Dosimetric comparison between VMAT and dedicated stereotactic planning tool for single isocenter stereotactic radiotherapy for patients with multiple brain metastases

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Background and Objective

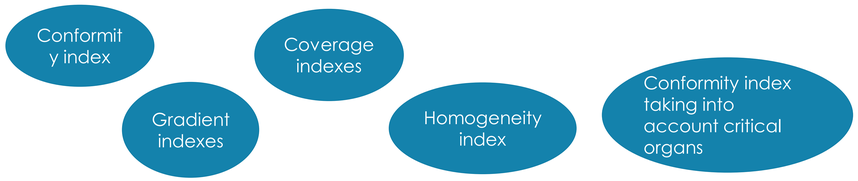
Treatment planning for multiple brain metastases using 2 MONO-ISOCENTRIC approaches DCAT and VMAT

Evaluation and comparison of the two techniques.

Comparison of two dose calculation algorithms (PBC / MC) used for planning in DCAT.

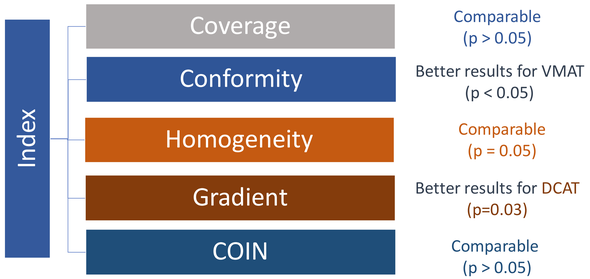
Methods

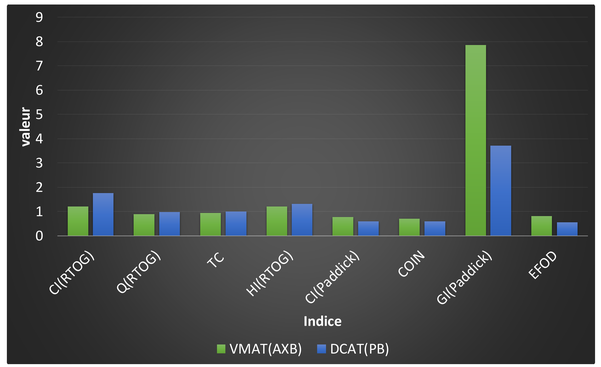
VMAT planning (Eclipse)	• TPS Eclipse (version 13.35.7) Varian. • RapidArc • Acuros AXB Dose Algorithm
DCAT planning (MBM)	• TPS Elements MBM (version 2.0) Brainlab. • PBC Dose Algorithm • MC Dose Algorithm



Results and Discussion

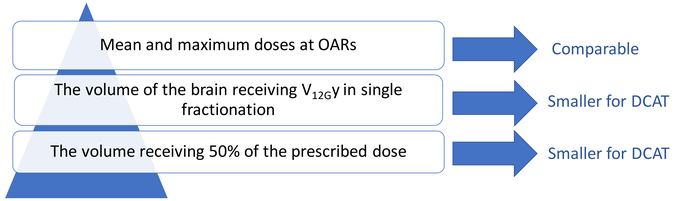
VMAT(AXB)/DCAT(PB):





Histogram representing the different indices calculated in this study for the evaluation and comparison of the VMAT (AXB) and DCAT (PBC) plans

VMAT(AXB)/DCAT(PB):



Conclusions

- Equivalence of the results of the OAR coverage, homogeneity and sparing indices between VMAT (AXB) and DCAT (PB).
- Superiority of VMAT for conformity indices.
- Superiority of DCAT for gradient indices.