Effect of HCG Injection on Obesity and Metabolism

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Abstract

Obesity may be due to an abnormal functioning occurring at certain parts of the body and disorders of some regulatory mechanisms which may lead to abnormally accumulated fat. It may be hypothesized that the HCG hormone can lead to fat extraction from the cells, causing them to be empty then the body breaks down its cellular structure and absorbs it. This work aimed to study the effect of injecting Human Chorionic Gonadotropines (HCG) on the body weight of obese rats and its effect on cholesterol level and thyroid level.

Twenty male albino obese rats weighing 350-430 grams were included in this study. They were fed on excess chow and butter and had free access to water for few days for acclimatization then, they were divided into two equal groups: Group I (control), group II (treated with HCG injections).

Both groups were fed for one month on quarter the daily requirements while group two were subjected beside that to daily injections of 5IU of the HCG hormone along the whole month. The rats of the two groups were weighed every week and at the end of the month. Fasting blood samples were taken from the rats retro-orbitally to detect the cholesterol level and the thyroid hormone level in both groups. Histological samples were taken from liver, kidney and pancreas and examined under light microscope for the presence of fat in these organs.

There were significant decrease in the weight of the control group fed on quarter of the daily requirements but the decrease in weight of the group fed on quarter of the daily requirements and were given HCG injections was much greater indicating an effect of the HCG in weight reduction. There were significant decrease in the cholesterol level and the thyroid hormone level in both groups. Histological samples were taken from liver, kidney and pancreas and examined under light microscope for the presence of fat in these organs.

Conclusion: HCG injections may be beneficial with strong reduction in dietary requirements in combating obesity.

Key Words: Human chorionic gonadotropines (HCG) — Obesity — Metabolism.

Introduction

OBESITY is due to an abnormal functioning of some part of the body and disorders of some regulatory mechanisms leading to abnormally accumulated fat ill. Persons suffering from this particular disorder will get fat regardless of whether they eat excessively, normally or less than normal. A person who is free of the disorder will never get fat, even if he frequently overeats [3].

Those in whom the disorder is severe will accumulate fat very rapidly, while those in whom it is moderate will gradually increase in weight and those in whom it is mild may be able to keep their excess weight stationary for long periods. In all these cases a loss of weight brought about by dieting, treatments with thyroid, appetite-reducing drugs, laxatives, violent exercise, massage, baths, etc., is only temporary and will be rapidly regained as soon as the reducing regimen is relaxed. The reason is simply that none of these measures corrects the basic disorder [3].

Combating obesity is a major problem. New methods were tried, experimentally. But invariably the results were disappointing and lacking in uniformity.

H.C.G. also known as Human Chorionic Gonadotropin is a hormone made by the placenta during pregnancy was found that its injection in overweight patients, combined with decreasing the daily caloric supply to quarter (about 500 calories per day) resulted in rapid fat loss [4].

Human chorionic gonadotropin (H.C.G.) is a hormone produced later during pregnancy by the placental component synctiotrophoblast. Some cancerous tumors produce this hormone; therefore, elevated levels measured when the patient is not pregnant can lead to a cancer diagnosis. The pituitary analog of H.C.G. known as luteinizing hor-
mone (LH), is produced in the pituitary gland of males and females of all ages [5].

Human chorionic gonadotropin interacts with the HCG receptor and promotes the maintenance of the corpus luteum during the beginning of pregnancy, causing it to secrete the hormone progesterone. Progesterone enriches the uterus with a thick lining of blood vessels and capillaries so that it can sustain the growing fetus. Due to its highly negative charge, H.C.G. may repel the immune cells of the mother, protecting the fetus during the first trimester [6].

It has also been hypothesized that H.C.G. may be a placental link for the development of local maternal immunotolerance. For example, H.C.G.-treated endometrial cells induce an increase in T cell apoptosis (dissolution of T cells). These results suggest that H.C.G. may be a link in the development of peritrophoblastic immune tolerance, and may facilitate the trophoblast invasion, which is known to expedite fetal development in the endometrium. It has also been suggested that H.C.G. levels are linked to the severity of morning sickness in pregnant women. Because of its similarity to LH, H.C.G. can also be used clinically to induce ovulation in the ovaries as well as testosterone production in the testes, it also plays a role in cellular differentiation and proliferation and may activate apoptosis [7].

H.C.G. may be considered a potential "silver bullet" for those who really need to lose weight. It just may be the perfect antidote. However, we cannot comment on what else might be occurring in the body while it is being exposed to a regular dosage of this very unique hormone. The human body can react in dramatic, profound and sometimes unknown ways when it is subjected to this hormone. During pregnancy, the surge of this hormone signals the hypothalamus in the brain to start moving nutrients and fat into the placenta. When used as part of a weight loss program, it is the fat-mobilization aspects of the hormone that has garnered attention for its seeming ability to help facilitate weight loss [8].

Under the influence of HCG, fat is being extracted from the cells, in which it is stored in the fatty tissue. When these cells are empty and therefore serve no purpose, the body breaks down the cellular structure and absorbs it.

When this happens the body replaces some of the extracted fat with water. Because water is heavier than fat, the weight scale may show no loss of weight even though fat has actually been consumed to make up for the deficit in the 500-calorie diet. When the fat tissue is finally broken down and the water liberated, there is a sudden flood of urine and a marked loss of weight there for consuming fluids is critical to the success of this program [9].

The use of the HCG drops or injection which are present newly are combined with a massive calorie deficit that enables the body to lose fat rather than lean muscle, enabling the user to experience fast weight loss.

According to Dr. Simeons [2], the daily dosage of H.C.G. is 125 IU to 175 given subcutaneously. It is normally not to feel hunger pains with the use of HCG despite the very low calorie diet as it is simply suggested to contain natural ingredients which help suppress appetite.

**Material and Methods**

Twenty male albino obese rats weighing 350-430 grams were included in this study. They were obtained from Ophthalmology Institute and were housed in wire mesh cages (40x25x15) at room temperature in Physiology Department, Cairo University, during March 2013. They were fed on excess chow and butter and had free access to water.

*Rats were then divided into two equal groups:* Group I: Control.

Group II: Treated with HCG injections.

Both groups were fed for one month on quarter the daily requirements while group II were subjected beside that to daily subcutaneous injections of 5 IU of the HCG. Along the whole month. The H.C.G. is available in the market as Pregnyl 2000 IU.

The Ampoule/Vial Size: 2000 IU HCG was diluted with a total of 40ml water then each ml of the mixture was divided for ten rats.

The rats of the two groups were weighed every week and at the end of the month. Samples of blood were taken from the rats retro-orbitally at the beginning of the experiment to detect the cholesterol level and the thyroid hormone level in both groups at the beginning of experiment. Then at end of experiment samples were taken another time retro-orbitally to detect effect of HCG hormone.

The rats are sacrificed at the end of experiment and histological sections were taken from liver, pancreas, kidney, and were examined for the presence of fatty changes in these organs.
Statistical analysis:

The data were encoded and entered using the statistical package SPSS version 15. The data were summarized using mean, comparison between studied groups was done using unpaired t-test. \( p \)-value <0.05 were considered statistically significant.

Results

The obtained results showed that reducing the daily supplements to quarter the amount led to significant decrease in the total body weight. The mean weight for the rats for the control group subjected only to decrease the daily supplements to quarter the level showed significant decrease in the total body weight by about 24% from mean of 402 grams to 305.5±8.03 (\( p \)<0.05).

The results also showed that injecting the rats with HCG in conjunction with reducing the daily supplements to quarter the value for one month led to much greater significant decrease in total body weight by 33.5% than that occurred in the control group as the mean weight decreased from 429.2 grams to 285.2±13.89 (\( p \)<0.001).

The results of the present study showed significant decrease in the cholesterol level in the control group subjected only to decrease the daily supplements to quarter the dose after one month as the cholesterol level decreased from 114.3mg/dl to 100.7±4.96mg/dl (p<0.05).

Also there were significant decrease in the cholesterol level in the group subjected to HCG daily injections in concordance with the decrease in the daily supplements to quarter the dose as the cholesterol level decreased from 116.9mg/dl to 90.7±3mg/dl (p<0.05), yet the change is not that much greater than the control group.

The results showed non significant change in the T4 level in the control group subjected only to decrease the daily supplements to quarter the dose after one month as the T4 level increased from mean of 88nmol/l to mean of 95nmol/l (p>0.05). Also there were non significant decrease in the T4 level in the group subjected to HCG daily injections in concordance with the decrease in the daily supplements to quarter the dose as the mean T4 level increased from to 90nmol/l to 99nmol/l (p>0.05).

Histological results:

Histological examination of liver showing no fatty infiltration in group not receiving HCG, but marked perinephric fat in group not receiving HCG.

Histological picture of kidney showing absence of perinephric fat in group receiving HCG, but marked perinephric fat in group not receiving HCG.
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Histological picture of liver showing no fatty infiltration in group receiving HCG x100.

Histological picture of liver showing mild fatty infiltration in group not receiving HCG x100.

Histological picture of pancreas showing moderate fatty infiltration in group not receiving HCG x100.

Histological picture of pancreas showing no fatty infiltration in group receiving HCG x100.

Histological picture of kidney showing absence of perinephric fat in group receiving HCG x100.

Histological picture of kidney showing marked perinephric fat in group not receiving HCG x100.
Table (1): Weight, cholesterol level and T4 level for the control, and H.C.G. treated groups at the beginning of the experiment and after one month (Mean±SD).

<table>
<thead>
<tr>
<th></th>
<th>Control group</th>
<th>H.C.G. treated group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean weight of rats at beginning of experiment (grams)</td>
<td>402</td>
<td>429.2</td>
</tr>
<tr>
<td>Mean weight of rats after reducing dietary daily supplements to quarter the daily requirements for one month (grams)</td>
<td>305.5± 8.03*</td>
<td>285.2±13.89*</td>
</tr>
<tr>
<td>Mean Cholesterol level of rats at beginning of experiment (mg/dl)</td>
<td>114.3</td>
<td>116.9</td>
</tr>
<tr>
<td>Mean Cholesterol level of rats after reducing dietary daily supplements to quarter the daily requirements one month (mg/dl)</td>
<td>100.7±4.96*</td>
<td>90.7±3.0*</td>
</tr>
<tr>
<td>Mean T4 level of rats at beginning of experiment (nmo1/l)</td>
<td>88</td>
<td>90</td>
</tr>
<tr>
<td>Mean T4 level of rats after reducing dietary daily supplements to quarter the daily requirements one month</td>
<td>95</td>
<td>99</td>
</tr>
</tbody>
</table>

* Significant with control group (p-value<0.05).

Table (2): Comparison between the percentage decrease in weight after one month of decreasing dietary supplements to quarter the dose for the control group and the H.C.G. treated group.

<table>
<thead>
<tr>
<th></th>
<th>Control group</th>
<th>H.C.G. treated group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percentage decrease in weight after one month of reducing dietary supplements to quarter the dose</td>
<td>24%</td>
<td>33.5%</td>
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</table>

Table (3): Comparison between the percentage decrease in cholesterol level after one month of decreasing dietary supplements to quarter the dose for the control group and the H.C.G. treated group.

<table>
<thead>
<tr>
<th></th>
<th>Control group</th>
<th>H.C.G. treated group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percentage decrease in cholesterol level after one month of reducing dietary supplements to quarter the dose</td>
<td>12.7%</td>
<td>22.4%</td>
</tr>
</tbody>
</table>

Discussion

The objective of the present study was to study the effect of injecting Human Chorionic Gonadotropines (HCG) in conjunction with decreasing the dietary supplements to quarter the dose on the body weight of obese rats and its effect on cholesterol level and thyroid level and fat in different body organs.

Reducing the dietary supplements was suggested to decrease the body weight as stated by Melindas et al., [10]. This was shown in the control group where the mean weight of rats decreased after one month of decreasing the dietary supplements from 402 grams to 305.5±8 grams (p<0.005).

The use of the HCG injections in conjunction with decreasing the dietary supplements was suggested to cause much greater decrease in the body weight than that achieved by decreasing the daily supplement alone. This was shown in the group treated with HCG beside decreasing the daily supplements when the mean weight of rats decreased significantly from 429.2 grams to 285.2±13.89 and fat decrease in different body organs assuming a role for the HCG hormone in decreasing the body weight and fat beside the decrease in daily supplements.

These results agree with the results of Davidl, et al., 111 who stated that after one week with the use of the HCG injections with the decrease in daily supplements to quarter the daily dose the energy level for the persons under the experiment was up, and they were able to resist sweet and fatty foods. He stated that on day 7 the persons under the experiment lost about 9 lbs.

He stated that after two weeks of using HCG injections, the persons under experiment started the week off with even more energy and was feeling happier than before (this may be a positive side effect mood enhancement) and they lost 16 lbs of weight by the end of this week and 25 lbs by the end of the fourth week.

The results also agree with the results of Toholoria L, et al., [12] who stated that they under went the experiment on them selves and lost about 25 lbs by the fourth week.

The results of the study also agrees with the results of Martikainen et al., [3] where they stated that the HCG through its hypothalamic action decreases the lipogenesis in the adipose tissue, and that the Beta endorphin content in the HCG may account for the sensation of well being described by the patients through the course of the HCG.
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treatment. They also stated that the administration of the HCG leads to its accumulation in the hypothalamic region and the secretion of fat mobilizing substance that inhibit lipogenesis and increase lipolysis leading to the reduction of adipose tissue pads.

The results of the present study did not agree with the statement of the FDA of December 6, 2011 that prohibited the sale of the HCG diet products and declared them fraudulent and illegal as they said they could not comment on what else might be occurring in the body while it is being exposed to a regular dosage of this very unique hormone.

The results of the present study also disagree with Hashinoto et al., [13]. They stated that when the HCG is used in conjunction with a very low calorie diet, any weight loss that occurs is likely to be due to the reduced caloric intake rather than the HCG shots themselves.

The results of the present study showed that there were significant decrease in the cholesterol level in the control group subjected only to diet decrease as the cholesterol level decreased from mean of 14.3mg/dl to 100.7±4.96mg/dl. And also there were significant decrease in the cholesterol level in the group treated with HCG injection along with diet decrease as the cholesterol level decreased from mean of 116.9mg/dl to 90.7±3.0mg/dl. Yet the decrease in cholesterol level in the treated group was greater than the decrease in the control group by about 9.7%.

The results of the present study agree with the results of Joplman L et al., [14] as they stated that during pregnancy this hormone signals the hypothalamus in the brain to start moving nutrients and fat into the placenta. When used as part of a weight loss program, it is the fat-mobilization aspects of the hormone that has garnered attention for its seeming ability to help facilitate weight loss.

On diet the HCG has the added benefit of making the stored fat available to the body, together with controlling the hunger pain.

In addition to losing weight in a rapid and safe manner, the HCG helps to prepare the person and the body to keep the weight off after the diet has been completed. Not only does HCG help to "reset" the metabolism, but by adhering to the HCG Protocol, person can train himself and his body, to eat less and in a more healthy manner.

The results of the present study showed non significant change in the T4 level after one month of decreasing the dietary supplements in both the control group and the HCG treated groups indicating that its use with this low dose may be safe. These results were consistent with the results of Melinde S. et al., [10].

These results disagree with the results of Buiaamow W. et al., [15] who stated that many side effects have been shown in those who take HCG shots for weight loss. As blood clots, depression, headaches and ovarian hyperstimulation syndrome in women.

The present study suggests that the using the HCG injection with the reduction of the daily supplements may cause a loss of about 30% of the body weight through one month. You will definitely lose weight on this regimen without heavy exercise.

The HCG Diet was previously only available in spas and weight loss clinics which made access to the diet unaffordable for most of the people, but as the diet proved wildly successful and something that could easily be done at home with the proper instructions, HCG Diet Direct was formed so that you could obtain the same supplements and instructions that the clinics provide.

Newly formed HCG drops may have the same effect of the injected form with less side effects.

References


