

Abstracts

O2.06. USE OF MRI FUSION FOR CT BASED INTRACRANIAL STEREOTACTIC RADIOSURGERY

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The aim of this study is to evaluate the reliability of MRI fusion when determining intracranial target volume when performing CT based intracranial stereotactic radiosurgery. Patients treated with CT based intracranial stereotactic radiosurgery with various diagnosis are included in the study. All patients were immobilized using stereotactic thermoplastic masks prior to simulation. The planning CT was obtained both with and without iv contrast with 1mm slice thickness. The images obtained were then fused with 3D, T1 weighted MR images with contrast by two different platforms (Eclipse 10.0, Velocity 3.0 rigid and Velocity 3.0 deformable). The target volume was

contoured by the same physician in four different image sets (planning CT with iv contrast, planning CT fused with MRI by Eclipse software, planning CT fused with MRI with Velocity rigid fusion algorithm software, planning CT fused with MRI with Velocity deformable fusion algorithm software). The target volumes delineated on planning CT with iv contrast were determined as reference volume. The intersections of all volumes delineated with three different fusion algorithms were produced and ratios of the intersections were calculated. Values close to one was determined as the unit of similarity and were compared with Paired-Samples T Test. Eight intracranial targets were evaluated. All of the targets evaluated were clearly visualized in the planning CT with iv contrast. Six of these lesions were metastases while the remaining two were meningioma. The median volume of the delineated targets on the planning CT with iv contrast was 9.53 cc. The intersecting volume with three different fusion algorithms (Eclipse fusion, Velocity rigid fusion and Velocity deformable fusion) was 8.08, 6.74 and 6.84 cc respectively. The ratios of the intersections were 1.20, 1.42 and 1.40 where all of these differences were significant ($p = 0.004$, $p = 0.010$ ve $p = 0.009$). Sonuç: Determining the target volume with MRI fusion when performing CT based intracranial stereotactic radiosurgery may not be very reliable compared to obtaining a planning CT with iv contrast. Careful attention must be paid to this as this might affect not only the treatment outcomes but also the late toxicity.