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| **3D Slicer Application for Measuring Metastatic Burden in Lung Cancer** |
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| **Introduction/Aim:**  Lung cancer is a leading cause of cancer-related death worldwide. Radiological staging and measurement of tumour burden is central to prognostication and treatment decisions. This process is currently performed manually and represents a source of potential inter- and intra-rater variability. Semi-automated software tools using computer aided detection (CAD) technologies may represent a new avenue for measuring disease burden for cancer staging.  3D Slicer (https://www.slicer.org/) is a freely available, open-source software that provides 3D measurements for imaging detected lesions. This project aims to validate 3D Slicer ability to generate contoured volumetric tumour measurements of non-small cell lung cancer (NSCLC) metastasis in comparison to conventional volumes derived manually from orthogonal measurements.  **Methods:** A single-centre 4-year retrospective observational study of participants was performed. Inclusion criteria were patients with primary NSCLC with known metastatic disease. Patient computed tomography was interrogated utilising a semi-automated CAD algorithm in 3D Slicer (ver:5.4.0) to define the volumetric burden of metastatic lesions. The CAD algorithm combined manual input of tumour location with follow-on automated delineation of tumour contour and volume. These measurements were compared with the volumetric parameters calculated by orthogonal methods.    **Results:** Total of (*n*=229) cases met inclusion criteria. Of these, a pilot subset of (*n*=10) were analysed. 3D Slicer was found to be reliable for the generation of volumetric measurements in the majority of cases. However, a minority of cases, greater manual input was required due to similarities between tumour and background radiological characteristics. These included metastasis within areas of collapse/consolidation, metastasis bordered by ground-glass or invading vasculature. The full dataset and comparison to manual measurements will be presented.  **Conclusion:** Semi-automated measurement of NSCLC metastasis appears possible with software tools, though there are limitations due to segmentation errors.  **Grant Support:** Self-funded.  **Keywords**: “3D Slicer”, volumetric, computer-assisted, metastasis, NSCLC. |