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*Lipid and hormone profile in psoriatic females**

There is a number of indirect evidences in the literature that sex hormones can affect the course of psoriasis (1–3, 5, 7, 8, 11, 13–15). Their intensification depends on the phase of the menstrual cycle whereas pregnancy may either enhance, reduce or even lead to almost complete regression of symptoms, it is rational to expect the sex hormone alterations in psoriatic females. In some cases the first symptoms of psoriasis occur at the beginning of menstruation, pregnancy, hormonal contraceptive therapy or menopause (1–3, 7, 8, 14, 15). Al.'Abadie et al. (1) reported that among different type of stressful events which can provoke or exacerbate within specified time periods after the occurrence of event were birth/hormonal changes (both childbirth and pubertal changes) in 16 from 113 psoriatic patients.

Major hormonal shifts appear to have some effect on psoriasis (8). When changes occur in pregnancy, psoriasis is most likely to improve. Swanbeck et al. (8) reported that women account for a greater percentage of the cases of late-onset psoriasis and suggest that menopause is a triggering factor. Mowad et al. supported this hypothesis (8).

Stevens et al. (14) report a patient with severe psoriatic arthritis in whom the severity of both the arthritis and psoriasis fluctuated with the menstrual cycle. These features failed to improve with standard therapy, but there was a prompt response to treatment which suppressed oestrogen secretion. To check this hypothesis we measured the serum level of sex hormones and lipids during follicular (I) and luteal (II) phase of the menstrual cycle in psoriatic women.

* Part of this work was presented as a poster at the 7th Congress of the European Academy of Dermatology and Venereology, Nice, 7–11 October 1998 (9).

OBJECTIVE

The aim of the study was to check if the psoriasis has any influence on sex hormones and lipid profile.

MATERIAL AND METHODS

The testosterone (T), sex hormone binding globulin (SHBG), LH, FSH, estradiol (E_2), progesterone (P), cortisol (C), aldosterone (A) were measured on the appropriate day of the cycle (Table 2). The T, SHBG, LH, FSH were estimated on day 5–8 of the cycle, estradiol on day 11–12 of the cycle; progesterone (P), cortisol (C), aldosterone (A) – day 21 of the cycle. Lipids were measured on day 8 of the cycle (Table 3). The hormones were estimated by radioimmunoassay and lipids by enzymatic method. Ten psoriatic subjects (mean PASI score 22.6 ± 22.9) were compared with 15 healthy BMI and age matched controls. Women in both groups were ovulating. Blood was drawn at 7.40 a.m., the participants had fasted from all food and liquids from 6 p.m. the night before.

Table 1. Parameters of psoriatic females and control group

Parameter	Group	N	X	SD	SEM	Z	P
Age	C	15	28.6	6.18	1.59	-0.391	>0.6
	P	10	28.7	2.26	0.71		
Weight	C	15	60.7	9.39	2.42	-0.195	>0.8
	P	10	59.9	7.12	2.25		
Height	C	15	164.06	6.64	1.71	-1.029	>0.3
	P	10	162.0	5.67	1.79		
BMI	C	15	22.5	3.09	0.79	-1.165	>0.2
	P	10	22.8	3.06	0.96		
Time of disease	C	15	-	-	-	-	-
	P	10	13.0	5.7	1.8		

Table 2. Hormonal parameters of investigated groups

Parameter	Group	N	X	SD	SEM	Z	P
T Nmol/l	C	15	3.57	1.62	0.42	-2.499	<0.02
	P	10	2.02	1.8	0.57		
SHBG Nmol/l	C	15	90.8	32.63	8.42	-1.526	>0.1
	P	10	71.14	33.52	10.6		
FAI	C	15	4.2	1.57	0.40	-1.886	=0.0593
	P	10	3.5	3.89	1.23		
FSH MIU/ml	C	15	6.09	1.95	0.50	-0.868	>0.3
	P	10	5.6	1.26	0.4		
LH MIU/ml	C	15	4.24	2.10	0.54	-1.174	>0.2
	P	10	5.90	3.14	0.99		
LH/FSH	C	15	0.71	0.42	0.108	-2.340	<0.02
	P	10	1.03	0.46	0.14		
E2 Pg/ml	C	15	214.0	71.6	18.48	-1.898	=0.0577
	P	10	128.5	104.4	32.9		
P Nmol/l	C	15	19.27	4.85	1.25	-1.180	>0.2
	P	10	15.6	7.43	2.35		
K Nmol/l	C	15	490.81	130.14	33.6	-0.904	>0.3
	P	8	446.34	207.29	73.29		
A Pg/ml	C	6	356.67	149.22	60.92	-1.220	>0.2
	P	7	277.14	256.95	97.12		

Table 3. Serum lipid parameter in the investigated groups

Parameter mg%	Group	n	X	SD	SEM	Z	P
Total cholesterol	C	15	195.7	23.0	5.9	-1.387	>0.1
	P	10	208.9	18.6	5.8		
HDL cholesterol	C	15	57.4	10.4	2.7	-1.637	>0.1
	P	10	49.8	10.0	3.2		
LDL cholesterol	C	15	111.9	14.3	3.7	-1.443	>0.1
	P	10	120.7	19.2	6.0		

LDL cholesterol	C	15	111.9	14.3	3.7	-1.443	>0.1
	P	10	120.7	19.2	6.0		
Total phospholipids	C	15	190.9	23.4	6.0	-0.277	>0.7
	P	10	193.7	21.8	6.9		
HDL phospholipids	C	15	88.0	14.7	3.8	-1.553	>0.1
	P	10	79.1	12.5	3.9		
LDL phospholipids	C	15	78.9	13.0	3.4	-0.444	>0.6
	P	10	80.9	10.2	3.2		
Total triglycerides	C	15	94.0	30.6	7.9	-1.997	<0.05
	P	10	139.9	53.6	16.9		

RESULTS

We observed lower levels of measured hormones relative to controls, except LH, which was higher but not significantly. The T levels and L/FSH ratio were remarkably lower in psoriatic group. The triglycerides were significantly higher in the psoriatic patients.

DISCUSSION

It is clear from a review of the literature that complex hormonal changes occur across the menstrual cycle (12). There are few studies concerning lipid parameters in menstruating female. Some of them analyse seasonal and biological variation of blood concentration of total cholesterol and some sex hormones (4). Less is known about the lipids in psoriatic females during the menstrual cycle.

Psoriatic subjects are believed to present many abnormalities in their serum lipid profile, which causes the increase of incidence of "occlusive vascular diseases" in that population. Lindegård demonstrates that in Swedish population among 160 psoriatic women psoriasis in females only is associated with lung cancer, diabetes, obesity, myocardial infarction and asthma (5).

In the current literature there is no of information concerning sex hormones profile in psoriatic females. Mowad et al. (8) emphasize that the menstrual cycle has

little effect on the course of psoriasis and is difficult to assess because of varying duration of individual cycles and relatively brief, minimal hormonal shifts.

We are not able to explain the fact that T levels and L/FSH ratio were remarkably lower in psoriatic group. The lipid pattern is similar to that published in our previous paper, we observed the same tendencies, they were more pronounced perhaps because of the higher number of participants. The triglycerides were significantly higher in the psoriatic patients, which is in agreement with many papers (5, 10, 11). Weigl (15) observed absolutely elevated serum cortisol levels, our patients demonstrated slightly lower (ns) level of serum cortisol, but there was a greater index of variability in this parameter as compared to the controls. On the contrary, Schmidt et al. (12) observed that psoriasis patients displayed higher adrenaline values but diminished cortisol and DHEA plasma concentrations as compared to controls. Our results show that serum sex hormone levels in psoriatic women are different comparing to healthy subjects, however, the exact mechanism of this alternation is yet unknown and needs further study .

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SUMMARY

The serum concentrations of sex hormones in appropriate days of the menstrual cycle, and of lipids in 15 ovulating women, were measured. The psoriatic patients were compared with a control group of healthy subjects matched for age, sex and body mass index (BMI). In psoriatic patients, the levels of measured hormones were lower than in the controls, with the exception of LH concentrations, which were increased but in a statistically insignificant way. The testosterone levels and LH/FSH ratio were significantly lower in the psoriatic group. The triglyceride concentrations were significantly higher in the patients, and this phenomenon was not related to their body mass.

Stężenie lipidów i hormonów u kobiet z łuszczycą

Zbadano surowicze stężenie hormonów płciowych w odpowiednich dniach cyklu płciowego i lipidów surowicy krwi u 15 owulujących kobiet z łuszczycą w porównaniu ze zdrową grupą kontrolną. Grupa kontrolna dobrana była wiekiem, płcią i *body mass index* (BMI). Obserwowano niższe stężenia mierzonych hormonów w porównaniu z kontrolą, z wyjątkiem LH, które było podwyższone, ale nieistotnie statystycznie. Stężenie testosteronu i wskaźnik LH/FSH były istotnie obniżone w grupie pacjentek chorych na łuszczycę. Poziom trójglicerydów był istotnie statystycznie podwyższony u chorych kobiet i zjawisko to nie było związane z masą ciała.