

What are the Future Aspects of Reports in Thyroid Research?

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Abstract

Anatomically, Thyroid gland (TG) is located anteriorly in the lower neck, covering the distance from the fifth cervical vertebra till to the first thoracic. Its shape is either H or U and divided into two lobes connected with a median isthmus. Sometimes, the isthmus may be missing and only the two lobes form the gland. Their length is approximately 50-60 mm, while the gland weighs 25-30 g. Also, is highly vascularized and innervated by the autonomic nervous system. Parasympathetic fibers come from the vagus nerves, and sympathetic fibers are distributed from the superior, middle and inferior ganglia of the sympathetic trunk. The produced hormones are Triiodothyronine (T3) and Thyroxine (T4), under regulation of thyroid stimulating hormone (TSH) which is produced in pituitary gland and regulated in turn by thyrotrophin releasing hormone (TRH), finally produced in Hypothalamus. Moreover, Thyroid gland secretes the hormone calcitonin which is implicated in homeostasis of blood calcium level. TG is considered to be the cornerstone of entire endocrine system.

Operationally, Thyroid gland plays a predominant role in Human organism. Not only serves as an outstanding regulator of metabolism but also affects in many different ways almost all the other systems. It has the ability to accelerate or decelerate all biochemical reactions inside and outside cell environment. In particular, Cardiovascular, pulmonary, gastrointestinal and nervous system are mostly related with thyroid hormones, through simple or complicated feed-back algorithms that are still being under research worldwide.

Cardiovascular system is affected by thyroid disease, exhibiting a variety of clinical and laboratory signs in relation with cardiac output, cardiac contractility, blood pressure, vascular resistance and cardiac rhythm. Likewise, pulmonary function is reduced both in hyper and hypothyroidism. Whereas nodular goiter and thyroid cancer may develop compression phenomena in respiratory tract. Additionally, gastrointestinal manifestations of thyroid disease include increased and decreased mobility in hyperthyroidism and hypothyroidism respectively, autoimmune

gastritis and esophageal external obstruction. Also, physiological Thyroid function has extraordinary effect on human brain. The development of a normal Central Nervous system during the early stages of embryogenesis is dependent on the presence of adequate thyroid hormones. In particular, hyperthyroidism initially, accelerates maturation process including cell migration, proliferation and multi-synaptic expansion. However, at later stages a negative effect on cell proliferation occurs with irreversible detrimental results on central nervous system anatomy and function. The last decade's researchers worldwide have revealed the impact of thyroid hormones on central nervous system diseases, such as Dementia, Parkinson's disease, Bipolar disorder etc.

Nowadays, new challenges have risen in this field of research, especially in DNA-pathways of Bioinformatics and Bioengineering. It is well known a variety of thyroid diseases that may affect thyroid function through various mechanisms like Graves's disease, and Hashimoto's Thyroiditis. Artificial Thyroid Gland development presents to be another significant tool towards this direction. In conclusion, Reports of Thyroid Research comes also, to serve as a link between the standard scientific research in physiological or pathological issues and the Bio-thyroid aspect of new era. Through detailed, reliable and scientifically completed reports of current developments; The Reports of Thyroid Research may help scientific community to cooperate more effectively.