

## Abstrak

Stroke merupakan penyakit dengan mortalitas dan morbiditas yang tinggi, dan salah satu dari penyakit yang menyebabkan disabilitas. Perbaikan stroke sampai saat ini masih sangat terbatas. Terapi stroke berupa program rehabilitasi dirancang berdasarkan prognosisnya. Pada 3 bulan pasca stroke, perbaikan mencapai puncaknya. Berbagai faktor prognosis untuk stroke iskemik sudah diteliti meliputi demografis pasien, faktor risiko, kondisi pasien saat masuk, terapi yang digunakan, hingga biomarker seperti VEGF. VEGF sudah terbukti berpengaruh pada luaran jangka pendek dan odem otak yang dapat memberikan perburukan pada pasien. Di saat yang sama VEGF mempunyai efek angiogenesis, neuroproteksi dan neurogenesis yang dapat berpotensi memperbaiki luaran stroke. Penelitian ini bertujuan untuk mengetahui hubungan antara kadar serum VEGF pada fase akut dengan keparahan stroke jangka panjang pada pasien stroke iskemi yang dinilai dengan menggunakan skor NIHSS.

Penelitian ini adalah penelitian kohort prospektif, subjek penelitian adalah pasien stroke iskemik akut yang dirawat di RSUP Dr. Sardjito, RSAU dr. S. Hardjolukito dan RS PKU Jogjakarta. Subjek yang memenuhi kriteria inklusi dan eksklusi dilakukan pemeriksaan kadar serum pada fase akut serta penilaian skor NIHSS pada saat admisi dan bulan ketiga. Analisis statistik digunakan untuk mengetahui hubungan antara kadar VEGF, variabel demografi dan laboratorium dengan skor NIHSS yang dilanjutkan uji regresi linear.

Didapatkan 29 subjek penelitian. Rerata kadar VEGF adalah  $642,93 \pm 476,7$  pg/ml. Kadar VEGF mempunyai korelasi negatif yang signifikan dengan NIHSS bulan ketiga ( $r -0,428$ ;  $p 0,021$ ). Selain VEGF, NIHSS bulan ketiga juga mempunyai hubungan yang signifikan dengan luas stroke infark ( $r 0,398$ ;  $p 0,032$ ) dan NIHSS admisi ( $r 0,668$ ;  $p 0,001$ ). Setelah uji regresi linear, kadar VEGF ( $\beta -0,387$ ;  $p 0,002$ ) dan NIHSS admisi ( $\beta 0,739$ ;  $p 0,001$ ) berhubungan dengan NIHSS bulan ketiga secara independen.

Kesimpulan penelitian ini adalah kadar VEGF pada fase akut berhubungan dengan NIHSS bulan ketiga.

Kata kunci: VEGF, NIHSS, stroke iskemik

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## Abstract

Stroke is a disease with high mortality and morbidity, and one of the diseases that causes disability. Repairing of strokes is still very limited. Rehabilitation program is designed based on its prognosis. At 3 months after a stroke, repair reaches its peak. Various prognostic factors for ischemic stroke have been studied including patient demographics, risk factors, patient condition at admission, therapy used, and biomarkers such as VEGF. VEGF has been shown to have an effect on short-term outcomes and brain edema that can make deterioration in patients. At the same time VEGF has the effect of angiogenesis, neuroprotection and neurogenesis which can potentially improve stroke outcome. This study aims to determine the relationship between serum VEGF levels in the acute phase with long-term stroke severity in ischemic stroke patients assessed using the NIHSS score.

This study was a prospective cohort study, the subjects of the study were acute ischemic stroke patients who were treated at Dr. Sardjito, RSAU Dr. S. Hardjolukito and PKU Jogjakarta Hospital. Subjects who met the inclusion and exclusion criteria were examined for serum levels in the acute phase and NIHSS scores were assessed at the time of admission and the third month. Statistical analysis was used to determine the relationship between VEGF levels, demographic and laboratory variables with NIHSS scores followed by linear regression tests.

There were 29 subjects. The mean VEGF level was  $642.93 \pm 476.7$  pg / ml. The VEGF level had a significant negative correlation with the third month NIHSS ( $r -0.4428$ ;  $p 0.021$ ). In addition to VEGF, the third month's NIHSS also had a significant relationship with the area of infarction stroke ( $r 0.398$ ;  $p 0.032$ ) and NIHSS admission ( $r 0.668$ ;  $p 0.001$ ). After the linear regression test, the VEGF levels ( $\beta -0.387$ ;  $p 0.002$ ) and NIHSS admissions ( $\beta 0.739$ ;  $p 0.001$ ) were associated with the third month of NIHSS independently.

The conclusion of this study was that VEGF levels in the acute phase were related to the third month of NIHSS.

Keywords: VEGF, NIHSS, ischemic stroke

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