

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

Malapure, Sumeet<sup>1</sup>; Ballal, Sanjana<sup>1</sup>; Singla, Suhas<sup>1</sup>; Bal, C.S<sup>1</sup>

<sup>1</sup>All India Institute of Medical Sciences, Nuclear Medicine, New Delhi, Delhi, India

**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 <sup>131</sup>I whole body scans (WBS). Traditionally, 100-150 mCi of <sup>131</sup>I is administered for therapy. We conducted randomized control trial to optimize administered activity of <sup>131</sup>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±12.8yr and mean 24h RAIU-3.9±0.5%. Gr-B comprised 294 patients (Nx-8, N1a-48 and N1b-238), females-69.7%, papillary-96.6%, mean age 36.4±12.6yr and mean 24h RAIU-3.5±0.5%. Ablation criteria- negative 2mCi <sup>131</sup>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 <sup>131</sup>I seems optimum activity for nodal ablation in non-palpable but scintigraphic nodal metastasis in DTC patients.