

ABSTRACT

PATTERN OF CELLULAR INTERACTION OF EDTA-BLOOD IN COLORECTAL CANCER PATIENTS IN RSUP DR. SARDJITO, D.I YOGYAKARTA

Background: Colorectal cancer (CRC) is one of gastrointestinal malignancy that contribute 10% of all deaths caused by cancer. The standard procedure of CRC screening and prevention is colonoscopy. But colonoscopy is still quite invasive procedure. The risks are bleeding, missed lesion, and perforation. Erythrocyte Sedimentation Rate (ESR) measurement using Westergren method is not specific for inflammation. With Spectrophotometry, the specificity of ESR measurement could be improved.

Objective: To illustrate difference in pattern of cellular interaction in blood-EDTA between colorectal cancer patients and normal individuals using Westergren and Spectrophotometer methods.

Method: This study was a cross-sectional design. Population target was colorectal cancer patient in RSUP Dr. Sardjito and normal individuals. Sixty three subjects were recruited. Six mL blood-EDTA from each subject were the study specimen in this research. The blood-EDTA samples were measured and stored at Biochemistry's Laboratory in Faculty of Medicine UGM, to further obtain *Batas zona phlogistica* (B_{zp}) and absorbance values. The time series data was firstly analysed using language of technical computing (Matrix Laboratory or MATLAB programs) for applying deterministic and stochastic approaches to obtain the constants. Later, the constants of both measurements were analysed using independent t-test and Mann Whitney test with $p < 0.05$ as significance level.

Results: All of the constants shows statistically significant result, with deterministic approaches ($p = 0.001, 0.007, 0.022, 0.006, 0.002,$ and 0.005) and stochastic approaches ($p = 0.001, 0.001, 0.001, 0.039, 0.034,$ and 0.025).

Conclusion: There are differences of pattern cellular interaction in blood-EDTA sample between colorectal cancer patients and normal individuals using Westergren and Spectrophotometry methods.

Keywords: Colorectal Cancer, Erythrocyte Sedimentation Rate, Spectrophotometry, Westergren, Zeta Potential

INTISARI

PATTERN OF CELLULAR INTERACTION OF EDTA-BLOOD IN COLORECTAL CANCER PATIENTS IN RSUP DR. SARDJITO, D.I YOGYAKARTA

Latar Belakang: Kanker Kolorektal adalah salah satu keganasan gastrointestinal yang berkontribusi sebesar 10% terhadap kematian karena kanker. Prosedur standar dalam skrining dan prevensi kanker kolorektal adalah kolonoskopi. Namun, prosedur ini masih invasive. Beberapa risiko yang dapat ditimbulkan yaitu pendarahan, lesi terlewatkan dan perforasi. Pengukuran Laju Endap Darah (LED) dengan metode Westergren diketahui tidak spesifik untuk inflamasi. Dengan metode Spektrofotometri, spesifisitas pengukuran LED dapat ditingkatkan.

Tujuan: Mengilustrasikan perbedaan pola interaksi seluler darah-EDTA antara pasien kanker kolorektal dan individu normal menggunakan metode Westergren dan Spektrofotometer.

Metode: Penelitian ini menggunakan desain potong lintang. Target populasi adalah pasien kanker kolorektal di RSUP Dr. Sardjito dan individu normal. Terdapat enampuluh tiga subjek. Sample studi ini adalah enam mL darah dari pasien dan individu sehat. Pengukuran sampel darah-EDTA ini dilaksanakan di Laboratorium Biokimia, Fakultas Kedokteran UGM hingga didapatkan nilai B_{zp} dan absorbansi. Data serial waktu pertama diolah pada program Matlab dan dianalisis menggunakan pendekatan deterministik serta stokastik sehingga didapatkan beberapa konstanta. Konstanta ini kemudian diolah menggunakan uji T-tes Independen dan tes Mann Whitney dengan $p < 0.05$ sebagai level signifikansi.

Hasil: Semua konstanta menunjukkan hasil yang signifikan secara statistic, baik menggunakan pendekatan deterministik ($p = 0.001, 0.007, 0.022, 0.006, 0.002, \text{ dan } 0.005$) maupun dengan pendekatan stokastik ($p = 0.001, 0.001, 0.001, 0.039, 0.034, \text{ dan } 0.025$).

Kesimpulan: Terdapat perbedaan dari pola interaksi seluler dalam darah-EDTA antara pasien kanker kolorektal dan subjek sehat yang dapat terlihat menggunakan metode Westergren dan Spektrofotometri.

Kata kunci: Kanker Kolorektal, Laju Endap Darah, Spektrofotometri, Westergren, Potensial Zeta.