



# Endocrine Hormones and Disorders



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## Short Communication

The endocrine system is a network of glands that synthesize and release hormones that help control many important body functions; including the body's ability to change calories into energy that reinforces cells and organs. The endocrine system affects how the heart beats, the bones and tissues grow and the ability to make a baby. It plays a key role in whether or not the man develops diabetes, thyroid disease, sexual dysfunction, growth and other hormone-related disorders. The endocrine's feedback system helps to regulate and control the balance of hormone levels in circulation. If a certain hormone level changes, the feedback system signals from suitable gland and dispel this abnormality. A hormone imbalance may occur if this feedback system has not ability to keep the right level of hormones in circulation, or if body cannot clear them from circulation properly [1].

Hormonal disorders maybe due to a disorder in the gland itself or because of disorder in the hypothalamic-pituitary axis function that impact on hormones levels. Sometimes the body's immune system attacks to an endocrine gland and decreasing hormone production and disrupting the normal processes of the organ. Age also plays as an important factor in the development of hormonal disorders. Hormone levels typically are reduced with age and while some do not, hormone receptors become less active and cause certain changes in different areas of body. Tumors can also grow on hormone producing organs and cause an overproduction of the hormone or suppress the growth of hormone producing tissue, causing a reduction in hormone production. Other factors may affect hormone production include stress, infection and the blood chemistry and electrolyte balance changes. Thus depending on the hormonal disorder, the appeared symptoms may change plenty. In the modern life, one is exposed to various stressful conditions. Stress can lead to an alteration in the serum levels of many hormones, including glucocorticoids, catecholamines, growth hormone and prolactin. Some of these changes are necessary for the fight or flight response to protect oneself. However, long-term exposure to stress may lead to many destructive consequences that could lead to various endocrine disorders and thereupon a remarkable alteration in the clinical status of many endocrine conditions. It has been shown that

genomic and no genomic actions of thyroid hormones result in cardiovascular hemodynamic changes in overt hyperthyroidism, including reduced systemic vascular resistance (SVR), increase of heart rate, elevated cardiac preload and increased cardiac output. SVR is decreased in hyperthyroidism due to relaxation of vascular smooth muscle cells that mediated by thyroid hormone and increased endothelial NO production. Mild diastolic hypertension, narrowed pulse pressure and bradycardia might appear in hypothyroid patients. Overt hypothyroidism is accompanied with increased SVR, normal or reduced resting heart rate, decreased contractility and diminished cardiac output. Lipid metabolism is changed in hypothyroidism and approximately 90% of patients with overt hypothyroidism have increased total cholesterol and LDL-c levels. GHD is associated with elevated body fat and central adiposity, dyslipidemia (low high density lipoprotein cholesterol (HDL-c), high total cholesterol and high low density lipoprotein cholesterol (LDL-c)), endothelial dysfunction, and insulin resistance. Increased carotid arterial intima-media thickness (IMT), a marker of early atherosclerotic development has also been described in GHD. GH replacement therapy can result in increased lean body mass and reduced visceral adipose tissue and may decrease total and LDL-c levels. It is worth to note that in some cases thyroid hormones levels is decreased not due to dysfunction of thyroid organ but it is originated from disorder of other organs. It has been shown that clinical conditions including sepsis, surgery, myocardial infarction and other chronic and sever diseases are associated with decrease of thyroid hormones. T3 serum concentration is decreased during non thyroid diseases, but T4 levels is increased in most of the cases that is due to inhibition of T4 conversion to T3 as a result of decreased activity of deiodinase enzyme. Hypercortisolism is accompanied with insulin resistance, central obesity, hypertension, dyslipidemia and changes in clotting and platelet function. Recent studies also show that certain chemicals described as "endocrine disruptors" play a role in hormonal disorders incidence, in which they might mimic of the a certain hormone functions and causing an overstimulation of processes. Some may bind to the hormone receptors that are located in different parts of the body and the receptors fail to pick up the signal anymore and the body cannot

respond properly. Others may disrupt the production of the hormones themselves or the action of the receptors. These endocrine disruptors may interfere in daily household objects and disrupt the cosmetics and food pathway metabolism. Some evidence has shown that these endocrine disruptors may also change the expression of DNA and their effects may be passed on to the next generation [2,4].

Oral or intravenous form of hormone replacement therapy is a popular treatment to many types of hormonal disorders. For example hormone therapy in menopause women may increase the risks of certain cancers and cardiovascular diseases. Although some hormone supplements might help to restore normal hormone development but also some might cause a remarkable deficiency in certain vitamins or minerals. Certain drugs can also block the production of overproduced hormones or bind to their receptors to reduce their effect. Surgery of involved hormone producing sites could be used as a last cure means. Adjustment of diet might also be useful in reducing the pressure on the body particularly in diabetes and thyroid conditions. Exercise could also help to release some hormones as well as help facilitate metabolic processes [5-7].

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