COMPARISON OF HEMATOCRIT/HEMOGLOBIN RATIOS IN SUBJECTS WITH ALPHA-THALASSEmia, WITH SUBJECTS HAVING CHRONIC KIDNEY DISEASE AND NORMAL SUBJECTS

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Abstract. The ratio of hematocrit (Hct) to hemoglobin (Hb) in the people with normal red blood cell (RBC) morphology is generally three to one. We studied Hct/Hb ratios among patients with α-thalassemias (Hb H, H-CS, AEBart, AEBart-CS, EFBart and EFBart-CS diseases) diagnosed by high performance liquid chromatography, and compared them with normal subjects and with patients having anemia due to chronic kidney disease (CKD). The Hct and Hb levels were derived by automated analyzer. The means±SD of the Hct/Hb ratios were 3.5±0.2 (range 3.3 - 4.1), 3.0±0.1 (range 2.9 - 3.2) and 3.0±0.1 (range 2.8 - 3.2) in the α-thalassemia, normal and CKD groups, respectively. The mean Hct/Hb ratio in subjects with α-thalassemia was higher than the mean in normal subjects and in those with CKD. The Hct/Hb ratios for each genotype of the α-thalassemia were not different from each other. The underlying mechanisms for the higher Hct/Hb ratio among those with α-thalassemia are theorized to be less density and/or more hydration of α-thalassemia RBCs, more entrapment of plasma in the spun RBC, the high percent of nucleated RBC and WBC interference. A ratio of 3.5±0.2 may be helpful in cases of moderate anemia when typing only shows Hb A and E, to consider investigation for α-thalassemia, or in cases of α-thalassemia with acute blood loss, if the Hct is less than 35%, in the decision to transfuse.

Keywords: hematocrit, hemoglobin, α-thalassemia, chronic kidney disease

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