

THYROID**LET'S DISCUSS HYPOTHYROIDISM AND OBESITY**

THE thyroid is one of the largest endocrine glands in the human body. It is located in the neck and is protected by cartilage. In men, it is more pronounced and called "Adam's apple".

The thyroid gland produces and releases thyroid hormones (T3 and T4) into the bloodstream. These are essential to life and exert multiple and varied effects as far as our metabolism, growth and development are concerned.

Regulation of the thyroid is carried out by two other hormones, TSH and TRH, which in turn are produced in other organs, the pituitary and hypothalamus, respectively. These organs work as a type of sensor, sensitive to the levels of thyroid hormones in circulation and subsequently stimulating or inhibiting their production.

Hypothyroidism and obesity: cause or consequence?

Hypothyroidism and obesity are two conditions that are very prevalent in our population. Approximately 30% of the adult population



may suffer from obesity and about 5% of the population may suffer from hypothyroidism. It is, therefore, important to stress that thyroid disorders can be the cause or the consequence of obesity. When treating these patients, it is recommended to screen for TSH (thyroid stimulating hormone).

Recent data indicates that obesity, being an inflammatory condition – presence of cytokines – can cause disorders of the thyroid, revealing that up to 14% of patients with obesity may suffer from hypothyroidism, which makes weight loss difficult. This is the reason why alterations of the thyroid can be the cause or the consequence of obesity and vice-versa.

Food, obesity and hypothyroidism

Thyroid hormones (HT) cause an increase in the metabolic activity of cells influencing their metabolic levels as far as protein, lipids and glucose functioning levels are concerned. Whenever biosynthesis is

compromised, changes in the energy balance occur.

With clinical hypothyroidism, a slight weight increase (between 3-5kg) can be observed associated with oedema and decreased basal metabolism and thermogenesis. In addition, people with this disorder often complain of fatigue and decreased physical activity, which also causes a decrease in the release of energy. The prescription of drug therapy restores hormonal levels and, consequently, basal metabolism and energy balance.

Food plays an important role in the biosynthesis and metabolism of HT, as well as in regulating body weight. Adequate intake of iodine, concomitantly with other micronutrients (such as selenium, zinc, iron, vitamin A) that function as cofactors, are necessary for the normal functioning of this gland.

Iodine is an essential trace element in the synthesis of T3 and T4. Insufficient intake leads to inadequate HT synthesis, which can lead to hypothyroidism and goitre.

On the other hand, the

contrary will occur, an excess of iodine can also block, through a self-regulatory mechanism, the absorption of iodine and consequent hormonal synthesis. Thus, the consumption of food rich in this trace element, such as fish, seafood, milk and dairy products, and eggs, should be encouraged. Fruits and vegetables also contain iodine, but their content is dependent on the amount of iodine present in the soil.

As for selenium, it functions as a cofactor for the enzyme responsible for converting T4 into T3. This trace element is present in cereals and derivatives, Brazil nuts, eggs, mushrooms and seafood. Its content in meat and fish is variable, but abundant especially in tuna, salmon and sardines.

On the other hand, zinc also functions as a cofactor in the conversion of T4 to T3. The main source of zinc are oysters, red meat and poultry, nuts, beans and whole grain.

Iron is also a thyroid cofactor and its deficit interferes with HT biosynthesis.

Food of animal origin, such as red meat, liver, eggs and fish, provide iron in greater bioavailability.

Finally, vitamin A is essential in the synthesis of thyroglobulin and in the absorption of iodine by the thyroid. It is found in cod liver oil, eggs, liver, milk and dairy products. Beta-carotenes are found in fruits and vegetables.

With regards to obesity, different strategies can lead to weight loss, with the common premise of creating a negative energy balance through energy restriction. The promotion of healthy eating and physical exercise are the cornerstones for the treatment.

As one gets older, the function of the thyroid is reduced, especially in women, which is why it must be monitored regularly, especially when there are weight fluctuations.



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