Kesesuaian Metode Region of Interest Single Largest Slice dan Small Sample terhadap Metode Whole Volume dalam Menentukan Nilai Apparent Diffusion Coefficient pada Karsinoma Sel Skuamosa Rongga Mulut = Concordance of Single Largest Slice and Small Sample Region of Interest Methods Compared to Whole Volume Method in Determining Apparent Diffusion Coefficient Values in Oral Squamous Cell Carcinoma

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Abstrak

Latar belakang: Peran nilai ADC sebagai biomarka imaging pada KSS kepala leher telah banyak diteliti namun nilai ADC belum digunakan rutin untuk memandu manajemen pasien karena tingginya heterogenitas hasil penelitian terdahulu. Teknik ROI pada peta ADC merupakan salah satu faktor yang memengaruhi hasil pengukuran nilai ADC. Belum diketahui bagaimana kesesuaian metode ROI single largest slice (ROIsls) dan small sample (ROIss) terhadap ROI whole volume (ROIwv) dalam menentukan nilai ADC pada KSS rongga mulut. Metode: 138 pasien KSS rongga mulut selama bulan Januari 2019 hingga September 2023 yang memenuhi kriteria penelitian dilakukan pengukuran nilai mean dan minimum ADC tumor menggunakan ROIwv, ROIsls, dan ROIss. Nilai mean dan minimum ADC tumor yang dinormalisasi terhadap nilai mean dan minimum ADC medulla spinalis juga disajikan. Analisis kesesuaian ketiga metode ROI dilakukan dengan uji korelasi.. Hasil: Median nilai mean ADC tumor berdasarkan ROIwv, ROIsls, dan ROIss berturut-turut adalah 1,210, 1,190, dan 0,910 mm2/s. Median minimum ADC tumor berdasarkan ROIwv, ROIsls, dan ROIss adalah 0,730, 0,640, dan 0,770 mm2/s. Mean ADC ROIsls memiliki korelasi positif kuat dengan mean ADC ROIwv ($r = 0,846$, $p < 0,05$). Minimum ADC ROIsls memiliki korelasi positif sedang dengan minimum ADC ROIwv ($r = 0,773$, $p < 0,05$). Terdapat korelasi positif sedang antara mean ADC ROIss dan ROIwv ($r = 0,565$, $p < 0,05$), serta antara minimum ADC ROIss dan ROIwv ($r = 0,767$, $p < 0,05$). Normalisasi parameter ADC tumor terhadap parameter ADC medulla spinalis tidak menyebabkan perubahan signifikan pada kekuatan korelasi Kesimpulan: Pengukuran nilai ADC berdasarkan metode ROIsls dapat digunakan sebagai alternatif ROIwv dan lebih terpilih dibandingkan ROIss pada KSS rongga mulut.

.....Background: The role of ADC values as an imaging biomarker in HNSCC has been extensively studied, but ADC values have not been routinely used to guide patient management due to the high heterogeneity of research findings. The method of ROI delineation is one of the factors that affect the measurement results of ADC values. The concordance of the single largest slice (ROIsls) and small sample (ROIss) methods compared to the whole volume (ROIwv) method in determining ADC values in oral HNSCC remain unknown. Methods: Measurements of mean and minimum ADC tumor values were conducted using ROIwv, ROIsls, and ROIss methods on 138 oral cavity HNSCC patients from January 2019 to September 2023, who met the study criteria. Normalized mean and minimum ADC tumor values relative to the mean and minimum ADC values of the spinal cord were also presented. Concordance of ADC measurement methods was analysed using correlation test. Results: The median mean ADC tumor values based on ROIwv, ROIsls, and ROIss were 1.210, 1.190, and 0.910 mm^2/s, respectively. The median minimum ADC

tumor values based on ROIwv, ROIsls, and ROIss were 0.730, 0.640, and 0.770 mm^2/s, respectively. The mean ADC of ROIsls showed a strong positive correlation with the mean ADC of ROIwv ($r = 0.846$, $p < 0.05$). The minimum ADC of ROIsls showed a moderate positive correlation with the minimum ADC of ROIwv ($r = 0.773$, $p < 0.05$). There was a moderate positive correlation between the mean ADC of ROIss and ROIwv ($r = 0.565$, $p < 0.05$), as well as between the minimum ADC of ROIss and ROIwv ($r = 0.767$, $p < 0.05$). Normalizing tumor ADC parameters to spinal cord ADC parameters did not result in significant changes in the strength of the correlations. Conclusion: Measurement of ADC values based on the ROIsls method can be used as an alternative to ROIwv and is preferred over ROIss in oral HNSCC.