

## ABSTRAK

**GAMBARAN MRI KEPALA KONVENTIONAL PADA ANAK  
USIA 0-18 TAHUN DENGAN *DEVELOPMENTAL DELAY*  
PENGAMATAN DI RSUD DR SOETOMO SURABAYA  
PERIODE SEPTEMBER 2017 – AGUSTUS 2018**

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**Latar Belakang:** Proses tumbuh kembang anak adalah proses yang simultan dan berkesinambungan, adanya gangguan tumbuh kembang akan berdampak pada aspek motorik kasar, motorik halus, sosial/bahasa dan kemandirian anak, mempengaruhi keluarga secara emosional dan psikis serta secara luas berdampak ekonomi bagi masyarakat. Kausa dan manifestasi klinis DD sangat luas, dibutuhkan evaluasi yang menyeluruh terhadap penderita untuk optimalisasi tumbuh kembangnya. MRI adalah modalitas pilihan yang dapat memberikan detail susunan anatomi dan mendeteksi kelainan anatomi karena kegagalan pada proses pembentukan, perkembangan dan maturasi otak.

**Objektif:** untuk mendapatkan gambaran MRI Kepala pada anak dengan DD.

**Metode:** Dari bulan September 2017 hingga Agustus 2018, 59 anak DD (32 laki-laki dan 27 perempuan) usia 6 bulan hingga 18 tahun dimasukkan ke dalam penelitian. Semua diperiksa MRI Kepala menggunakan MRI 1,5 Tesla dan secara retrospektif dievaluasi dalam bentuk *raw data* digital.

**Hasil :** Usia 0-6 tahun, morfologi ventrikel tidak normal 11/56 (19,6%). EI >0,3 8/56 (14,3%) EI < normal 21/56 (37,5%) EI < normal 10/56 (17,9%) dan Tidak bisa dinilai EI 3/56 (5,4%) Ratio V.III/BA < normal 15/56 (26,8%) V. III/BA > normal 32/56 (57,1%) Tidak normal 1/56 (1,8%). V.IV < normal 23/56 (41,1%) V.IV > normal 21/56 (37,5%) Panjang CC tidak normal 36/56 (64,3%) dan Ketebalan CC tidak normal 12/56 (2,4%) 6/56 (10,7%) agensis CC. *Mid brain* tidak normal 18/56 (32,1%) Pons tidak normal 14/56 (25%) Formasi *brain parenchyme* tidak normal 14/56 (25%), 11/56 (19,6%) mengalami keterlambatan myelinisasi. Usia 7-18 tahun 1/3 (33,3%) morfologi tidak normal, Rasio v.III/BA > nilai normal 1/3 (33,3%) v. IV < normal 1/3 (33,3%) v. IV > normal 2/3 (66,7%). 2/3 (66,7%) *mid brain* tidak normal 1/3 (33,3%) Formasi *brain parenchyme* tidak normal pada 2/3 (66,7%) EI, Pons dan medulla, CC dan proses myelinisasi normal pada keseluruhan sampel

**Kesimpulan :** Tidak didapatkan struktur yang seluruhnya normal pada pasien DD, Kelainan terbanyak kelompok usia 0-6 tahun terbanyak di ventrikel dan corpus callosum mengindikasikan kelainan white matter. Kelompok usia 7-18 tahun pada ventrikel dan formasi *brain parenchyme* namun dalam spektrum yang lebih ringan dibandingkan dengan kelompok umur sebelumnya

**Kata Kunci:** *MRI Kepala Developmental Delay, Developmental Delay, Anak Developmental Delay*

**ABSTRACT**  
**CONVENTIONAL HEAD MRI FEATURES ON 0-18 YEARS OLD CHILDREN**  
**WITH DEVELOPMENTAL DELAY**  
**AN OBSERVATION IN DR. SOETOMO PUBLIC HOSPITAL**  
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**Background:** A child's development is a simultaneous and continuous process. Developmental disturbances will affect gross motor, fine motor, personal-social and language. It will affect their family emotionally and psychologically and will have a widespread impact on the society economically. The cause and clinical manifestation of DD is very broad. A thorough evaluation on patients is needed to optimize their development. MRI is the modality of choice that is able to show detail anatomic arrangements and detect anatomical abnormality due to brain formation, developmental, and maturation process failures.

**Objective:** To obtain head MRI features on children with DD.

**Methods:** During September 2017 to August 2018 period, 59 children (32 boys and 27 girls), between 6 months and 18 years of age with DD are included in this study. All of them were examined using 1,5 Tesla MRI and were evaluated retrospectively in the form of digital raw data.

**Results:** MRI head feature of children with DD at 0-6 years, abnormal ventricular morphology 11/56 (19.6%). EI > 0.3 8/56 (14.3%) EI < normal 21/56 (37.5%) EI < normal 10/56 (17.9%) and cannot be evaluated EI 3/56 (5.4%) V.III / BA ratio < normal 15/56 (26.8%) V. III / BA > normal 32/56 (57.1%) Abnormal 1/56 (1.8%). V. IV < normal 23/56 (41.1%) V. IV > normal 21/56 (37.5%) CC length abnormal 36/56 (64.3%) and abnormal CC thickness 12/56 (2.4%) 6/56 (10.7%) agenesis CC. Mid brain abnormal 18/56 (32.1%) Pons abnormal 14/56 (25%) Brain formation abnormal 14/56 (25%) and 11/56 (19.6%) delayed myelination. Group 7-18 years, 1/3 (33.3%) had abnormal ventricle morphology, v.III / BA ratio greater than normal v. IV < normal 1/3 (33.3%) v. IV > normal 2/3 (66.7%) 2/3 (66.7%) brain stem *Mid brain* is not normal 1/3 (33.3%) Parenchymal brain formation not normal on 2/3 (66.7%) Corpus callosum and EI, Pons dan medulla, CC dan myelination process are normal in all samples.

**Conclusion:** No normal structure was found in DD patients. Most abnormalities were obtained in the ventricles and corpus callosum in the younger population, defined as abnormalities in white matter. In Groups 7-18 year old abnormalities were also obtained from the brain and parenchymal brain form but in a mild spectrum.

**Key Words:** *Head MRI Developmental Delay, Developmental Delay, Children Developmental Delay*