

## KORELASI DERAJAT *LEUKOARAIOSIS* DENGAN HIPERLIPIDEMIA PADA PASIEN PASKA STROKE ISKEMIK

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### INTISARI

**Latar Belakang dan Tujuan.** *Leukoaraiosis* merupakan gambaran neurologis pada area periventrikuler dan sentrum semiovale. Terjadi akibat adanya kelainan pada pembuluh darah kecil di otak yang mengalami hipoksia. Banyak dijumpai pada pasien dengan stroke iskemik disertai faktor resiko hiperlipidemia terdiri dari kolesterol, HDL, LDL dan trigliserida. Angka kejadian stroke yang terus meningkat derajat *Leukoaraiosis* dapat mempengaruhi pasien paska stroke iskemik. Meningkatnya hiperlipidemia dapat digunakan sebagai prediktor temuan *leukoaraiosis* pada pasien stroke iskemik. Tujuan dari penelitian ini adalah untuk mengetahui adanya korelasi antara derajat *leukoaraiosis* dengan hiperlipidemia pada pasien paska stroke iskemik

**Bahan dan Metode.** Sampel sebanyak 36 orang dilakukan penilaian derajat *leukoaraiosis* pada pemeriksaan MRI kepala dan menilai kadar kolesterol, HDL, LDL dan trigliserida melalui hasil pemeriksaan laboratorium pada pasien paska stroke iskemik. Rancangan penelitian ini merupakan *cross sectional* dilakukan secara retrospektif pada pasien paska stroke iskemik yang menjalani pemeriksaan MRI kepala sekuens T2 dan FLAIR di Departemen Radiologi RSUP Dr Sardjito Yogyakarta periode Januari 2021 sampai Maret 2022. Kemudian dilakukan penilaian derajat *leukoaraiosis* dengan menggunakan klasifikasi Fazekas. Derajat 1 apabila ditemukan lesi *punctata*, derajat 2 bila ditemukan lesi konfluens dan derajat 3 bila ditemukan lesi konfluens yang lebih luas pada area periventrikuler atau centrum semiovale. Hiperlipidemia apabila: LDL < 100 *Optimal*, 100-129 *Above optimal*, 130-159 *Borderline High*, 160-189 *High*, >190 *Very high*. Total Kolesterol (<200 *Desirable*, 200-239 *Borderline High*, >240 *High*) HDL (< 40 *Low*, > 60 *High*), Trigliserida < 150 *Normal*, 150-199 *Borderline high*, 200-499 *High*, > 500 *Very high*. Kemudian dilakukan analisis menggunakan analisis korelasi spearman.

**Hasil.** Didapatkan korelasi positif antara derajat *leukoaraiosis* dengan trigliserida pada pemeriksaan MRI kepala pasien paska stroke iskemik ( $p\text{-value}=0.042$ ) dan ( $r=0.292$ ). Semakin tinggi derajat *leukoaraiosis* semakin besar angka trigliserida. Dan didapatkan korelasi dengan usia dengan derajat *leukoaraiosis* ( $p=0.004$ ), ( $r=0.464$ ) positif artinya semakin tinggi usia semakin bertambah derajat *leukoaraiosis*. Tidak didapatkan korelasi antara derajat *leukoaraiosis* dengan kolesterol, HDL dan LDL.

**Kesimpulan.** Didapatkan korelasi positif antara derajat *leukoaraiosis* dengan usia dan trigliserida pada pasien paska stroke iskemik.

**Kata Kunci:** *Leukoaraiosis*, hiperlipidemia, paska stroke iskemik, korelasi.

## CORRELATION BETWEEN THE DEGREE OF LEUKOARAIOSIS AND HYPERLIPIDEMIA IN POST-ISCHEMIC STROKE PATIENTS

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### ABSTRACT

**Background and Purpose.** *Leukoaraiosis* is a neurological imaging in the periventricular area and the centrum semiovale. This occurs due to abnormalities in the small blood vessels in the brain that are hypoxic. This disorder is often found in patients with ischemic stroke accompanied by risk factors for hyperlipidemia consisting of cholesterol, HDL, LDL, and triglycerides. With an increase in the incidence of stroke, the degree of leukoaraiosis can affect post-ischemic stroke patients. Increased hyperlipidemia can be used as a predictor for *leukoaraiosis* in ischemic stroke patients. This study aimed to investigate the correlation between the degree of leukoaraiosis and hyperlipidemia in post-ischemic stroke patients.

**Materials and Methods.** A cross-sectional study was carried out retrospectively on 36 post-ischemic stroke patients who underwent head MRI on T2 and FLAIR sequence at the Radiology Department, Central General Hospital Dr Sardjito, Yogyakarta, from January 2021 to March 2022. These patients were examined to measure the degree of *leukoaraiosis* through head MRI examination and also their cholesterol, HDL, LDL and triglyceride levels through laboratory results. Then, the degree of *leukoaraiosis* was measured using the Fazekas scale with the following classification: *Grade 1* if punctate lesions were found; *Grade 2* if confluent lesions were found; and *Grade 3* if larger confluent lesions were found more broadly in the periventricular area or centrum semiovale. Hyperlipidemia was measured and classified as follows: *Optimal* (LDL <100), *Above optimal* (100-129), *Borderline High* (130-159), *High* (160-189), *Very high* (>190); and total cholesterol as *Desirable* (<200), *Borderline High* (200-239), and *High* (>240). HDL was classified as *Low* (< 40) and *High* (> 60) while Triglyceride was classified as *Normal* (<150), *Borderline high* (150-199), *High* (200-499), and *Very High* (>500). The results were then analyzed using Spearman correlation.

**Results.** A positive correlation was found between the degree of *leukoaraiosis* and triglyceride level with p-value = 0.042 and R-value = 0.292, which means that the higher the degree of leukoaraiosis, the higher the triglyceride level. A correlation was also found between the degree of *leukoaraiosis* and age with p-value = 0.004 and R-value = 0.464, which implies that the older the age, the higher the degree of leukoaraiosis. No correlation was found between the degree of *leukoaraiosis* and cholesterol, HDL, and LDL.

**Conclusion.** The results demonstrate a positive correlation between the degree of leukoaraiosis and age and also triglyceride level in post-ischemic stroke patients.

**Key words:** *Leukoaraiosis*, hyperlipidemia, post-ischemic stroke, correlation.