapeutic correlations are still to be defined (1-7). Systemic HRT may prevent skin aging by increasing sebaceous gland activity, hydration, dermal collagen content and mitotic activity of keratinocytes.

Measurement of skin hydration, pH and sebum in vivo, using instrumental techniques which are non invasive, are based on the evaluations of biological and biophysical state of stratum corneum (4).

In this study we didn't observe a significant difference related with HRT, between sebum, pH, TEWL and hydration of the skin of postmenopausal women. There are some reports about the increase of skin surface lipids during HRT, which

may reflect stimulatory effects of progesterone component on sebaceous gland activity while estrogen alone has a sebum-suppressive action (6). It was suggested that HRT demonstrate a beneficial effect from a cosmetic point of view, but showed not to induce an abnormal increase in sebum production (3).

In our opinion HRT improves the barrier function of the skin, however seborrheic condition may be worsened during this treatment.

Table I
Demografic data of study groups

Groups	n	Ages (years)			Duration (years)	Menopause type		Therapy
		range	mean	SD		surgical	physiological	
Group-I	24	40-65	51.29	5.44	1-10	11	13	HRT
Group-II	24	37-70	55.66	7.99	1-10	2	22	-

Table II
The results of measurements

Localisation	Forehead		Nose		Cheek		Chin		Average		p
	I	II	I	II	I	II	I	II	I	II	
Sebumeter ($\mu\text{g}/\text{cm}^2$)	133*	83*	119*	94*	95*	94*	42*	23*	96	78	0.11
Corneometer	38*	43*	15*	14*	50*	50.9*	29.5*	23*	33	32	0.87
pHmeter	4.7*	4.6*	4.9*	4.7*	4.9*	4.9*	4.87*	4.87*	4.8	4.8	0.97
TEWL (g/hm^2)	16.5*	27.2*	35.6*	34.2*	27.6*	32.5*	14.2*	19.7*	20.8	25.1	0.08
Median	16.13*	44.1*	35.9*	31.5*	26.7*	33.2*	14.5*	18.75*			
SD	0.97*	1.24*	1.48*	2.8*	1.95*	2.5*	0.6*	0.9*			
Temperature	25.17*	26.4*	26.2*	28.1*	27.7*	28.5*	27.8*	27.8*			
Real.humidity	52.50*	59*	63.9*	59.5*	53.2*	59.3*	44.3*	50.*			

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