

Korelasi Nilai Volumetrik MRI *Hippocampus* dan *Cerebellum* dengan Gambaran EEG Penderita Epilepsi

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INTISARI

Tujuan: Penelitian ini bertujuan untuk mengetahui korelasi nilai volumetrik MRI *hippocampus* dan *cerebellum* dengan gambaran EEG pasien epilepsi.

Metode: Penelitian ini merupakan jenis penelitian observasional analitik korelatif dengan desain penelitian *cross sectional*. Pengambilan data dilakukan secara retrospektif dari data sekunder pasien dengan pengantar klinis epilepsi yang dilakukan pemeriksaan MRI kepala volumetrik di Instalasi Radiologi RSUP Dr. Sardjito Yogyakarta pada bulan November 2018 sampai bulan Februari 2022. Pengambilan sampel dilakukan secara *consecutive non-random sampling*. Subjek terpilih sesuai dengan kriteria inklusi dan eksklusi. Dilakukan penilaian volumetrik *hippocampus* dan *cerebellum* dengan MRI, dan hasilnya dikorelasikan dengan tipe gelombang EEG pada pasien.

Hasil: Jumlah sampel sebanyak 32 pasien diikutsertakan dalam penelitian ini. Rerata volume *hippocampus* EEG normal $7,49 \pm 1,08 \text{ cm}^3$, EEG tipe *sharp* $6,99 \pm 1,40 \text{ cm}^3$, dan EEG *spike and wave* sebesar $8,01 \pm 1,27 \text{ cm}^3$ ($p=0,402$). Rerata volume *cerebellum* pada EEG normal $124,64 \pm 20,87 \text{ cm}^3$, EEG *sharp* sebesar $122,18 \pm 15,84 \text{ cm}^3$, dan EEG *spike and wave* sebesar $126,34 \pm 14,60 \text{ cm}^3$ ($p=0,935$). Dari analisis bivariat *One Way Anova*, tidak ditemukan perbedaan bermakna antara rerata nilai volumetrik MRI *hippocampus* dan *cerebellum* dengan gambaran EEG, dengan nilai p masing-masing sebesar 0,402 dan 0,935.

Kesimpulan: Rerata nilai volumetrik *hippocampus* dan *cerebellum* tertinggi pada EEG *Spike and Wave*, rerata nilai volumetrik *cerebellum* dan *cerebellum* terendah pada EEG *Sharp*. Tidak ditemukan hubungan yang bermakna secara statistik antara nilai volumetrik MRI *hippocampus* maupun *cerebellum* terhadap gambaran EEG penderita epilepsi.

Kata kunci: EEG, Epilepsi, MRI, volume *hippocampus*, volume *cerebellum*

The Correlation Between Hippocampus and Cerebellum MRI Volumetric Values with EEG Patterns of Epilepsy Patients

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ABSTRACT

Objectives: This study aims to determine the correlation of hippocampus and cerebellum MRI volumetric values with EEG images in epilepsy patients.

Method: This was an analytic observational study with a cross-sectional research design. Data collection was carried out retrospectively from secondary data of patients with an introduction to the clinical epilepsy who underwent a volumetric head MRI examination at the Radiology Installation of RSUP Dr. Sardjito Yogyakarta from November 2018 to February 2022. Sampling was carried out using consecutive non-random sampling. Subjects were selected according to the inclusion and exclusion criteria. Volumetric assessment of the hippocampus and cerebellum was carried out with MRI and the results were correlated with the type of EEG waves in the patient

Result: A total sample of 32 patients was included in this study. The normal EEG hippocampus volume mean was $7.49 \pm 1.08 \text{ cm}^3$, the sharp type EEG was $6.99 \pm 1.40 \text{ cm}^3$, and the spike and wave EEG was $8.01 \pm 1.27 \text{ cm}^3$ ($p=0.402$). The mean volume of the cerebellum on a normal EEG was $124.64 \pm 20.87 \text{ cm}^3$, a sharp EEG was $122.18 \pm 15.84 \text{ cm}^3$, and spike and wave EEG was $126.34 \pm 14.60 \text{ cm}^3$ ($p=0.935$). From bivariate One Way Anova analysis, there was no significant difference between the mean volumetric MRI values of the hippocampus and cerebellum and EEG images, with p values of 0.402 and 0.935 respectively.

Conclusion: The highest mean hippocampus and cerebellum volumetric values were on the EEG Spike and Wave, the lowest mean cerebellum and cerebellum volumetric values were on EEG Sharp. There was no statistically significant relationship between volumetric MRI values of the hippocampus and cerebellum on the EEG appearance of epileptic patients.

Keywords: EEG, epilepsy, MRI, volumetric of hippocampus, volumetric of cerebellum