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| **Report of radiation dosimetry using a novel externally cooled Bronchoscopic Radiofrequency Ablation Catheter** |
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| **Introduction/Aim:**  Endobronchial radiofrequency ablation (RFA) is a novel approach to management of peripheral non small cell lung cancer (NSCLC) in medically inoperable patients. A pilot study with 10 patients was conducted indicating that Bronchoscopic RFA was both feasible and appeared safe while achieving uniform ablation to the treatment zone. Radiation dosimetry has not previously been determined for this approach.  **Methods:**  Post Hoc analysis of data collected on patients with stage I biopsy-confirmed NSCLC underwent bronchoscopic RFA of tumour 7 days prior to lobectomy. The RFA catheter was delivered bronchoscopically to peripheral NSCLC lesions, guided by radial endobronchial ultrasound, with positioning confirmed using intra-procedural cone beam CT. Pre-operative CT chest and histologic examination of resected specimens were used to establish distribution/uniformity of ablation and efficacy of tumour ablation. Effective dose estimates for these patients has been calculated using the Monte Carlo simulation.  **Results:**  The approximate effective dose estimates in this group ranged from 7.2 to 47.7 mSv with a mean of 23 +/- 14.8 which compares favourably radiation exposure associated with percutaneous RFA tumour ablation (mean radiation dose of 35.3 mSv for lung percutaneous ablation under CT guidance).This is also consistent when compared to other diagnostic interventional radiological procedures including Cone Beam CT guidance for cryobiopsy (mean 31.4 +/- 19.6).  The effective dose of radiation with bronchoscopic RFA is comparatively higher than the reported dose associated with CT-guided lung biopsy (5.3 +/- 1.6 mSv) and that associated with Coronary angiography and Invasive catheter angiography (2.9 +/- 0.9 and 5.6 +/- 0.55 mSv respectively)  **Conclusion:**  This is the first study to report radiation dosimetry consequent to CBCT guidance for bronchoscopic radiofrequency ablation procedures. Doses appear comparable to other CT-fluoroscopic procedures.  **Grant Support:**  N/A |