QUESTIONS & ANSWERS THE USE OF "HCG" IN THE TREATMENT OF OBESITY

Q. WHAT IS HCG?

A. Human Chorionic Gonadotropin (HCG) hormone is a substance which occurs naturally in pregnant women and which has the effect of releasing abnormal stored fat.

Q. **HOW DOES THIS REDUCING METHOD WORK?**

A. It depends upon the daily injection of Human Chorionic Gonadotropin (HCG) hormone plus an exact diet.

Q. CAN IT BE HARMFUL IN ANY WAY?

A. No. During pregnancy it is produced daily in a quantity hundreds of thousands of times the amount used for the treatment of obesity. Yet, it harms neither the mother nor the child.

Q. CAN BOTH MEN AND WOMEN TAKE IT?

A. Yes. It has been used with equally good results in both.

Q. WILL HCG WORK WITHOUT A DIET?

A. Although there is no dramatic weight loss without the accompanying diet, HCG usually causes a reduction in inches rather than pounds.

Q. HAS THIS METHOD BEEN USED BEFORE?

A. Yes. When first reported in the Medical Journal Lancet in November of 1954, it had been used in thousands of cases. Since then, it had been used in many more.

Q. HOW DOES HCG AND DIET WORK?

A. During pregnancy HCG (Human Chorionic Gonadotropin) is believed to help insure that the fetus will have access to its mother's stored fat supply, regardless of the amount of food which she eats. In overweight people, HCG seems to work by the same method - namely that of making available permanently stored supplies of fat making it possible to adhere to the diet.

Q. WILL IT AFFECT MY APPEARANCE? WILL I GET WRINKLES OR STRETCH MARKS IF I LOSE ALL THIS WEIGHT?

A. No, not with this method. Abnormal fat deposits should disappear. Double chins, pot bellies, and fat around the thighs should be the first to go. The treatment does not deplete the subcutaneous or other essential fat. The face retains its freshness and natural appearance.

Q HOW DO WE KNOW THAT THE HCG AND DIET is MORE EFFECTIVE THAN JUST THE DIET ALONE?

A. Unknown to the patient, weak saline solution was substituted for the HCG and weight loss continued for about 3 days. Thereafter, the patients complained of feeling weak or dizzy, became ravenously hungry, and declared themselves unable to continue the treatment. As soon as treatment on HCG was resumed, they again felt fit and perfectly satisfied with their diets

Q. WHAT EFFECTS CAN I EXPECT FROM THE INJECTION ITSELF?

A. Usually a loss of appetite occurs and patients notice that the severe compulsive hunger disappears completely.

Q. HOW LONG CAN I CONTINUE THESE INJECTIONS?

A. After 40 injections, the effectiveness diminishes due to the body's ability to develop temporary immunity to the HCG. However, if necessary, subsequent courses of injection can be resumed after a 3-week stabilizing period. In some instances, 4 or more courses have been given with continued effectiveness if a 3-week interval has been allowed between them.

Q. WILL I GAIN THE WEIGHT BACK ONCE I STOP THE HCG DIET?

A. Some degree of moderation in eating will be necessary because of the tendency to gain weight after any type of weight loss program. However, a stabilizing program is available at the end of the injection series. Stability of the normal weight is relatively easy because the weight loss is from storage fat and not from structural fat.

Q. WHAT IF I MISS ONE OR MORE OF THE INJECTIONS?

A. This merely delays the total effectiveness of the program.

Q. CAN I MAINTAIN THE DIET EVEN IF I ENGAGE IN DAILY HARD PHYSICAL LABOR?

A. Yes. HCG allows you to maintain this diet even during hard work.

Q. WHAT ABOUT PROTEIN OR VITAMIN DEFICIENCIES DURING THIS DIET?

A. None has been observed with this method due to the stored quantities of both in the fat. However, supplements are available at very modest prices.

Q. WHAT IF I OCCASIONALLY GET JITTERY OR SHAKY DUE TO THE REDUCED QUANTITY OF FOOD?

A 15 calorie Lifesaver or Charm, when necessary, usually controls this and does not interfere with the weight loss.

Q. CAN MY OVERWEIGHT CHILDREN USE THIS PROGRAM?

A. No. These injections are not advisable for persons under the age of puberty. Other methods are available for these cases.

Q. APART FROM ITS ACTION ON FAT, ARE THERE ANY OTHER ACTIONS OR SIDE EFFECTS TO THE INJECTION OF HCG THAT I SHOULD KNOW ABOUT?

A. Yes, there seems to be some stimulation to the generative system. Premenstrual difficulties may be relieved. Abnormal loss of head hair in obese individuals may cease. Brittle fingernails may become normal and professional singers may note an improvement in their voices. Blood pressure tends to normalize, cholesterol readings become normal, arthritis symptoms are lessened. No adverse reactions to the injections have been experienced.

Q. DO YOU GUARANTEE THAT I WILL LOSE WEIGHT WITH THIS METHOD?

A. No. Guarantees cannot be made, as with any other medical treatment. However, most of our patients have lost an appreciable amount of weight with this program. It is the most effective method we have experienced in weight reduction.

Q. WHAT IF I DO NOT LOSE VERY MUCH?

A. Our experience has been that in cases where there is no, or slow weight loss, a very common cause is the patient's depressed metabolism. This is frequently caused by past dieting, chronic low intake, etc. WE CAN CORRECT THIS. Slow weight loss can also be due to associated medical problems, which should be sought out and corrected. Once this is accomplished, weight loss occurs.

Treatment of Obesity Today

Dr. Louis M. Orr, past president of the AMA was asked, "Do you consider cancer as the greatest threat we face?" He answered, *"No, cancer Is the most dreaded disease in the U.S., but the greatest danger to the health of the American people is obesity. "*

Today, tens of millions of Americans are overweight and not taking advantage of the medically safe, rapid weight-loss techniques that work. (Generalized advice from family and friends seldom works.)

By following the specific program outlined here, you will lose weight safely and rapidly from the body areas which contain stored fat. Basically the body has *three types* of *fat:*

- *Structural fat* (endogenous) - necessary to give support to organs and smooth contour to the body (youthful appearance).
- *Normal fat* - a reserve of fuel upon which the body can freely draw when the nutritional income from the intestinal tract is insufficient.
- *Excess stored fat* (exogenous) - unwanted, unsightly, and dangerous. By stretching skin and Burdening the body organs, it destroys health as well as beauty.

AT. Simeons, M.D., at the Salvador Mundi International Hospital in Rome, Italy, demonstrated that *injections of Human Chorionic Gonadotropin hormone (HCG) selects this abnormal stored fat and mobilizes it into the circulation where it becomes available for use* as *energy and appetite control.* This insures high loss from the areas of exogenous fat and prevents any loss of structural fat. It also restores any normal structural fat, which may be missing due to attempted dieting or poor eating habits, which may have caused wrinkles and flabbiness. As the normal tat is restored, it has the effect of making the face and neck, in particular, look younger and fresher. When dieting with injections, you will lose fat you are storing and do not need. Therefore, you will not have the tendency to regain the weight that you lose on this program.

It will be easy to follow the special 800 calorie diet because, according to Dr. Simeons, the injection makes available approximately 2,000 calories of stored fat. In addition, the diet has been carefully selected and balanced in the ratio of fat, starch, and protein, so that the body will use the food efficiently. Use of listed food substitutions will insure variety of menu as well as sound nutrition. Nutritional supplements and medication will be provided as needed. ANY deviation from the menu can result in weight gain. This may have to be experienced to be believed. On the other hand, willing and faithful compliance with the entire program will give you the very best results.

Our Phase I program consists of appetite suppressants, and/or 40 injections in a two month period, resulting in an average weight loss of 20-30 pounds - rapidly, safely, and easily. After 40 injections there is temporary immunity to the injections which lasts approximately 3 weeks. The diet is continued for 72 hours after the last injection. After the 72 hour period, the patient goes into *"PHASE II"* of our program. *"PHASE II" accelerates the basic metabolism rate*. as *well* as *gives the body* a *break from the HCG and the appetite suppressants. If the patient is at their goal weight then they are placed on our "MAINTENANCE PROGRAM", which is continued* as *long* as *necessary* to *insure that the desired weight loss is maintained*. There should be no weight gain or weight loss when not in treatment. The patient who has more weight to lose may begin a second series at the end of the 3 week period.

Detailed verbal and written instructions are provided for the weight-losing portion of the program, and again for the weight-stabilizing portion. Experience has shown that this plan provides a predictable, rapid, and safe weight loss and weight normalization for those who are motivated sufficiently to persevere, whether for reasons of health, beauty, or happiness.

"Although most of us take it for granted,
water is quite possibly the single most important catalyst in losing weight and keeping it off. "

WATER

Water suppresses the appetite naturally and helps the body metabolize stored fat! Studies have shown that a decrease in water intake will cause fat deposits to increase, while an increase in water intake can actually reduce fat deposits.

Here's Why: The kidneys can't function properly without enough water. When they don't work to capacity, some of their load is dumped onto the liver.

One of the liver's primary functions is to metabolize stored fat into useable energy for the body. However, if the liver has to do some of the kidney's work, it can't operate at full throttle. As a result, it metabolizes less fat, more fat remains stored in the body and weight result, more fat remains stored in the body and weight loss stops.

Drinking enough water is the best treatment for fluid retention. When the body gets less water, it perceives this as a threat to survival and begins to hold on to every drop. Water is stored in extra-cellular spaces (outside the cells). This shows up as swollen feet, legs, and hand?

Diuretics offer a temporary solution at best. They force out stored water along with some essential nutrients. Again, the body perceives a threat and will replace the lost water at the first opportunity. Thus, the condition quickly returns.

The best way to overcome the problem of water retention is to give your body what it needs - plenty of water. Only then will stored water be released.

If you have a constant problem with water retention, excess salt may be to blame. Your body will tolerate sodium only in a certain concentration. The more salt you eat, the more water your system retains to dilute it.

But getting rid of unneeded salt is easy - just drink more water. As it's forced through the kidneys, it takes away excess sodium.

The overweight person needs more water than the thin one. Larger people have larger metabolic loads. Since we know that water is the key to fat metabolism, it follows that the overweight person needs more water.

Water helps to maintain proper muscle tone by giving muscles their natural ability to contract and by preventing dehydration. It also helps to prevent the sagging skin that usually follows weight loss.

Shrinking cells are buoyed by water, which plumps the skin and leaves it clear, healthy, and resilient.

Water helps rid the body of waste. During weight loss, the body has a lot more waste to get rid of - all that metabolized fat must be shed. Again, adequate water helps flush out the waste.

Fact: The body will not function properly without enough water and can't metabolize stored fat efficiently.
Fact: Retained water shows up as excess weight. Fact: To get rid of excess water you must drink more water.
Fact: Drinking water is essential to weight loss.

How much water is enough? On the average, a person should drink eight 8-ounce glasses every day. That's about 2 quarts. However, the overweight person needs an additional glass for every 25 pounds of excess weight. The amount you drink also should be increased if you exercise briskly, or if weather is hot and dry. Water should preferably be cold. It's absorbed into the system more quickly than warm room temperature. And some evidence suggests that drinking cold water can actually help burn calories.

To utilize water most efficiently during weight loss, follow this schedule:

Morning: 1 quart consumed over a 30 minute period.
Noon: 1 quart consumed over a 30 minute period.
Evening: 1 quart consumed between five - six o'clock.

When the body gets the water it needs to function optimally, its fluids are perfectly balanced. When this happens, you have reached the breakthrough point. **What does this mean?**

Endocrine - gland function improves.

Fluid retention is alleviated as stored water is lost.

More fat is used as fuel because the liver is free to metabolize stored fat.

Natural thirst returns.

There is a less of hunger almost overnight.

If you stop drinking enough water, your body fluids will be thrown out of balance again, and you may experience fluid retention, unexplained weight gain, and loss of thirst. To remedy the situation, you will have to go back and force another breakthrough.

WEIGHT LOSING ROUTINE

Your success in this program depends upon your following every detail of every instruction, no matter how unimportant it may seem.

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Weight loss is proportionate to the frequency of injections. Five injections weekly give the best result, for after, 72 hours the injection is completely used up. Should you continue on the 800 calorie diet after 72 hours without an injection, you will lose some structural fat and experience sudden increased appetite, diminished energy, irritability, as well as other unpleasant symptoms. If you miss injections, ask for specific instructions beforehand whenever possible.

1. Each visit, your weight and blood pressure will be monitored.
2. You will be taking medication as needed.
3. Do not divert from the allotted foods in exactly the allowed portions without first consulting with the nurse.
4. You must drink 8 glasses of water daily (2 1/2 - 3 qts. is best). If your body is functioning normally you will not retain it. Your kidneys require 2 quarts, or 8 glasses, of water a day in order to function properly. If they do not get it, your liver has to pitch in and help them out. One of the jobs of your liver is to metabolize your body fat. If it is busy helping the kidneys out, it cannot do its own job of burning your body fat.
5. Weight loss is not always in evidence on the scale even though you have made no mistakes. Sometimes, even though you are using up body fat, it is being replaced temporarily by water, which is heavier than fat. Reduction in size may occur before a corresponding loss in weight. A pound of muscle takes up less space than a pound of fat.
6. Anniversaries, birthdays, and emotional upsets occasionally crop up. Report these on your next visit. You will be instructed on how to minimize the damage done. Remember, it's what you do daily that counts, not what happens once or twice.
7. Planned exercise is heartily encouraged. Isometrics, brisk walking, yoga postures, swimming, bicycling, cardio-glide, and jogging are all acceptable. Choose one and make it part of your life. It will help to maintain your new trim figure and your health.

Before you interrupt or stop treatment inform the nurse or doctor. They will explain the way to insure holding your last recorded weight. This is important! Verbal and printed instructions are a must. After weight loss, this is a necessary precaution to insure your body becomes stabilized at the new weight, rather than have rapid weight gain.

MEDICATION ADVISORY FORM

The staff at Sarasota Family Medical hopes your experience with us will be pleasant as well as rewarding. To ensure your experience with us is pleasant, we want you to be aware there are several side effects and/or reactions to appetite suppressants. There is a possibility **you may not** experience any of these listed, however, the most typical or more commonly experienced side effects with using appetite suppressants are:

- dryness of the mouth
- unpleasant taste
- occasional headaches
- diarrhea and/or constipation
- sleeplessness

POSSIBLE SIDE EFFECTS

Appetite Suppressants: The medication may cause restlessness, dizziness, tremors, headaches, and/or depression. When taken as prescribed there are rarely any psychotic episodes. In some cases a patient may experience blood pressure elevation (our nursing staff will be monitoring this for you), rapid heart beat and/or pounding in the chest. The less common, but possible risks are: primary pulmonary hypertension and valvular heart disease. These and other possible risks could be serious or fatal. **Important: Doctors and Anesthesiologists require different lengths of time off different medications prior to surgery. In order to avoid any possible delay in your surgery, go off all medications from Transformations at least two weeks before your surgical date.**

How To Use This Medicine: Follow the directions for using this medicine provided by your Doctor. This medication may be taken with food. If you are using this medication on a regular basis and happen to miss a dose, take it as soon as possible. If it is almost time for your next dose, "skip" the missed dose and go back to your regular dosing schedule. **DO NOT** take two (2) doses at once. **Cautions**: When taking this medicine aloneor with other medicine(s} and/or alcohol, it may affect your ability to drive and/or operate equipment, or perform other potentially dangerous tasks. Until you are aware of how this medication effects your Central Nervous System, avoid activities that require alertness and/or good Psychomotor coordination**. BEFORE YOU BEGIN TAKING ANY NEW MEDICINE** either prescription or over-the-counter, check with your Doctor or Pharmacist. If you are pregnant and/or will be nursing an infant DO NOT use this medication.

HCG: There may be some side effects to the RCG (Human Chorionic Gonadotropin). Below are several possible side effects to the injections. The more typical or most commonly experienced are: tenderness of the breasts, disruption in menstrual cycles (i.e. early onset or delayed - usually one week), and occasionally slight bruising at the injection site. The use of HCG has the potential to stimulate the production of estrogen which, in rare instances, may be inducible to pregnancy and/or multiple births. Other possibilities not generally seen which may occur in male patients are: tenderness in the groin, and/or aggravation to the prostate gland (if there is a continued history of prostatitis).

Possible adverse reactions which **may** occur include headache, irritability, restlessness, depression, fatigue, edema, precocious puberty, gynecomastia, and pain at the site of injection. Hypersensitivity reactions both localized and systemic in nature, including erythema, urticaria, rash, angioedema, dyspnea, and shortness of breath, have been reported. The relationship of these allergic-like events to the polypeptide hormone or the diluent containing benzyl alcohol is not clear. **Cautions:** If you are pregnant and/or will be nursing an infant **DO NOT** take this medication.

PLEASE DO NOT WAIT until your next visit to report these or any other side effects you may be experiencing to our nursing staff. Due to a wide variety of choices with selecting both the medication and strength, we can almost always help you become more comfortable.

I have carefully read and fully understand all the above information, and acknowledge the possibility of all risks with using the medications, and/or injections, in this program. I therefore assume all risks, and hold Sarasota Medical Center, the Doctors and Staff, harmless to any, and/or all, reactions or side effects experienced while taking any, and/or all, of said medications.

(patient's legal name) (date)

(witnessed by) (date)

The first report on the use of hCG for the management of obesity was published in 1954 by the late Dr. ATW Simeons, a British Physician practicing at the Ospedale Salvatori Mundii in Rome.

Working in India, he noticed that the so-called "fat boys," who showed Adiposogenital dystrophy improved their undescended testis when they were treated with hCG. But he also observed that body fat distribution modified during the treatment course. Therefore he hypothesized that if those children were concomitantly submitted to a very Hypocaloric diet they could reduce their body weight, consuming the "fat on the move".

Later on, he extended his investigations to patients showing different degrees of obesity, and concluded that hCG might be useful for the treatment of obesity because

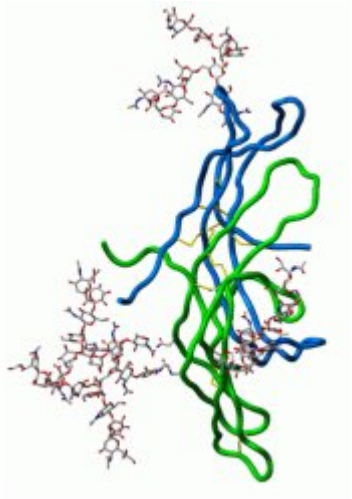
- Patients tolerated a Very Low Calorie Diet without suffering headaches irritability, weakness, so common to this approach for weight reduction. Maintenance period after treatment was more effective when compared with simple dietetic procedures.
- Weight reductions were more satisfactory than those obtained with Standard Hypocaloric Diets
- Patients lost more body fat (measured in centimeters) from those regions where adipose tissue accumulations were more conspicuous.
- He hypothesized that hCG acted at diencephalic level, modulating hypothalamic regulatory Centers, which were in turn responsible for the excessive fat accumulation as seen in obesity.

This preliminary communication was followed by a myriad of reports, some of them favoring the use of hCG, and others criticizing the procedure.

Finally, and after a serial of Double-Blind Tests, the FDA concluded the method bears no utility for Obesity therapy.

This Administration forced Pharmaceutical Firms to include in their hCG leaflets of information a paragraph stating that hCG was of no use in the management of obesity.

We have recently performed a Double Blind study on the subject, assessing data that was not included in previous reports. Our results demonstrated that despite weight loss was similar in both Placebo and hCG-treated groups, the latter lost more body fat than control volunteers: .



hCG is a glycoproteic hormone, normally secreted by trophoblastic cells of the placenta. It consists of two dissimilar, separately but coordinately translated chains called the Alfa and beta subunits
The three pituitary hormones LH (Luteinising Hormone) are closely related to hCG in that all four are glycosilated and have a dimeric structure comprising an Alpha and Beta chain as well.

The aminoacid sequences of the Alfa chain of all four human glycoproteic hormones are nearly identical.

Aminoacid sequences of the beta subunits differ because of the unique immunological and biological activities of each glycoproteic hormone. Beta -hCG contains a carboxylic residue of 30 aminoacids characteristic to hCG.

When it was discovered by Ascheim and Zondek by 1927 they found out that hCG matured the infantile sex glands of experimental animals, and it was secreted by the human placenta. From there its denomination: Chorionic Gonadotrophin **.**

However, recent data suggest that both terms can be quite misleading: normal human tissuesplasma from

non pregnant subjects trophoblastic and non-trophoblastic tumors bacteria and plants express hCG or a hCG- like material.

After the first report on hCG use for obesity treatment, an innumerable amount Physicians all over the world visited Dr. Simeons in Italy, to learn from first hand the hCG original protocol.

Many of them attempted to recreate the standard procedure without success, or obtaining undesirable results.

After many years of experience on the use of hCG for the management of obesity , we would like to stress the following

- ***hCG is not a magic wand***

It does not cure or eradicate obesity, but weight losses are rapid, comfortable, and the maintenance period after treatment runs a smoother course.

Obesity might not be only a matter of overweight. Dieting per se is not a treatment for obesity. Rather, it is an ancillary procedure.

Unless we try to act upon the basic diencephalic disturbance, any dietetic procedure will be condemned to failure.

We cannot improve diabetes just by dieting, and obesity cannot be effectively treated without some sort of medical intervention in the diencephalon.

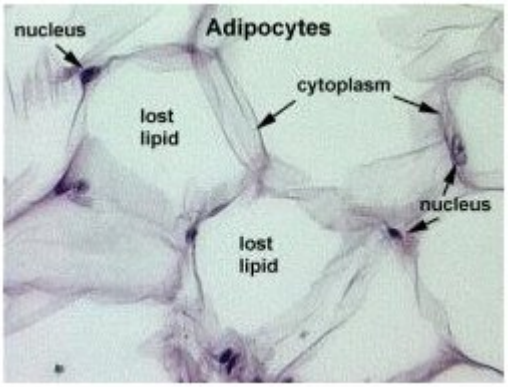
Anorectics point in that direction, and were for many years an unsuccessful approach to obesity because their side-effects.

What he suggested was that hCG, acting at hypothalamic level, might correct the basic hypothalamic disorder, and consequently adipose tissue metabolism.

If this turns out to be the case, hCG could be an excellent adjuvant procedure in the management of the disease.

The vast majority of publications concluded hCG has no action on weight loss, rendering no better results than a current Hypocaloric diet, except for classical Asher and Harper report concluding that weight losses under hCG were superior to placebo.

hCG displays a metabolic action on adipose tissue metabolism



Throughout these years, hCG has been reported to exert its actions on several tissues other than gonadal: *Kaposi sarcoma*,*asthma*, *psychoses*, *artheriopaties*,*thalassemia*, *osteopenia*, *alcoholism*, *glaucoma*. Therefore, we are not dealing with a "pure" sex hormone

Available data would indicate that hCG might also improve lypolisis in human adipose tissue, via an inhibitory effect on lipogenesis.

- **hCG actions on adipose tissue metabolism**

Fleigelman concluded that the administration of hCG in rats decreased the activity of alfa-glycerophosphate dehydrogenase and glucose-6-phosphate dehydrogenase from the liver and adipose tissue, suggesting a decreased lipogenic activity in both tissues under hCG .

Yanagihara reported that hCG accelerates "not only the mobilization of fat from fat deposits, but also its utilization in peripheral tissues. hCG increased the metabolism of injected fat emulsions, suggesting the acceleration not only of fat oxidation, but also increased ketone production in the liver and its utilization in peripheral tissues" Romer reported that hCG intensifies the metabolism of rat brown adipose tissue (391).

Administration of hCG to humans appears to increase the release of fatty acids that varies with the age of the subject. Melichar demonstrated that hCG causes a marked FFA release in newborn infants.

In adults, a single dose of hCG caused a marked FFA release by $p > 0.05$ when compared to placebo-treated subjects.

Consequently we hypothesize, that hCG might act upon adipose tissue metabolism through some mediators secreted at hypothalamic level.

One of the most valuable hypotheses on the genesis of obesity sustains that the basic metabolic disorder lies in the hypothalamic region: like in any other clinical disorder, we have to find out who is the villain in this story. For example: the pancreas in diabetes, the thyroid in hypothyroidism. the adrenal glands in Addison disease.

The organ more frequently incriminated in the genesis of fat accumulation seems to be the hypothalamus. A considerable body of evidences points in that direction.

Interestingly, exogenous administered hCG accumulates in hypothalamic region, particularly in Ventromedial and Lateral Hypothalamus. It is not therefore unreasonable to suppose that the target organ for hCG metabolic actions might be the diencephalon.(178-513)

hCG may act at diencephalic level, probably modifying some neuropeptide metabolic pathways, which in turn act whether on Ventromedial or Lateral hypothalamic Nucleus, or via Hypothalamus hypophisis (30-209).

There are no age or sex limits, and hardly any contraindications (211) to use the hCG method for the treatment of obesity. Tolerance to the treatment is excellent, and many patients willingly submit to a second treatment.

Weight loss is safe and comfortable for patients, provided that they meticulously follow the prescribed diet. Any deviation from the protocol is apt to yield poor results. Even minor deviations may cause

unwanted setbacks.

The hCG protocol is an appropriate approach to the treatment of obesity that also includes a behavior modification program as well as pharmacological and dietetic aspects. When properly managed, the result is rapid weight loss and improved body shape after treatment. Clinical complications and unfavorable results are related to unsafe modifications of the protocol.

Evidence suggest that hCG promotes lipolytic activity. Since hCG does not mobilize in vitro lipids from the fat cell, it was hypothesized that the hypothalamic region might be the intermediate organ in hCG lipolytic action.

The hCG method includes patients' follow-up (daily visits to the doctor to be weighed and injected), helping patients with their behavior modification program.

There are some similarities between the behavioral program included in the hCG protocol and a current behavior modification program for obesity treatment.

The 500 Kcal-diet as prescribed in the original treatment proved to be safe and effective.

Results are not surpassed by any other modality of obesity therapy. Reshaping of body contour is more noticeable in those patients displaying the so-called gynoid types (fat located in buttocks and hips area).

- ## Introduction

The subject of adipose tissue membrane receptors has been a subject of great interest in recent years.

Human fat cells possess both Alfa and Beta membrane adrenoreceptors, acting differently on adipose tissue metabolism (500).

The major function of adrenoreceptors in white fat cells is to regulate the breakdown of tryglicerides to free fatty acids and glycerol through lipolysis. Functions and mechanisms of action of adrenoreceptors in white fat cells are as follows:(16-17-18-19-20-21-22).

1. Beta l.2.3. receptors increase lipolysis rate.

2. Alpha 2 decrease lipolysis rate.

Human adipose tissue is an extremely metabolic active organ : Depending on where it is localized, it shows a different response to drug intervention. Visceral fat cells are more responsive than abdominal subcutaneous fat cells (gluteal or femoral) to the lipolytic actions of catecholamines.

There are also sex differences: A higher Alpha2-receptor affinity has been reported in peripheral male subcutaneous fat cells than in the abdominal, which may explain why the regional variation in catecholamines-induced lipolysis within the subcutaneous adipose tissue is more pronounced in men than in women.

Fasting also modifies the regional sensitivity of adipose tissue: It is associated with a decrease in catecholamines-induced lipolysis rate in peripheral, but not abdominal, subcutaneous adipose tissue. This may further promote the development of gynoid obesity.

During fasting, Alfa activity (antilipolytic) increases and Beta action (lipolytic) decreases in female thighs region

An increase of Alfa activity is related to a decreased lipolysis, whereas a diminution of beta adrenergic

activity provokes the same effect (366).

Therefore, it has been suggested that the combination of both activities might explain why the female thigh region is more resistant to dietetic procedures.

Abdominal adipocytes are more responsive to the lipolytic action of Beta-1 adrenergic agonists, while gluteal adipocytes are more responsive to the antilipolytic action of Alpha-2-adrenergic agonists.

In lean and obese adults, gluteal subcutaneous adipose tissue was strikingly more responsive to antilipolytic alpha-adrenergic stimulation, and less responsive to lipolytic beta-adrenergic stimulation, and less responsive to lipolytic beta-adrenergic stimuli compared to abdominal tissue (394).

This would explain why gluteal and femoral fat pads are more resistant to dietary interventions.

Taken together, these results seem to suggest that it should be possible to locally modulate the activity of Alfa and Beta adrenoreceptors through the administration of Beta-adrenergic or Alfa-Blockers agents. Beta Stimulation and/or Alfa blocking of adipocytes membrane receptors might increase lipolysis in those areas.

Thus, a reasonable combination would be the prescription of a Very Low Calorie Diet (such as indicated in the hCG Protocol) plus the local administration of Alfa Blockers or Beta stimulating agents.

We have found the association of both procedures extremely useful, both from the Clinic as well as from the Aesthetic viewpoint

We currently indicate the hCG Protocol plus the local administration (to the thigh area) of a cream containing diluted amount of Aminophyline (metilxanthine) and Yohimbine (Alfa Blocker). This procedure is well accepted by patients and is indicated as a good pre-surgical management of obesity. Since it can be performed in a consultation office inside the clinic, the plastic surgeon does not lose contact with their future patients.

No complications were reported with this combined method .

Severe food restriction, as observed within the hCG protocol, enhances lipid mobilization from lower limbs, improving the obtained results .