AB019. 79. Neoadjuvant chemoradiation for oesophageal cancer impairs pulmonary physiology preoperatively, with impact on postoperative respiratory complications and quality of life

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Background: Neoadjuvant chemoradiation (nCRT) results in lung exposure to radiation, but the impact of modern quality-assured nCRT with respect to pulmonary morbidity is unclear. This prospective observational study aimed to systematically examine pulmonary physiology through multimodal therapy, and in survivorship.

Methods: Consecutive patients with locally advanced oesophageal cancer treated with curative intent between 2010 and 2016 were studied. A dose-volume histogram of V20 <25% was set for nCRT (40–44 Gy). DLCO, FEV1 and FVC were assessed at baseline and one month post-neoadjuvant therapy. Radiation-induced lung injury (RILI, EORTC ≥2), comprehensive complications index (CCI), Clavien-Dindo (CDC), pulmonary morbidity (PPCs) and HR-QL were monitored.

Results: A total of 384 patients were studied [nCRT, n=228; neoadjuvant chemotherapy (nCT), n=156]. Neoadjuvant therapy decreased FEV1 (P=0.0002), FVC (P=0.003) and DLCO (P<0.0001), with a greater reduction in DLCO (14%±14% *vs.* 7%±15%; P=0.002) post-nCRT *vs.* nCT. Post-nCRT 5 (2.2%) patients developed RILI precluding resection, associated with baseline DLCO (P=0.03). Smoking and age independently predicted pulmonary function decline. Comparing nCRT and nCT, major PPCs (CDC ≥ IIIb) occurred in 14.3% and 6.6% (P=0.037) and pneumonia in 30.9% and 24.8% (P=0.30). FEV1 (P=0.004, P=0.017, P=0.03), FVC (P=0.004, P=0.006, P=0.04) and DLCO (P=0.001, P=0.04, P=0.04) post-treatment, but not at baseline, were associated with CCI, inpatient LOS, and pneumonia, respectively, while post-treatment DLCO predicted prolonged intubation (P=0.03). In survivorship, post-treatment DLCO (P=0.03) independently predicted physical function score.

Conclusions: Modern nCRT rarely results in RILI precluding surgery, however these data highlight for the first time a significant impact on pulmonary function, associated with major short- and long-term respiratory morbidity.

Keywords: Oesophagectomy; oesophageal cancer; spirometry; pulmonary function; morbidity; quality of life; chemotherapy; radiotherapy

doi: 10.21037/map.2018.AB019

Cite this abstract as: Elliott JA, O'Byrne L, Foley G, Murphy CF, King S, Guinan EM, Ravi N, Reynolds JV. Neoadjuvant chemoradiation for oesophageal cancer impairs pulmonary physiology preoperatively, with impact on postoperative respiratory complications and quality of life. Mesentery Peritoneum 2018;2:AB019. doi: 10.21037/map.2018.AB019