Probability of Concurrent Deficiency of Vitamin D and Iron in Hypothyroidism: A Cross-Sectional Study

ABSTRACT

Background: Hypothyroidism is the most common pathophysiological condition that affects mostly females in both developed and developing countries. Data on hypothyroidism among adult females are essential to understand the underactive status of the thyroid gland among the female population and its correlated effects on a deficiency of vitamin D and iron, as effective prevention of osteoporotic changes and iron deficiency anemia is possible. Therefore, the present study was designed to investigate the probability of concurrent iron and vitamin D deficiency among the adult hypothyroid female population of Abu Dhabi, UAE. Materials and methods: This cross-sectional study was carried out from September 2019 to July 2021 among 500 adult females aged 18 to 45 years old in Sheikh Shakhbout Medical City (SSMC) and Sheikh Khalifa Medical City (SKMC), Abu Dhabi, UAE. After obtaining written informed consent, subjects' demographic characteristics (sun exposure, dressing code, food consumption), anthropometry (height, weight, BMI), and biochemical parameters (thyroid profile, vitamin D profile, iron profile, and blood indices) were measured. Results: In this study, serum vitamin D and iron levels were significantly ($p<0.01$) decreased in the hypothyroid female group (study group). The serum vitamin D and iron levels showed a significant negative ($p<0.01$) correlation with thyroid-stimulating hormone (TSH). Out of 250 study group participants, 61 had a concurrent deficiency of serum vitamin D and iron, yielding a probability (P of low vitamin D and iron and hypothyroidism) of 0.244, which indicates that if 1000 hypothyroid patients are tested for serum vitamin D and iron levels, 24 patients are probable to have low vitamin D and iron. Conclusion: The study concluded that vitamin D and iron bi-deficiency were observed in adult hypothyroid females in Abu Dhabi, UAE. So, the routine check-up of thyroid function and vitamin D and iron profiles should be done early. Therefore, early vitamin D and iron deficiencies can be detected, and supplements can be given to prevent further health complications like osteoporosis and iron deficiency anemia.