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Early Hypothyroidism after Radiotherapy for Nasopharyngeal Carcinoma

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Abstract : Purpose: Radiation induced hypothyroidism in nasopharyngeal cancer (NPC) ranged from 15% to 55%. In reported data, it is considered as a common late complication of definitive radiation and is mainly observed 2 years after the end of treatment. The aim of this study was to evaluate the incidence of early hypothyroidism within 6 months after radiotherapy. Patients and methods: From June 2017 to February 2020, 35 patients treated with concurrent chemo-radiotherapy (CCR) for NPC were included in this prospective study. Median age was 49 years [23-68] with a sex ratio of 2.88. All patients received intensity modulated radiotherapy (IMRT) at a dose of 69.96 Gy in 33 daily fractions with weekly cisplatin (40mg/m²) chemotherapy. Thyroid stimulating hormone (TSH) and Free Thyroxine 4 (FT4) dosage was performed before the start of radiotherapy and 6 months after. Different dosimetric parameters for the thyroid gland were reported: the volume (cc); the mean dose (Dmean) and the %age of volume receiving more than 45 Gy (V45Gy). Wilcoxon Test was used to compare these different parameters between patients with or without hypothyroidism. Results: At baseline, 5 patients (14.3%) had hypothyroidism and were excluded from the analysis. For the remaining 30 patients, 9 patients (30%) developed a hypothyroidism 6 months after the end of radiotherapy. The median thyroid volume was 10.3 cc [4.6-23]. The median Dmean and V45Gy were 48.3 Gy [43.15-55.4] and 74.8 [38.2-97.9] respectively. No significant difference was noted for all studied parameters. Conclusion: Early hypothyroidism occurring within 6 months after CCR for NPC seems to be a common complication (30%) that should be screened. Good patient monitoring with regular dosage of TSH and FT4 makes it possible to treat hypothyroidism in asymptomatic phase. This would be correlated with an improvement in the quality of life of these patients. The results of our study do not show a correlation between the thyroid doses and the occurrence of hypothyroidism. This is probably related to the high doses received by the thyroid in our series. These findings encourage more optimization to limit thyroid doses and then the risk of radiation-induced hypothyroidism

Keywords : nasopharyngeal carcinoma, hypothyroidism, early complication, thyroid dose
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