

ABSTRAK

HUBUNGAN KADAR IL-6 DENGAN *GLASGOW OUTCOME SCALE EXTENDED* SETELAH TIGA BULAN PADA PENDERITA CEDERA OTAK BERAT DI RSUD dr. SOETOMO

Fendi Fatkhurrohman Gozi, Abdul Hafid Bajamal, Windhu Purnomo
Departemen Ilmu Bedah Saraf, Fakultas Kedokteran Universitas Airlangga
Rumah Sakit Umum Dr. Soetomo
Surabaya, Indonesia

Latar Belakang: Trauma merupakan penyebab utama kematian pada kelompok usia di bawah 45 tahun. Penanganan kasus cedera otak dalam bidang neurotraumatologi terus berkembang pesat, tidak hanya secara makro, tetapi lebih lagi ke arah mikroseluler. Interleukin-6 (IL-6) merupakan salah satu sitokin yang merupakan mediator inflamasi penting karena merupakan regulator reaksi inflamasi primer di otak. Kadar IL-6 serum dan LCS mewakili proses neuroinflamasi serta memiliki nilai prognostik tertentu pada penderita cedera otak. Tingginya kadar IL-6 pada fase akut cedera otak, diduga berhubungan dengan derajat kerusakan otak.

Tujuan: Mengetahui peranan IL-6 terhadap prognosis penderita cedera otak berat.

Metode: Jenis penelitian ini adalah observasional analitik longitudinal prospektif. Pengambilan sampel dengan *consecutive sampling*. Subjek adalah pasien cedera otak berat sebanyak 23 pasien. Kadar IL-6 serum dan LCS pasien pada hari ke-1 dan ke-4 pasca trauma dihubungkan dengan GCS pada hari ke-7 dan GOSE bulan ke 3 pasca trauma. Data dianalisis menggunakan *independent sample test* dan *Fisher test*.

Hasil: Rerata kadar IL-6 serum hari ke-4 dan LCS hari ke-1 pada kelompok GCS ≤ 8 di hari ke 7 pasca trauma secara berurutan adalah $159,07 \pm 82,3$ pg/ml dan $869,2 \pm 728,6$ pg/ml ($p=0,026;0,036$). Kemudian pada kelompok *unfavorable* untuk GOSE 3 bulan pasca trauma rerata kadar IL-6 serum hari ke-1, ke-4 dan LCS hari ke-1, ke-4 secara berurutan adalah $229,8 \pm 95,1$ pg/ml, $188,2 \pm 80,39$ pg/ml, 521 ± 262 pg/ml dan $538,3 \pm 559,1$ pg/ml ($p=0,004;0,001;0,002;0,001$). Sedangkan dari analisis bivariat, hanya kadar IL-6 serum hari ke - 4 ≤ 100 pg/ml yang berhubungan secara signifikan terhadap GOSE *unfavorable* ($p=0,001$).

Kesimpulan: Terdapat hubungan yang bermakna antara rerata kadar IL-6 serum hari ke-1, ke-4 dengan GCS hari ke-7 pada pasien cedera otak berat. Kemudian, terdapat hubungan rerata yang bermakna juga didapatkan antara kadar IL-6 serum hari ke-1, ke-4 dengan GOSE bulan ke-3 pasca trauma pada pasien cedera otak berat. Kadar IL-6 serum hari ke-4 ≥ 100 pg/ml merupakan faktor prognostik yang buruk pada pasien cedera otak berat.

Kata Kunci: Interleukin-6, Cedera Otak, GOSE

ABSTRACT

**CORELATION BETWEEN LEVEL OF IL-6 AND
GLASGOW OUTCOME SCALE EXTENDED AFTER THREE MONTHS
IN SEVERE TRAUMATIC BRAIN INJURY PATIENTS IN RSUD dr.
SOETOMO**

Fendi Fatkhurrohman Gozi, Abdul Hafid Bajamal, Windhu Purnomo
Departemen of Neurosurgery, Faculty of Medicine, Airlangga University
Dr. Soetomo General Hospital
Surabaya, Indonesia

Background: Trauma is the main cause of death at age groups under 45 years. The management of brain injury in traumatology field continues to grow rapidly, not only at the macro level, but more again toward microcellular level. Interleukin-6 (IL-6) is one of cytokines, an important inflammation mediator for the primary regulator inflammation reaction in the brain. Serum and cerebrospinal fluid levels of IL-6 represent the inflammation process which have been proved as prognostic value for the injured brain in some prior studies. The high levels of IL-6 in an acute brain injury phase, supposedly associated with degree of brain damage and the outcome.

Aim: Knowing the role of IL-6 as a prognostic factor in traumatic brain injury.

Keyword: This was an observational analytic longitudinal prospective study. The sampling method was consecutive sampling. The subjects were 23 patients which have been diagnosed as severe traumatic brain injury on the admission. The level of IL-6 serum and CSF of the first and the fourth day were analyzed and correlated with Glasgow Coma Scale in the seventh day and GOSE score 3 months after injury. Data were analyzed using independent sample test and Fisher test

Result: The mean level of IL-6 serum in day four and CSF in day one within GCS ≤ 8 group at seven days after injury were $196,43 \pm 96,3$ pg/ml, $159,07 \pm 82,3$ pg/ml and $869,2 \pm 728,6$ pg/ml ($p=0,07;0,026;0,036$), subsequently. Then, in unfavorable group of three months GOSE scoring after injury, the mean IL-6 serum and CSF level in day one, day four after injury were $229,8 \pm 95,1$ pg/ml, $188,2 \pm 80,39$ pg/ml, 521 ± 262 pg/ml and $538,3 \pm 559,1$ pg/ml ($p=0,004;0,001;0,002;0,001$). From the bivariate analysis, the only variable which significantly correlated with GOSE after three months injury was IL-6 serum ≤ 100 pg/ml in day four after injury ($p=0,001$).

Conclusion: There were significant correlation between mean levels of serum IL-6 in day one, day four, mean level of IL-6 serum in day one after injury and GCS scoring after seven days of injury in severe traumatic brain injury patient. There were significant correlations between mean levels of serum IL-6 in the first and fourth day with GOSE scoring after three months of injury in severe traumatic brain injury patient. The level of serum IL-6 in the fourth day ≥ 100 pg/ml is poor prognostic for severe traumatic brain injury.

Keyword: Interleukin-6, Traumatic Brain Injury, GOSE