

Hubungan Jarak Waktu Magnetic Resonance Imaging Pelvis Pre Radiasi dan Computed Tomography Planning dengan Kesesuaian Delineasi Gross Tumor Volume Radiasi Eksterna Kanker Serviks = Correlation Between the Time Interval of Pretreatment Magnetic Resonance Imaging and Computed Tomography Scan Planning With a Dice Similarity Coefficient of Gross Tumor Volume Delineation for External Beam Radiation Therapy of Cervical Cancer

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Abstrak

Tujuan: Mengetahui hubungan nilai DSC (Dice Similarity Coefficient) GTVMRI dan GTVCT dengan jarak waktu MRI sebelum radiasi dan CT Simulator dalam radiasi eksterna kanker serviks.

Metode: Dilakukan studi potong lintang pada 25 pasien kanker serviks yang belum mendapatkan terapi definitif sebelumnya, dan sudah dilakukan MRI pelvis diagnostik dan CT Simulator pelvis pada periode Januari 2018 – Februari 2021. Dilakukan registrasi/fusi antara MRI dan CT, dilakukan delineasi GTV primer pada T2WI MRI dan CT Simulator. Dihitung nilai DSC dan dilakukan analisis korelasi antara nilai DSC dan jarak waktu. Batasan waktu dihitung menggunakan kurva ROC (Receiving Operator Characteristic).

Hasil: Median jarak waktu MRI dan CT Simulator 24 (1-71) hari. Volume GTVMRI 104.35 ± 66.23 , GTVCT 167.79 ± 97.15 . Nilai DSC sebesar 0.53 ± 0.16 . Korelasi antara DSC dan jarak waktu $r = -0.421$, $p = 0.036$. Kurva ROC dengan sensitivitas 85.7%, spesifitas 54.5%, dengan indeks Youden yang paling optimal dan Area Under Curve (AUC) 0.682, 95% CI 0.461-0.902 didapatkan pada 10 hari.

Kesimpulan: Semakin lama jarak waktu antara pemeriksaan MRI dan CT akan menurunkan nilai DSC. Diperlukan pertimbangan lebih jika akan dilakukan fusi antara MRI dan CT pada delineasi GTV primer kanker serviks dengan jarak waktu antara pemeriksaan lebih dari 10 hari.

.....**Objective:** The aim of this study is to assess the correlation between DSC (Dice Similarity Coefficient) values of GTVMRI and GTVCT with the MRI time interval before radiation and CT Simulator.

Method: A cross-sectional study was conducted on 25 cervical cancer patients who had not previously received definitive therapy, and already had a diagnostic pelvic MRI and pelvic CT simulator in periode January 2018 – February 2021. Rigid Body Registration/fusion between MRI and CT was carried out, primary GTV delineate on T2WI MRI and CT Simulator. The DSC value was calculated and a correlation analysis was performed between the DSC value and the interval time. The time limit was calculated using the ROC (Receiving Operator Characteristic) curve.

Result: Median time interval between MRI and CT Simulator was 24 (1-71) days. GTVMRI volume 104.35 ± 66.23 , GTVCT 167.79 ± 97.15 . Mean DSC value was 0.53 ± 0.16 . Correlation between DSC and time

interval $r = -0.421$, $p = 0.036$. ROC curve with sensitivity 85.7%, specificity 54.5%, with the most optimal Youden index and Area Under Curve (AUC) 0.682, 95% CI 0.461-0.902 obtained at 10 days.

Conclusion: The longer the time interval between the MRI and CT planning, the lower the DSC value. Need to be more caution in doing the fusion if the time interval between MRI and CT is more than 10 days.