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Human Chorionic Gonadotropin (HCG) in the Treatment of Obesity

A Critical Assessment of the Simeons Method

FRANK L. GREENWAY, MD, and GEORGE A. BRAY, MD, *Torrance, California*

Injections of human chorionic gonadotropin (HCG) have been claimed to aid in weight reduction by reducing hunger, and affecting mood as well as aiding in localized (spot) reduction. We have tested these claims in a double-blind randomized trial using injections of HCG or placebo. Weight loss was identical between the two groups, and there was no evidence for differential effects on hunger, mood or localized body measurements. Placebo injections, therefore, appear to be as effective as HCG in the treatment of obesity.

THE TREATMENT OF OBESITY with diet and injections of human chorionic gonadotropin (HCG) was suggested by Simeons in 1954[1] but its effectiveness has never been clearly established.[2-5] In spite of the tenuous scientific basis for treating obesity in this fashion, the method has flourished in commercial weight clinics throughout the United States but with concentrations in certain locales such as Southern California.[6] Many of the commercial weight clinics advertise, operate on a high profit margin and offer physicians large sums of money to affiliate with them while making minimal demands upon physician time. Consequently, with strong financial motivations for the continued use of the Simeons method, critical objective evaluation seemed indicated. Among the values claimed for this treatment are less hunger; differential weight loss predominantly from the hips and legs, and less emotional difficulties such as depression during treatment. To put these allegations to the test the following randomized double-blind study was carried out.

From the Clinical Research Center, and the Department of Medicine, Harbor General Hospital, Torrance, and University of California, Los Angeles, School of Medicine.

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Reprint requests to: George A. Bray, MD, Harbor General Hospital, 1000 West Carson Street, Torrance, CA 90509.

Patients and Methods

Patients answering an advertisement for participation in a treatment program for obesity were enrolled after payment of a deposit which was refundable upon completion of the study. The participants in this study were white women between 20 and 40 years of age, 152 and 172 cm in height, and 20 percent to 60 percent overweight.[7] They were all in good health and had not received HCG previously nor were they receiving any medication for obesity. Following physical and laboratory examinations, patients were randomly assigned into two groups, one receiving human chorionic gonadotropin and the other receiving placebo injections of diluent.

The drugs were prepared and dispensed by a local pharmacist, according to code number. Injections were given six days a week for six weeks and weights were obtained weekly. The measurement of hunger was evaluated by the method of Silverstone[8] and involves asking patients to mark a line between 1 and 9 based on their rating of hunger (1 = not hungry; 9 = maximum hunger). This measure was obtained at the beginning and at the end of treatment. The circumference of the midthigh, the chest, the hips at the iliac crest, and the mid-upper arm were measured at

the beginning and end of treatment to assess the possibility of localized fat reduction. Changes in mood during treatment were assessed using the Multiple Affect Adjective Check List, which rates anxiety, hostility and depression.[9] Instructions regarding diet, cosmetics and handling of patients at return visits were identical to those described in the study reported previously by Asher and Harper.[10] Upon completion of the course of injections the code was broken, and the data were tabulated and analyzed by analysis of variance using an IBM 370 computer.

Results

Twenty patients were enrolled in each group. The only significant difference between the two groups on the initial measurements was on the anxiety scale, where the HCG group were more anxious ($p < .05$) (Table 1). During treatment, seven patients in the placebo group and two in the HCG group failed to meet the minimum criteria for completion and were excluded from subsequent analysis (X^2 for difference in dropouts between groups using the Yates correction was 2.294; $p > 0.10$). The rate of weight loss is shown in Figure 1. There were no significant differences between the two groups at any time. The initial and final values for the anthropometric and psychological variables are shown in Table 2. There were no significant differences in the changes in any of these variables between the beginning and end of the treatment when comparing the patients who started and finished.

TABLE 1.—*Initial Values for Clinical Measurements In Two Groups of Patients*

	*HCG**	*Placebo**	*P†*
Body weight (kg) .	81.4± 9.7	79.4± 8.4	.483
Circumferences (cm)			
Biceps	33.3± 2.8	33.0± 2.5	.881
Chest	91.2± 8.4	94.0± 7.1	.255
Iliac crest	104.6± 9.9	101.8±11.2	.402
Midthigh	58.2± 5.4	57.4± 4.2	.681
Hunger score	3.3± 1.1	2.8± 1.2	.203
Anxiety score	83.6±20.8	63.2±28.0	.017
Hostility score ...	69.1±22.0	71.6±28.3	.770
Depression score .	74.1±24.5	69.4±23.3	.557

*N=20
†Probability determined by analysis of variance for group differences.

Comment and Discussion

In this trial of HCG and its diluent as a placebo, there were no significant differences in the two groups other than the greater anxiety in the HCG

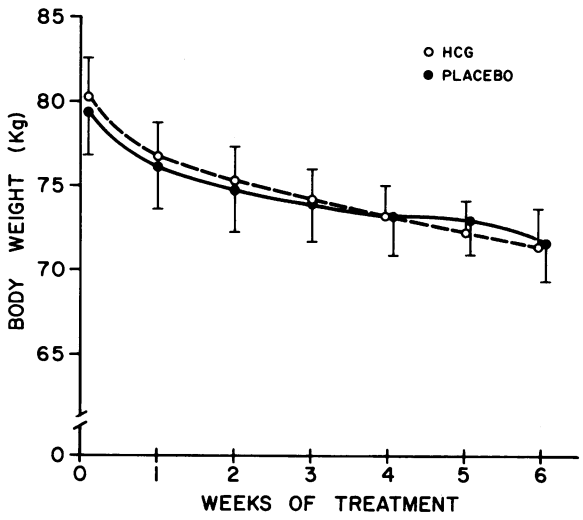

Figure 1.—Body weight during treatment with human chorionic gonadotropin (o) or placebo (•). There was no significant difference at any time.

TABLE 2.—*Initial and Final Values for Clinical Data in HCG-Treated and Placebo-Treated Patients*

	HCG		*Placebo*		
	Initial	*Final*	*Initial*	*Final*	*P**
Body weight (kg) ...	80.4±2.3	71.6±2.1	79.7±2.6	71.6±2.3	.366
Circumferences (cm)					
Arm	33.0±0.5	29.5±0.5	33.3±0.8	30.0±0.5	.733
Chest	91.7±1.8	88.6±1.5	94.0±2.0	89.4±1.8	.405
Iliac crest	103.9±2.3	95.0±2.0	100.6±3.8	92.5±2.3	.772
Midthigh	57.2±1.0	53.1±1.0	57.4±1.3	53.6±0.8	.285
Hunger score	3.3±0.3	4.4±0.5	2.9±0.3	4.2±0.5	.709
Anxiety score	85.1±5.0	64.5±5.4	67.1±8.1	65.4±6.1	.139
Hostility score	66.9±5.2	66.4±3.9	72.6±7.6	60.9±6.7	.318
Depression score	72.1±5.9	67.9±4.7	67.7±6.9	62.4±5.0	.913

*Probability determined by analysis of variance from F ratio for individual differences between initial and final values.

group before treatment. It is clear that patients lost weight quite satisfactorily indicating a high degree of adherence to the 500 kilocalorie diet. The injections of HCG, however, provided no additional effects that could not be accounted for by the diet alone. We conclude, therefore, that HCG used in the manner prescribed by Simeons does not enhance the rate of weight loss, nor does it significantly reduce hunger or change the ratings of anxiety, hostility or depression.

Although a number of other studies using HCG in the treatment of obesity have been carried out,[11] there appear to be only two that found HCG may be effective in treating obesity. The recent study by Stein and co-workers[4] was designed in much the same manner as the present study, except that mood ratings were not examined. However, they reached the same conclusion. With the now overwhelming body of evidence suggesting that HCG is no more effective than placebo in the treatment of obesity, it would seem that further efforts to perpetuate the Simeons method could only be financially motivated. Therefore, we feel that the 20 year history of the use of HCG in the treatment of obesity should come to an end because injections of placebo appear to be equally effective in all respects.[12]

REFERENCES

1. Simeons ATW: The action of chorionic gonadotropin in the obese. Lancet 2:946-947, 1954

2. Albrink MJ: Chorionic gonadotropin and obesity? Am J Clin Nutr 22:681-685, 1969

3. Bray GA: The Obese Patient, Philadelphia, W B Saunders, 1976, chapter 9

4. Stein MR, Julis RE, Peck CC, et al: Ineffectiveness of human chorionic gonadotropin in weight reduction: A double-blind study. Am J Clin Nutr 29:940-948, 1976

5. Young RL, Fuchs RJ, Wolfjen MJ: Chorionic gonadotropin in weight control. JAMA 236:2495-2497, 1976

6. Crout JR: Chroionic gonadotropin. Federal Register 39: 42397-42403, 1974

7. Bray GA (Ed): Obesity in Perspective, Fogarty International Center Series on Preventive Medicine, Vol 2. Washington, DC, US Government Printing Office, 1976, pt 1, p 7

8. Silverstone JT, Turner P, Humpherson P: Direct measurement of the anorectic activity of diethylpropion (Tenuate Dospan). J Clin Pharmacol 8:172-179, 1968

9. Zuckerman M, Lubin B, Robins SJ: Validation of the Multiple Affect Adjective Checklist in clinical situations. J Consult Psychol 29:594, 1965

10. Asher WL, Harper HW: Effect of human chorionic gonadotropin on weight loss, hunger, and feeling of well-being. Am J Clin Nutr 26:211-218, 1973

11. Bray GA, Greenway FL: Pharmacological approaches to treating the obese patient. Clinic Endocrinol Metab 5:455-479, 1976

12. Carne S: The action of chorionic gonadotropin in the obese. Lancet 2:1282-1284, 1961

Protocol of Taking Blood Pressures in Children

Most often it's very difficult in an office practice to take blood pressures in patients under 2 and 3 years of age. However, I think there's a great need for us to be doing this; and we need to develop our techniques and our sensitivities to be able to determine blood pressures on every physical examination that we do on a child. I believe that pediatricians should devise a special protocol in taking blood pressures. . . . They should take a blood pressure with the patient standing or sitting; and then they should take the blood pressure following exercise. I think this would be terribly important. Many of us know that when a child first comes into a physician's office and is rather nervous, the child's blood pressure might be elevated as a result and perhaps the results of a blood pressure determination done at home by a parent might be much more significant, so that you can use this as a guideline.

—PHILIP L. CALGANO, MD, *Washington, DC*
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