

The Structural Changes in the Body after the Topical Fat Reduction in Women

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194 women with obesity of gynoideous type and cellulite, divided into 4 groups are included in this study. 1st group are put to recommended Individual kinesitherapy and dietary regime. To the program of the 2nd group are added Special kinesitherapy in a fitness center with intensive action and massage with Anticellulite balm in the region of "the women's pool" of the body. The 3rd group— to the program of the 1st group is added Laserpuncture. The 4th is like the 3rd with additional diffusion local Laser radiation of the affected from cellulite zones. The treatment lasted 12 weeks. In the 1st group a modest reduction of the body weight, body fat, body water and BMI are received. It's leading to an insignificant effect of the ball of 4 circumferences and cellulite's ball. In the three experimental groups the results of the circumferences and cellulite's ball are better. The women who lost weight, received a new structure of the body.

Key words: obesity, cellulite, laser puncture, balm, kinesitherapy.

Introduction

The obesity and cellulite of gynoideous type are illnesses of the "women's pool". They are the most common metabolic illnesses of the women. The cellulite (edematose fibrosclerotic panniculopathy) is a noninflammatory, constitutionally caused defined adiposity, accompanied by lymphatic congestion and formation of edema in connective tissue. It caused the cellulite-typical skin picture known as mattress or orange skin phenomenon in the affected body regions, first of all hips, buttocks, thighs and the transition zone between them [8, 10, 12]. The cellulite and obesity caused by similar factors: irrational feeding, genetic predisposition, weak connective tissue, hormonal disbalance, variation of the weight, etc. One of the reasons is the insufficient movement activity, which is leading to stagnation of liquids and increasing of the fatty depots in some parts of the body [11, 12]. Many people would like to selectively lose fat from a specific area of their body. The thighs and buttock area seem to be the area of most frequent concern for women. This desire for cosmetic change has been the basis for much popular and professional writing [9]. The structure of the subcutane-

ous adipose tissue accounts for the development of the "peau d'orange" appearance. Fibrous connective tissue septae surround groups of fat cells and attach to the underside of the dermis. As fat cells enlarge, these septae are stretched and pull down on the overlying skin. The result of this process is indentation or dimpling of the skin over the thigh and buttock area in women — cellulite [1, 2, 4, 7, 9].

J. K r a l et al. [8], J. S m i t h et al. [10] demonstrated that fat was absorbed more slowly in the femoral region in women losing weight after the jeuno-ileal bypass operation for server obesity. These observation suggested regional differences in the lipolytic processes that might respond to the local application of lipolytic agents [3, 4, 5, 6, 10].

The aim of present study was to investigate the influence of the kinesitherapy and lasertherapy upon the structure of the body in women with obesity of gynoideous type and cellulite.

Material and Methods

We have studied the influence of the kinesitherapy and lasertherapy upon women with obesity of gynoideous type I—III and cellulite II—III stage. 194 women (17—46 years), divided into 4 groups were included in this study. The women who fulfil one or more of the following exclusion criteria must be not admitted to the study: lactating, pregnant, with a psychological illness, with skin affections, taking sequence preparations and cosmetically disturbance in the defined body region. The 1st group (73 women) were put to Individual kinesitherapy and dietary regime with a negative energy balance of about — 800 kcal and individual tea of herbal medicines. To the program of the 2nd group (67 women) was added Special kinesitherapy in a fitness centre with intensive action and massage with Anticellulite balm. The 3rd group (29 women) — to the program of the 1st group was added Laserpuncture of corporal and auricular biologically-active points. The 4th group (25 women) was like the 3rd with additional diffusion local Laser radiation of the affected from cellulite zones (women's pool). The treatment lasted 12 weeks.

The height (cm), body weight (kg), body mass index (kg/m^2), body fat mass (kg), body lean mass (kg), body water (l), basal metabolism rate (kcal), ball of 4 circumferences (thigh, buttock, hip and waist) (cm), ball of 5 cellulite zones (stomach, hip, buttock, thigh — front and side part) were examined. Active mass (kg) = Body Weight (kg) — [Body Fat Mass (kg) + Body Water (l)].

For measurement we used the Body Fat Monitor "Tanita", the Body Stat — 1500, Spiroscreen "Jaeger", the Cellutest — "Irisine". We used also Laser System LT (He—Ne laser, 632,8 nm). Laserpuncture (with 5 m watt) lasts $\frac{1}{2}$ — 1 min a point, 12 procedures for everybody. The diffusion laser radiation (with 15 m watt) continued about 20 min in the region of the thighs, buttocks and hips.

The statistical analysis were made using ANOVA.

Results and Discussion

The results of the Table 1 are showing that the Individual kinesitherapy and dietary regime with a negative energy balance of about —800 kcal and tea of herbal medicines is leading to a modest reduction of the body weight, body fat, body water and body mass index. It's leading to a modest increase of the body lean mass, and body metabolism rate and an insignificant effect of the ball of 4 circumferences and

T a b l e 1. The results of examinations of the groups of women with cellulite and obesity of gynoideous type before (I) and after (II) treatment. n=194

MEASUREMENTS	Category	1st GROUP (n = 73)	2nd GROUP (n = 67)	3rd GROUP (n = 29)	4th GROUP (n = 25)
BODY WEIGHT (kg)	I	76.1	78.8	74.6	75.9
	II	72.4±3.8	73.0±4.1*	69.7±2.9*	70.8±3.7*
BODY FAT (kg)	I	26.0	28.9	26.8	27.9
	II	22.9±2.9	23.8±2.6*	22.7±2.8*	23.4±2.3*
B M I (kg / m ²)	I	29.2	32.4	31.9	32.1
	II	27.6±1.2	30.4±1.8	30.4±1.3	29.9±2.1
BODY LEAN MASS (kg)	I	50.1	49.9	47.8	48.0
	II	49.5±2.7	49.2±2.9	47.0±2.1	47.4±2.7
BODY WATER (l)	I	32.7	34.6	31.9	33.5
	II	30.1±1.7	31.2±2.0	29.8±1.4	31.6±2.3
BASAL METABOLISM RATE (kcal)	I	1570	1634	1671	1596
	II	1482±118	1496±121	1508±127	1494±108
BALL (cm) CIRCUMFERENCES	I	331	348	329	336
	II	318±12	326±21*	306±17	318±17*
CELLULITE'S BALL (points)	I	16.2	17.1	15.8	17.4
	II	13.9±1.2	11.7±2.1*	12.0±2.5*	12.0±1.7*

* $p < 0.05$ (in comparison with 1st group)

cellulite's ball. These results were for us controlling data for comparison of the 1st (control) group with the other 3 groups.

In the 2nd group with Special kinesitherapy in a fitness centre with intensive action of exercises and massage with Anticellulite balm in the region of the women's pool of the body, the reduction of the body weight, and the body fat is better ($p < 0,05$). The BMI and the body water remains as in the 1st group. The basal metabolism rate is increasing as a percentage (kcal / kg), but not for the whole organism. The ball of 4 circumferences and cellulite's ball has decreased in comparison with the 1st group ($p < 0,05$). These results are due to the negative energy balance, the exercises and the local massage procedures with the balm [3, 6, 10].

In the 3rd group with Laserpuncture of corporal and auricular points, together with the weight and the body fat, the cellulite is getting better too in comparison with the 1st group ($p < 0,05$). The basal metabolism rate is increasing as a percentage (kcal/kg). We think that the reduction of the body weight, body fat and cellulite in this group is a result of the decreased appetite and increased metabolism in the whole organism from the laserpuncture [11].

In the 4th group with additional diffusion local laser radiation, the results are the best — the body weight, the body fat and the ball of circumferences are considerably reduced in comparison with the 1st group ($p < 0,05$). The cellulite is getting certainly better compared even to the 3rd group ($p < 0,05$). It's showing that the diffusion local laser radiation of the affected from cellulite zones increase the reduction of cellulite and local body fat in the women's pool. We suppose that it is a result of the increased metabolism (lipolysis), the increased number of capillaries and collagen fibres, the vasodilatation, and the level of the antioxidant defense system in these region of the body [6, 11].

There is a tendency that **the body fat mass and the body water decrease, but the active mass increases** for all the groups (Table 2). Therefore, the women who lost weight, not only lost the fat mass, but receive a new structure of the body.

T a b l e 2. The new structure of the body: changes in body lean mass, body water and active mass (kg) before (I) and after (II) treatment

Measurements	1st group I	1st group II	2nd group I	2nd group II	3rd group I	3rd group II	4th group I	4th group II
BODY FAT MASS (kg)	26.0	22.9 -3.1	28.9	23.8 -5.3	26.8	22.7 -4.1	27.9	23.4 -4.5
BODY WATER (l)	32.7	30.1 -1.6	34.6	31.2 -3.6	31.9	29.8 -2.1	33.5	31.6 -1.9
ACTIVE MASS (kg)	17.4	19.4 +2.0	15.3	18.0 +2.7	15.9	17.2 +1.3	14.5	15.8 +1.3

Conclusion

The Individual kinesitherapy and dietary regime has a beneficial effect for the modest general reduction of the weight and body fats but it is insufficient for the treatment of cellulite and obesity of gynoideous type. They need local treatments. The Special kinesitherapy with local fitness and massage procedures and Lasertherapy with additional diffusion local laser radiation are effective methods for treatment of these diseases.

It is easier to measure the benefit to women who are so distressed about the appearance of the fat on their thighs that they resort to a surgical procedure such as liposuction for therapy. Topical lipolysis is almost certainly safer and does not carry with it the attendant risks of surgical procedures with its scarring and risks of infection as well as the risks of anesthesia.

Therefore, there are effective methods to achieve local fat reduction topically by manipulating the lipolytic mechanism and obviating the need for more risky surgical interventions.

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