

## عنوان مقاله:

The Impact of Dose Calculation Algorithm for SBRT Lung Cancer Radiotherapy Treatment

## محل انتشار:

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## خلاصه مقاله:

**Introduction:** The study aimed to provide the dose accuracy effects between the Anisotropic Analytical Algorithm (AAA) and the deterministic solver Acuros XB (AXB) that are available on Eclipse TPS (Varian Medical Systems, Palo Alto, CA) treatment planning system (TPS). The purpose is to investigate the difference between the AAA and Acuros XB Algorithm, The difference is due to the electron transport difference in the case of small fields. **Material and Methods:** For the study of non-small cell lung cancer (NSCLC) patient Computed tomography (CT) scans are used to do retrospective stereotactic body radiosurgery (SBRT) plans via AAA and recalculated by AXB dose calculation algorithms using the Eclipse treatment planning system. The main dosimetric comparison parameters are Conformity index (CI), Homogeneity Index (HI), Gradient Index (GI), Target mean dose, and calculation time. The Statistical analysis done by the gamma index comparison. **Results:** Based on the results, the CI is  $(1.45 \pm 0.55)$  to  $(1.85 \pm 0.7)$  ( $P < 0.05$ ). The HI are  $(0.15 \pm 0.07)$  and  $(0.13 \pm 0.08)$  ( $P < 0.05$ ), the GI for AAA was  $(4.8 \pm 2.6)$  and for AXB reaches  $(7.4 \pm 3.8)$  ( $P < 0.05$ ) and the maximum dose for Planning target volume (PTV) is differed about 2.3% to 4.5%, mean dose is differed about 2.4% to 3.8% and the calculation time  $153 \pm 43$ sec and  $185 \pm 76$ sec for AAA and AXB respectively. **Conclusion:** The findings using the deterministic solver AXB in the calculation for the case of low density like lung .cases is more accurate than AAA calculation Algorithm in SBRT treatment

## کلمات کلیدی:

Radiotherapy planning, Stereotactic Body Radiotherapy, Lung Neoplasms, Anisotropic Analytical Algorithm, Acuros XB Algorithm

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