

History

Human Chorionic Gonadotropin (HCG) is a hormone normally secreted by the trophoblastic cells of the placenta during pregnancy. It was first described as a treatment for obesity in conjunction with a very low-calorie diet (VLCD) by Dr. A. Simeons in 1954 [1]. The Simeons method consisted of a rigid diet of about 500 calories per day combined with 125 units of HCG injected six days per week for 8 weeks. For each of the two meals permitted daily, patients were instructed to select one item from each of four food groups: protein, vegetable, bread, and fruit. For protein servings, patients were told to select from the following list: 3.5 ounces of meat, 3.75 ounces of fish, 4 ounces of Hoop cheese, or 6 egg whites. The latter two choices were to be selected occasionally [2]. The protein intake on the Simeons diet therefore ranged from about 45 to 50 grams of protein per day. The Simeons method was very popular in the 1970s, and advocates claimed that the method had numerous advantages, including rapid weight loss with minimal hunger, no weakness, and dramatic loss of fat in the stomach, hips, thighs, and upper arms.

After a series of clinical trials disputing the effectiveness of the Simeons Method, it fell from favor, but popular demand for HCG in the treatment of obesity has recently resurfaced in the United States. HCG is currently available for injection and as sublingual tablets.

Discussion

Although there were a few early studies in agreement with Simeons recommendations [2-3], a number of subsequent studies produced evidence that the HCG in the Simeons method was ineffectual and that the weight loss was entirely due to the diet [4-7]. A meta-analysis review in 1995 of prior studies concluded that there is no scientific evidence that HCG is effective in the treatment of obesity [8]. The meta-analysis found insufficient evidence supporting the claims that HCG is effective in altering fat-distribution, hunger reduction, or in inducing a feeling of well-being. The authors stated "...the use of HCG should be regarded as an inappropriate therapy for weight reduction..." In the authors' opinions, "Pharmacists and physicians should be alert on the use of HCG for Simeons therapy. The results of this meta-analysis support a firm standpoint against this improper indication. Restraints on physicians practicing this therapy can be based on our findings." PubMed and Google Scholar searches (on December 2, 2009) revealed no favorable reports on the Simeons method since the 1995 meta-analysis.

On the other hand, no significant harmful effects of HCG injections have been described in the medical literature. The diet employed in the Simeons method provides a daily protein intake below that of the recommended daily amount (RDA) for most patients. The caloric intake of the Simeons diet is similar to that of a VLCD, but the protein intake is lower than that prescribed for VLCDs in current use. Indeed, in the last few years, several well-known researchers have produced evidence that most adults benefit from protein intakes well above the minimum RDA and that intakes higher than the minimum RDA improve weight loss during caloric restriction diets [9-10]. A further criticism of the Simeons diet is that the amounts of protein per serving recommended do not reach 30 grams, the threshold dose required for initiation of muscle protein synthesis [11-14]. Although the required amount of daily protein intake is still controversial, most obesity medicine clinicians will agree that caloric restriction diets should provide more than the minimum recommended by the RDA.

Recent studies indicate that HCG injections in men, especially men with testosterone deficiency, can produce a slight gain in muscle mass, thought to be due to rises in testosterone levels [15]. The doses in the latter study were 250 units twice weekly. However, no studies have been reported of muscle mass changes in patients before and after weight loss with the Simeons method. Therefore one cannot assume that weight loss with the Simeons method will result in a net gain in muscle mass.

There are no reports in the medical literature regarding the effectiveness of sublingual HCG.

Summary

Numerous clinical trials have shown HCG to be ineffectual in producing weight loss. HCG injections can induce a slight increase in muscle mass in androgen-deficient males. The diet used in the Simeons method provides a lower protein intake than is advisable in view of current knowledge and practice. There are few medical literature reports favorable to the Simeons method; the overwhelming majority of medical reports are critical of it. Physicians employing either the HCG diet or the diet recommended by Simeons may expose themselves to criticism from other physicians, insurers, or government bodies.

Conclusions

It is the position of the Obesity Medicine Association that:

1. The Simeons method for weight loss is not recommended.
2. The Simeons diet is not recommended.
3. The use of HCG for weight loss is not recommended.

References

1. Simeons A. The action of chorionic gonadotropin in the obese. *Lancet* 1954; **2**: 946-947.
2. Asher WL, Harper HW. Effect of human chorionic gonadotrophin on weight loss, hunger, and feeling of well-being. *Am J Clin Nutr* 1973; **26**: 211-218.
3. Lebon P. Treatment of overweight patients with gonadotropin: follow-up study. *J Am Geriatr Soc* 1966; **14**: 116-125.
4. Greenway FL, Bray GA. Human chorionic gonadotropin (HCG) in the treatment of obesity: a critical assessment of the Simeons method. *West J Med* 1977; **127**: 461-463. PMID: 1237915.
5. Stein M, Julis R, Peck C, Hinshaw W, Sawicki J, Deller J, Jr. Ineffectiveness of human chorionic gonadotropin in weight reduction: a double-blind study. *Am J Clin Nutr* 1976; **29**: 940-948.
6. Young RL, Fuchs RJ, Woltjen MJ. Chorionic Gonadotropin in Weight Control: A Double-Blind Crossover Study. *JAMA* 1976; **236**: 2495-2497.
7. Bosch B, Venter I, Stewart RI, Bertram SR. Human chorionic gonadotrophin and weight loss. A double-blind, placebo-controlled trial. *S Afr Med J* 1990; **77**: 185-189.
8. Lijesen GK, Theeuwen I, Assendelft WJ, Van Der Wal G. The effect of human chorionic gonadotropin (HCG) in the treatment of obesity by means of the Simeons therapy: a criteria-based meta-analysis. *British journal of clinical pharmacology* 1995; **40**: 237-243. PMID: 1365103.
9. Layman D. Dietary guidelines should reflect new understandings about adult protein needs. *Nutrition & metabolism* 2009; **6**: 12.
10. Layman DK. Protein quantity and quality at levels above the RDA improves adult weight loss. *J Am Coll Nutr* 2004; **23**: 631S-636S.
11. Paddon-Jones D, Rasmussen BB. Dietary protein recommendations and the prevention of sarcopenia. *Curr Opin Clin Nutr Metab Care* 2009; **12**: 86-90.
12. Paddon-Jones D, Short KR, Campbell WW, Volpi E, Wolfe RR. Role of dietary protein in the sarcopenia of aging. *Am J Clin Nutr* 2008; **87**: 1562S-1566.
13. Paddon-Jones D, Westman E, Mattes RD, Wolfe RR, Astrup A, Westterterp-Plantenga M. Protein, weight management, and satiety. *Am J Clin Nutr* 2008; **87**: 1558S-1561.
14. Symons TB, Sheffield-Moore M, Wolfe RR, Paddon-Jones D. A moderate serving of high-quality protein maximally stimulates skeletal muscle protein synthesis in young and elderly subjects. *J Am Diet Assoc* 2009; **109**: 1582-1586.
15. Liu PY, Wishart SM, Handelsman DJ. A Double-Blind, Placebo-Controlled, Randomized Clinical Trial of Recombinant Human Chorionic Gonadotropin on Muscle Strength and Physical Function and Activity in Older Men with Partial Age-Related Androgen Deficiency. *J Clin Endocrinol Metab* 2002; **87**: 3125-3135.