The effects of excessive Disodium Ethylene Diamine Tetraacetic Acid (Na2EDTA) anticoagulant concentration toward hematology profile and morphology of erythrocytes in peripheral blood examination

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Abstrak

Tujuan penelitian ini adalah untuk mengetahui apakah terdapat perbedaan antara hasil pemeriksaan hematologi rutin dan morfologi darah tepi eritrosit pada sampel darah dengan berbagai konsentrasi antikoagulan Na2EDTA yang berbeda. Penditian ini merupakan penelitian potong lintang. Bahan penelitian berupa 33 sampel darah vena mahasiswa Fakultas Kedokteran UGM Yogyakarta. Dua ml darah dibagi ke datum 4 tabling Na2EDTA yang masing-masing berisi antikoagulan dengan konsentrasi yang berbeda. Tabung pertama berisi Na2EDTA konsentrasi standar, 2 mg/dl, tabung yang lain secara berurutan berisi Na2EDTA dengan konsentrasi 4 mg/dl, 6 mg/dl, and 8 mg/dl. Sebelumnya dibuat sediaan hapus langsung dari setetes darah tanpa antikoagulan (sebagai kontrol) untuk pemeriksaan morfologi darah tepi (MDT). Darah dalam keempat tabung tersebut segera dilakukan pembuatan sediaan hapus dan diperiksa profit hematologi eritrositnya menggunakan SYSMEX SE-9500 automatic analyzer. Terdapat penurunan yang bermakna dari hitung eritrosit, hemoglobin, hematokrit, dan MCHC serta peningkatan yang bermakna dari nilai MCV dan RDW antara konsentrasi Na2EDTA yang berlebihan, sedangkan nilai MCH tidak ada perbedaan. Pemeriksaan MDT menunjukkan perubahan yang bermakna pada bentuk echinocytes serta ditemukan gambaran ghost cells pada sampel darah dengan Na2EDTA yang berlebihan. Disimpulkan bahwa antikoagulan Na2EDTA yang berlebihan akan berpengaruh terhadap morfologi dan beberapa parameter hematologi eritrosit. (Med J Indones 2006; 15:157-64)

<hr><i>The purpose of this study is to know whether there are differences between hematology profile and morphology of erythrocyles of blood specimens which are prepared with excessive Na2EDTA anticoagulant in different concentration. This study was conducted in Faculty of Medicine Gadjah Mada University. The criteria of subject were male, age from 18 until 22 years old and healthy, ascertained from history taking and vital sign examination. Blood samples from 33 subjects were taken using vein puncture. Two millimeters blood was divided into 4 Na2EDTA-containing tube's. Before that, one drop of blood without Na2EDTA anticoagulant was used for making control blood film right after vein puncture. Each tubes contained different concentration of anticoagulant. The first tube contained Na2EDTA in standard concentration 2 mg/dl; the remaining tubes contained consecutively, 4 mg/dl, 6 mg/dl, and 8 mg/dl. Those samples were immediately examined using SYSMEX SE-9500 automatic analyzer for measuring erythrocytes hematological profile and were stained with Wright staining far morphological examination. These procedures were done before 20 minutes of vein puncture. There were significant decrease ofRBC count, HGB, HCT, and MCHC and also significant increase of MCV and RDW between different concentrations of excessive Na2EDTA anticoagulant. MCH did not have significant result. Morphological examination showed significant morphological changes in the form of echinocytes and appearance of ghost cells in the sample treated with excessive Na2EDTA anticoagulant concentration. In conclusion, there are differences in hematological profile and morphology of erythrocytes among blood specimen which are prepared with excessive Na2EDTA anticoagulant in different concentration, except for MCH. Excessive Na2EDTA

anticoagulant concentration will affect the blood specimen for peripheral blood examination of erythrocytes by interfering morphology and some of hematological parameters. (Med J Indones 2006; J 5:157-64)</i>