

KORELASI NILAI APPARENT DIFFUSION COEFFICIENT PADA MAGNETIC RESONANCE IMAGING DENGAN INDEX PROLIFERASI KI-67 PADA PASIEN GLIOMA DIFUS TIPE DEWASA

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INTISARI

Latar Belakang: Glioma merupakan tumor otak primer paling umum dengan tingkat keganasan dan mortalitas tinggi. Indeks Ki-67 mencerminkan tingkat proliferasi sel tumor, sedangkan nilai ADC dari MRI-DWI digunakan untuk menilai karakteristik tumor secara non-invasif. Korelasi antara ADC dan Ki-67 dapat membantu memprediksi agresivitas tumor, namun penelitian mengenai hal ini masih terbatas.

Tujuan: Mengetahui korelasi antara nilai ADC pada MRI dengan indeks proliferasi Ki-67 pada pasien glioma difus tipe dewasa.

Metode: Penelitian ini merupakan studi observasional analitik dengan desain *cross sectional*. Data retrospektif subjek penelitian diperoleh dari 51 pasien terdiagnosis glioma secara histopatologis di RSUP Dr. Sardjito Yogyakarta yang menjalani pemeriksaan MRI kepala. Nilai rerata ADC dihitung pada area padat tumor dengan panduan pencitraan MRI konvensional oleh dokter spesialis radiologi. Analisis data dilakukan dengan uji korelasi Spearman dan dilakukan uji korelasi parsial dan regresi logistik untuk menilai variabel perancu.

Hasil: Penelitian terhadap 51 pasien glioma menunjukkan rerata nilai ADC sebesar $0,991 \times 10^{-3} \text{ mm}^2/\text{s}$ dan rerata Ki-67 sebesar 20,68%. Terdapat korelasi negatif yang signifikan antara nilai ADC dan indeks Ki-67 ($p < 0,001$; $r = -0,621$; 95% CI = -0,9 s/d -0,33). Beberapa faktor seperti usia, jenis kelamin, dan derajat glioma dapat berperan sebagai variabel perancu.

Kesimpulan: Terdapat korelasi negatif yang signifikan antara nilai ADC dengan indeks proliferasi Ki-67 pada pasien glioma difus tipe dewasa. Semakin rendah nilai ADC, maka semakin tinggi tingkat proliferasi sel tumor dengan kekuatan korelasi yang termasuk dalam kategori kuat.

Kata kunci: *Apparent Diffusion Coefficient*, Ki-67, glioma, MRI, DWI

CORRELATION BETWEEN APPARENT DIFFUSION COEFFICIENT VALUES ON MAGNETIC RESONANCE IMAGING AND KI-67 PROLIFERATION INDEX IN ADULT-TYPE DIFFUSE GLIOMA

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ABSTRACT

Background: Glioma is the most common primary brain tumour, characterized by high malignancy and mortality rates. The Ki-67 index reflects the proliferative activity of tumour cells, while the ADC value from MRI-DWI is used to non-invasively assess tumour characteristics. The correlation between ADC and Ki-67 may help predict tumour aggressiveness; however, studies on this relationship remain limited.

Objective: To determine the correlation between ADC values on MRI and the Ki-67 proliferation index in adult-type diffuse glioma patients.

Methods: This study is analytical observational research with a cross-sectional design. Retrospective data were obtained from 51 patients with histopathologically confirmed glioma who underwent brain MRI at RSUP Dr. Sardjito Yogyakarta. The mean ADC values were measured in the solid tumour areas, guided by conventional MRI imaging, by a radiologist. Data analysis was performed using Spearman correlation test, and partial correlation and logistic regression were conducted to assess confounding variables.

Results: A study involving 51 glioma patients showed a mean ADC value of $0.991 \times 10^{-3} \text{ mm}^2/\text{s}$ and a mean Ki-67 index of 20.68%. A significant negative correlation was found between ADC values and the Ki-67 index ($p < 0,001$; $r = -0,621$; 95% CI = -0,9 s/d -0,33). Several factors, such as age, sex, and glioma grade may acted as confounding variables.

Conclusion: There is a significant negative correlation between ADC values and the Ki-67 proliferation index in patients with adult-type diffuse glioma. Lower ADC values are associated with higher tumour cell proliferation, with a correlation strength classified as strong.

Keywords: Apparent Diffusion Coefficient, Ki-67, glioma, MRI, DWI