

may reduce the vascular permeability or may trigger immunologic reactions leading to several clinical events including the histological changes, however such histological change within the irradiated thyroid have been reported by Mizukami et al, [19] which appeared as microscopic changes pattern of multiple adenomatous nodules with cystic changes, marked oxyphilic cell changes with nuclear atypism and various degrees of chronic thyroiditis. Also Jung et al, [20] have showed that: greater numbers of abnormal and unusually small follicles were observed in the thyroid tissues of rats subjected to radiation, such as surrounding of thyroid Follicles by cuboidal or columnar epithelium on days 4 and 7 after irradiation and inflammatory cells were observed in the inter-follicular areas. Regarding the thyroid hormones influence after irradiation, some authors reported that the thyroid hormones decrease significantly due to irradiation, as Arun et al, [21], found that the mean serum of T3 & T4 levels were found to be decreased during EBRT significantly ($p < 0.001$, $p < 0.005$ and Garcia et al, [22] stated that the head and neck irradiation results in biochemical hypothyroidism in at least 50% of patients as well as have been reported by Irvin et al, [23] and Khoo et al, [24]. Also TSH has been noted to be increases following the radiation dose increment in a linear correlation for that could be fitted in the following equation: $y = 0.0006x - 0.5281$, where x refers to received dose by thyroid in cGy and y refers to logarithmic of TSH level in $\mu\text{m/l}$, such correlation is so significant as $R^2 = 0.8$ and the increment factor was 0.0006 per cGy. The increment of TSH could be ascribed to a reduced level of T4 and T3 in the circulating blood that triggers the production of TSH by the pituitary gland. Same result also been reported by Louis et al, [25].

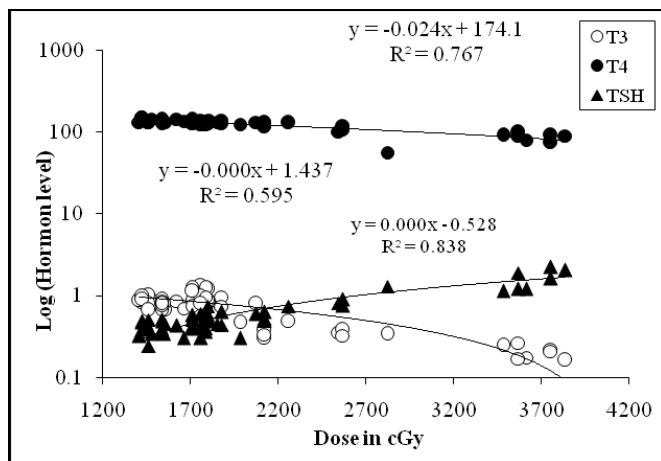


Figure 5: shows the correlation between the doses received by the thyroid gland in nasopharyngeal carcinoma irradiation and relative hormonal effect.

4. Conclusion

Radiotherapy of head and neck cancer have accompanied with serious complication in the vital organs structure and the physiological state, in this view the thyroid hormones (T4 and T3) have been reduced and the TSH increases due to irradiation of head and neck radiotherapy, and such consequences have been commonly with conventional radiation therapy.

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