

## THESIS ABSTRACT

### Evaluation the Correlation between Vitamin D and Thyroid Hormones in Women with Thyroid Diseases in Kirkuk City

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**Background:** Vitamin D deficiency is a global health problem, for due its association with acute and chronic diseases. Over a billion people of worldwide have a vitamin D insufficient or deficient. Low vitamin D status is prevalent in girls and women from the Middle East. Vitamin D deficiency includes a wide range age groups such as infants, children, adolescents, pregnant women, elderly persons. The National Health and Nutrition Examination Survey data suggested that high proportion of children and adults have 25(OH) D levels less than 15 ng/ml. Some studies had indicated that patients with hypothyroidism have vitamin D deficiency and that vitamin D improves thyroid function by Thyroid stimulating hormone (TSH) suppression in those patients. Vitamin D deficiency causes secondary hyperparathyroidism, in which it regulates the immune system by affecting most cells, so the lower vitamin D levels is related to autoimmune thyroid disease (AITD).

**Aim:** The study aimed at finding a relationship between thyroid hormones and serum vitamin D in women with thyroid diseases (hyperthyroidism and hypothyroidism) in Kirkuk city

**Patients and Methods:** A cross-sectional study was carried out on 90 specimens of serum collected from the hormonal laboratory unit of Kirkuk general hospital and external medical laboratory during the period from 23, July, 2017 to 18, October, 2017. Sixty specimens of serum were collected from women with thyroid diseases, of them 30 with hyperthyroidism and 30 with hypothyroidism. Their age range was from 25 to 45 year. From 30 apparently healthy women with same age range serum were collected as control group. Determination of serum 25-OH vitamin D, thyroid hormones (Tetraiodothyronine-T<sub>4</sub>, Triiodothyronine-T<sub>3</sub> and TSH), Calcium and lipid profile; total cholesterol, triglycerides, High density lipoprotein cholesterol- HDL-C, and Low density lipoprotein cholesterol LDL-C were carried out for all specimens under investigation by using standard methods.

**Results:** The results of this study indicated:

- A significant increase in serum T<sub>3</sub> and T<sub>4</sub> levels in women with hyperthyroidism and significant decrease in women with hypothyroidism as compared with the control group. However, the level of TSH significantly increased in sera of women with hypothyroidism, with no significant changes in sera of women with hyperthyroidism as compared with the control group.
- A significant decrease in serum 25-OH vitamin D level in women with hyper and hypothyroidism as compared with the control group.
- A significant increase in serum Ca<sup>2+</sup> level in women with hyperthyroidism and significant increase in women with hypothyroidism as compared with the control group.
- A significant decrease in each levels of serum TC, TG and VLDL-C in sera of women with hyperthyroidism and a significant increase in women with hypothyroidism. While a significant decrease in HDL-C level in women with hyperthyroidism, however, there was no significant change in sera of women with hypothyroidism, and also no significant change in the level of serum LDL-C for women with hyperthyroidism and significant increase in sera of women with hypothyroidism as compared with the control group.

The correlation study between 25-OH vitamin D and the biochemical parameters under investigation were carried out in women with hyperthyroidism and hypothyroidism, the results showed that:

- There was an inverse correlation between 25-OH vitamin D and each of T<sub>3</sub> and T<sub>4</sub> (hormones) in women with hyperthyroidism and hypothyroidism. Additionally, there was also inverse correlation between 25-OH vitamin D and TSH in women with hyperthyroidism. However, there was a positive correlation between 25-OH vitamin D and TSH in women with hypothyroidism.
- There was a positive correlation between serum level of 25-OH vitamin D and Ca<sup>2+</sup> in women with hyper and hypothyroidism.
- There was an inverse correlation between serum level of 25-OH vitamin D and each of (TC, HDL-C and LDL-C) in women with hyperthyroidism and positive correlation in women with hypothyroidism.
- There was a positive correlation between 25-OH vitamin D and each of (TG and VLDL-C) in women with hyperthyroidism and an inverse correlation in women with hypothyroidism.

**Conclusion:** The significant decrease in serum level of 25-OH vitamin D for women with hyperthyroidism and hypothyroidism may be risk factor for thyroid diseases.