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"PET-CT Scans as a Mechanism to Identify Second Primary Cancer Sites in Our Patient Population"

Introduction: For patients with laryngeal cancer who undergo either radiation therapy or surgery, pre-treatment workup, often involving a PET/CT scan, is important to rule out metastatic and/or second primary disease. If PET/CT scans can detect second primary tumors in patients before they are clinically apparent or in patients who would not routinely obtain one, we could offer different treatment options.

Methods: This is a retrospective chart review of 120 adult patients initially diagnosed with laryngeal cancer at a single institution in Baton Rouge, Louisiana over the past 10 years. We detected the prevalence of second primary cancers and used a zero-truncated Poisson mixed effect model to predict the number of PET/CT scans by whether a second primary malignancy was detected.

Results: There were 5 second primary cancers detected, with detection rate of 4.5%, (1.5%-10%). Of these patients, 3 were early-stage tumors (T1 or T2). 2 out of the 3 patients with early-stage tumors underwent surgical resection and did not get a PET/CT scan until after treatment. The numbers of PET/CT scans for 5 second primary cancers are 3, 1, 1, 4, 1, with mean (SD) = 2 (1.41), median (IQR) = 1 (1 – 3). The number of PET/CT scans for 105 patients without second primary cancer by PET/CT scan has mean (SD) = 2.80 (1.98), median (IQR) = 2 (1 – 4). In those whom a second primary was detected, the predicted number of PET/CT scans to detect a second primary is 1.84, (1.30-3.63). In those whom a second primary was not detected, the predicted number of PET/CT scans to detect a second primary is 2.53, (1.51-5.78). The difference between these medians were not statistically significant ($p = 0.3$).

Conclusions: In the examined cohort, prevalence of second primaries was low and no difference in median number of scans was found between those with or without detected second primaries. However, for those patients who undergo surgical resection of early-stage laryngeal cancers, pre-operative PET/CT could play a role in detection of second primary cancers that would otherwise only be detected in those undergoing radiation therapy and allow for alternative treatment options.