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| **The Value of VQ SPECT CT lobar quantitation for pre-treatment assessment of Lung malignancy** |
| Michael Brown1,2, Phan Nguyen1,2, Hien Le4, Aeneas Yeo1,2, Benjamin Crouch3, Chong Ghee Chew3 |
| *1* Department of Thoracic Medicine, Royal Adelaide Hospital, Adelaide, Australia  *2* Faculty of Health and Medical Sciences, Adelaide Medical School, University of Adelaide, Adelaide, Australia  *3* Department of Nuclear Medicine, PET and Bone Mineral Densitometry, Royal Adelaide Hospital, Adelaide, Australia  *4* Department of radiation Oncology, Royal Adelaide Hospital, Adelaide, Australia |
| **Introduction/Aim:**  Curative surgery for stage 1 and 2 non small cell lung cancer could be hampered by reduced respiratory fitness from underlying airways disease. Stereotactic body radiation therapy (SBRT) is an alternative. Current guidelines rely on CT anatomy to estimate the “Predicted Postoperative Forced Expiratory Volume in 1 second (PPO FEV1)” to prognosticate the post treatment lung reserve. This qualitative method is suboptimal for assessing size and functionality of the diseased segments.  We aim to use VQ SPECT CT lobar quantification to predict post curative intervention (surgery and SBRT) FEV1 and DLCO (Diffusing capacity of carbon monoxide). We present our preliminary results.  **Methods:**  Patients referred to our institution between 2022 to 2023 for curative treatment of lung cancer were recruited. Pre-treatment FEV1 and DLCO were measured. VQ SPECT CT was acquired and quantified for differential lobar ventilation, perfusion and volume. Incorporating the 3 parameters we derived a novel index called Ventilation Perfusion Capacity Differential Index (VQCDI) that we contend would reflect differential lobar function. 6 months after treatment, a repeat PFT was performed. Correlation statistical analysis for the VQCDI predicted post treatment versus the measured post treatment FEV1 and DLCO was conducted.  **Results:**  44 participants were enrolled thus far (aim = 60). To date 16 (11 lobectomies, 5 SBRTs) have completed the post treatment PFTs. 50% are male. Mean age is 69 years. The Pearson Correlation coefficient for predicted versus measured post treatment FEV1 is 0.95 (95% CI: 0.86 - 0.98, p<0.0001) and DLCO is 0.89 (95% CI: 0.71 - 0.96, p< 0.0001).  **Conclusion:**  Our preliminary results suggest that our novel index of VQCDI can predict post curative intervention FEV1 and DLCO in early stage lung malignancy. The potential benefit is that patients with borderline lung function are not deprived of curative therapies.  Word count: 293 |