OPTIMUM ADMINISTERED ACTIVITY OF 131I FOR RADIOIODINE THERAPY IN NON-PALPABLE NODAL METASTASIS FROM DIFFERENTIATED THYROID CANCER: A RANDOMIZED CONTROL TRIAL IN 588 PATIENTS

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Background/Purpose: ATA and European guidelines recommend therapeutic neck dissection in node positive DTC patients. In spite of nodal clearance, often nodes are seen in ^{131}I whole body scans (WBS). Traditionally, 100-150 mCi of ^{131}I is administered for therapy. We conducted randomized control trial to optimize administered activity of ^{131}I for non-palpable nodal metastasis based-on pre-ablation diagnostic scan.
Methods: Patients with T1-3 tumors and node positive histologically, when additional node demonstrated on diagnostic WBS, were randomized into experimental cohort (50mCi- Gr-A) and control group (100mCi- Gr-B). Gr-A comprised 294(Nx-3, N1a-52 and N1b-239) patients, females-66%, papillary-96%, mean age 36.7$\pm$12.8yr and mean 24h RAIU-3.9$\pm$0.5%. Gr-B comprised 294 patients (Nx-8, N1a-48 and N1b-238), females-69.7%, papillary-96.6%, mean age 36.4$\pm$12.6yr and mean 24h RAIU-3.5$\pm$0.5%. Ablation criteria- negative 2mCi ^{131}I WBS, RAIU<0.2% and stimulated Tg and anti-Tg negative.
Results: Patients in both groups were comparable on all baseline parameters. After 6-9 months, 79.9% in Gr-A and 76.2% in Gr-B got ablated (p=0.319). Higher N1b and lower completion thyroidectomy were only significant variables (p=0.002, p=0.008) contributing to failed first-dose of radioiodine. In median follow-up of 42-months (range:12-230), 30(5.1%) patients had recurrence- 17(5.7%) in Gr-A and 13(4.4%) in Gr-B(p=0.708). Five- and 10-year adjusted Kaplan-Meier analysis showed disease-free-survival of 94.3% and 90.8%, in Gr-A and 93.3% and 87.5% in Gr-B, respectively. On multivariate-analysis, age ≥45yr (OR=2.9, 95%CI=1.3-6.2) and single-dose unsuccessful ablation (OR=5.4, 95%CI=2.5-11.5) were predictors of recurrence.
Discussion & Conclusion: Administered activity 50 mCi of ^{131}I seems optimum activity for nodal ablation in non-palpable but scintigraphic nodal matastasis in DTC patients.