

## KORELASI GAMBARAN *MAGNETIC RESONANCE IMAGING* PADA PASIEN INFEKSI *CYTOMEGALOVIRUS* KONGENITAL BERDASARKAN MODIFIKASI *NOYOLA SCALE* DENGAN *NEUROLOGICAL SEQUELAE*

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### INTISARI

**Latar Belakang.** *Cytomegalovirus* (CMV) atau *Human Herpes Virus 5* (HHV-5) merupakan virus DNA yang termasuk dalam genus virus Herpes 5. Infeksi CMV dapat ditularkan melalui cairan tubuh seperti saliva, darah, air susu ibu, semen, dan urin. *Cytomegalovirus* merupakan penyebab infeksi kongenital yang memiliki prevalensi tertinggi di dunia. Hal ini merupakan penyebab utama gangguan pendengaran *sensorineural* non hereditas, meskipun dapat juga menyebabkan *neurologis sequelae*, seperti gangguan motorik dan kognitif, epilepsi atau korioretinitis. Pencitraan menggunakan modalitas *Magnetic Resonance Imaging* (MRI) digunakan untuk penilaian keterlibatan sistem saraf pusat pada infeksi CMV kongenital. Prediktor terpenting dari gejala sisa neurologis (*neurological sequelae*) adalah status simptomatik saat lahir dan temuan abnormalitas *neuroimaging* pada bulan pertama kehidupan. Penelitian ini bertujuan untuk mengetahui korelasi antara gambaran *Magnetic Resonance Imaging* pada pasien infeksi CMV kongenital berdasarkan Modifikasi *Noyola Scale* dengan *neurological sequelae*.

**Tujuan.** Mengetahui korelasi antara gambaran *Magnetic Resonance Imaging* pada pasien infeksi CMV kongenital berdasarkan Modifikasi *Noyola Scale* dengan *neurological sequelae*.

**Bahan dan Metode.** Penelitian ini merupakan penelitian observasional analitik dengan rancangan penelitian *cross-sectional* dan pengambilan subyek secara retrospektif. Subyek yang digunakan adalah pasien anak dengan infeksi CMV kongenital yang telah menjalani pemeriksaan MRI Kepala dengan kontras di Instalasi Radiologi RSUP Dr. Sardjito Yogyakarta periode bulan Januari 2019-Desember 2020 dan telah memiliki hasil pemeriksaan *neurological sequelae*. Teknik pengambilan sampel dalam penelitian ini adalah *consecutive sampling*.

**Hasil.** Dari hasil penelitian didapatkan jumlah subyek yang diteliti sebanyak 91 subyek penelitian. Rata-rata usia anak  $34.73 \pm 25.4$  bulan dengan usia paling muda adalah 3 bulan dan yang paling tua adalah 96 bulan. Mayoritas subyek berjenis kelamin laki-laki yaitu 47 (51.6%), sedangkan subyek berjenis kelamin perempuan yaitu 44 (48.4%). Kejadian *neurological sequelae* ditemukan pada 70 (76.9%) subyek, sedangkan yang tidak 21 (23.1%).

**Kesimpulan.** Terdapat korelasi yang bermakna secara statistik antara gambaran *Magnetic Resonance Imaging* berdasarkan Modifikasi *Noyola Scale* pada pasien infeksi CMV kongenital dengan kejadian *neurological sequelae* ( $p < 0.001$ ). Semakin tinggi kategori Modifikasi *Noyola Scale* maka *neurological sequelae* semakin berat.

**Kata Kunci:** *Cytomegalovirus* kongenital, *Magnetic Resonance Imaging*, Modifikasi *Noyola Scale*, *neurological sequelae*.

## CORRELATION OF MAGNETIC RESONANCE IMAGING IMAGES IN CONGENITAL CYTOMEGALOVIRUS INFECTION PATIENTS BASED ON MODIFIED NOYOLA SCALE WITH NEUROLOGICAL SEQUELAE

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### ABSTRACT

**Background:** Cytomegalovirus (CMV) or Human Herpes Virus 5 (HHV-5) is a DNA virus that belongs to the genus Herpes 5 virus. CMV infection can be transmitted through body fluids such as saliva, blood, breast milk, semen and urine. Cytomegalovirus is the cause of congenital infection that has the highest prevalence in the world. It is a major cause of non-hereditary sensorineural hearing loss, although it can also cause neurological sequelae, such as motor and cognitive impairment, epilepsy or chorioretinitis. Magnetic Resonance Imaging (MRI) modality is used to assess central nervous system involvement in congenital CMV infection. The most important predictors of neurological sequelae are symptomatic status at birth and findings of neuroimaging abnormalities in the first month of life. This study aims to determine the correlation between Magnetic Resonance Imaging in congenital CMV infection based on the Modified Noyola Scale and neurological sequelae.

**Objective:** Knowing the correlation between Magnetic Resonance Imaging in patient with congenital CMV infection based on Modified Noyola Scale with neurological sequelae.

**Material and Methods:** This study is an analytic observational study with a cross-sectional study design and taking subject retrospectively. The subjects used were pediatric patients with congenital CMV infection who had undergone a contrast-enhanced MRI of the head at the Radiology Installation of Dr. Sardjito Hospital Yogyakarta for the period January 2019-December 2020 and has had neurological sequelae examination results. The sampling technique in this study was consecutive sampling.

**Results:** From the results of the study, the number of subjects studied was 91 research subjects. The average age of children is  $34.73 \pm 25.4$  months with the youngest age being 3 months and the oldest being 96 months. The majority of subjects were male, namely 47 (51.6%), while female subjects were 44 (48.4%). Neurological sequelae were found in 70 (76.9%) subjects, while in 21 (23.1%).

**Conclusion:** There was statistically significant correlation between Magnetic Resonance Imaging based on Modified Noyola Scale in patients with congenital CMV infection and neurological sequelae ( $p < 0.0001$ ). The higher the Noyola Scale Modification category, the more severe the neurological sequelae.

**Keyword:** Congenital cytomegalovirus, Magnetic Resonance Imaging, Modified Noyola Scale, neurological scale