Title

Name

Institution

**Hypothyroidism**

1. Hypothyroidism is difficult to diagnose because most of its signs are mild and in some cases, they are non-specific. Hormonal diagnosis is based on free T4 concentration without any prominent increase in TSH level. It has been noted that T4 levels are low than the normal range while the levels of TSH are quite normal mostly, although in hypothalamic forms they may slightly increase or decrease. That means that the thyroid functions may be normal which makes it difficult to diagnose. As far as T4 estimation is concerned the least sensitive to interruptions are step using immune-extraction and mass spectrometry (Grunenwald & Caron 2015).

2. Pathophysiology is the physiological processes that are associated with the disease. In the case of hypothyroidism, for example, the secretion of TSH occurs in a circadian pattern, it is secreted in lower concentration during the afternoon and secreted in higher concentration during night time. Also, it is regulated by the negative feedback effect of thyroid hormone, and also they are effected by sex steroid hormone (Grunenwald & Caron 2015).

3. The treatment for this disorder is costly, in patients with CH, levothyroxine therapy is effective. In long-standing patients, the dosage of levothyroxine is progressively increased for an effective dosage. The dose of levothyroxine is dependent on the age of the individual, patients who are under the age of 60 are given a high dose (Grunenwald & Caron 2015).

4. Growth hormones used both in children and adults stimulate T4 to T3 in a dose-dependent manner due to the stimulation of type 2 deiodinase and also reduces the pituitary secretion of TSH. It is also suggested that metformin affects the TSH levels by reducing the circulating concentrations of pituitary hormones to a lower level. It is also studied that metformin produces a decrease in TSH levels whereas no change in TSH level was noted in euthyroid patients. The mechanism in the decrease TSH level is not known but it is hypothesized that the effect of metformin on TSH involves its action on 50AMPK or its activity reduces the circulation of fatty acid (Grunenwald & Caron 2015).

**References**

Grunenwald, S., & Caron, P. (2015). Central hypothyroidism in adults: better understanding for better care. *Pituitary*, *18*(1), 169-175.