

INTISARI

Latar belakang dan Tujuan. Tumor intrakranial merupakan salah satu penyakit yang kejadiannya makin hari makin meningkat. Pengukuran nilai metabolit dengan menggunakan sekuen *Magnetic Resonance Spectroscopy* pada inti tumor dan edema peritumoral dapat berguna untuk menentukan derajat keganasan tumor otak primer. Tujuan penelitian ini untuk mengevaluasi nilai diagnostik nilai *Choline* dan rasio *Choline/Creatine* pada edema peritumoral tumor otak primer dalam menentukan derajat keganasan tumor otak primer.

Bahan dan Metode. Penelitian observasional analitik retrospektif ini menggunakan data sekunder citra *Magnetic Resonance Imaging* kepala sekuen MRS dengan histopatologi tumor otak primer. Nilai puncak kurva metabolit *Choline* dan *Creatine* diambil pada voxel di edema peritumoral dari tumor otak primer tersebut. Nilai diagnostik nilai puncak *Choline* dan rasio *Choline/Creatine* pada edema peritumoral untuk menentukan derajat keganasan tumor otak primer menggunakan analisis *Receiver Operating Characteristic* (ROC).

Hasil. Didapatkan 24 pasien tumor otak primer derajat rendah dan 14 pasien tumor otak primer derajat tinggi. Berdasarkan analisis ROC, pengukuran pada area peritumoral tumor dari nilai *Choline* dan rasio *Choline/Creatine* masing-masing menghasilkan *cutoff value* pada 16,65 dan 1,085, dengan sensitivitas 42,9% dan 92,9%, dan spesifisitas 87,5% dan 91,7% dengan akurasi diagnostik yang tinggi untuk membedakan derajat keganasan tumor otak derajat rendah dan tinggi.

Kesimpulan. Kombinasi pengukuran nilai *Choline* dan rasio *Choline/Creatine* pada edema peritumoral tumor otak primer memberikan nilai diagnostik yang tinggi dalam menentukan derajat keganasan tumor otak.

Kata Kunci: *Magnetic Resonance Imaging*, *Magnetic Resonance Spectroscopy*, derajat tumor otak primer, nilai diagnostik

ABSTRACT

Background and Purpose. Primary brain tumor is one of the diseases which occurrence is increasing every day. Measurement of metabolite values by using Magnetic Resonance Spectroscopy sequences in core tumors and peritumoral edema can be useful to determine malignancy degree of primary brain tumors. The purpose of this study was to evaluate the diagnostic value of Choline and Choline/Creatine ratios in peritumoral edema of primary brain tumors in determining the degree of primary brain tumors malignancy.

Materials and Methods. This retrospective observational analytic study uses secondary data from MRS sequences of brain Magnetic Resonance Imaging with primary brain tumors as histopathological diagnosis. Choline and Creatine peak values that were taken in peritumoral oedema voxels of the tumor. Diagnostic value of Choline peak and Choline/Creatine ratio to determine grade of primary brain tumor using Receiver Operating Characteristic (ROC) analysis.

Result. There were 24 patients with low grade primary brain tumor and 14 patients with high grade primary brain tumor. According to ROC analysis, measurement on peritumoral oedema area of the tumor from Choline peak value and Choline/Creatine ratio respectively obtained cut off value at 16,65 and 1,085, with sensitivity 42,9% and 92,9%, specificity 87,5% and 91,7% with high diagnostic accuracy to distinguish low-grade and high-grade primary brain tumor.

Conclusion. The combination of measuring Choline peak value and Choline/Creatine ratio in the peritumoral edema of brain tumor gave a high diagnostic value to determine grade of primary brain tumors.

Keywords: *Magnetic Resonance Imaging, Magnetic Resonance Spectroscopy, primary brain tumor, diagnostic value*