INTRODUCTION: The stability of the erythrocyte membrane occurs in a critical region of fluidity, which depends on its composition and the composition and characteristics of the medium. MATERIAL AND METHODS: This study evaluated the associations and causal relationships between the stability of the erythrocyte membrane and hematologic and biochemical variables in a population of 24 obese women (36.46 ± 9.8 years) using blood samples collected before and at 14, 28, 42 and 56 days after bariatric surgery. The erythrocyte stability, determined with basis in the sigmoidal regression line of the light extinction by released hemoglobin as a function of ethanol concentration, was estimated by the ethanol concentration capable of promoting 50% lysis (D50), the variation in the chaotropic concentration necessary for the complete hemolysis (dXe) and by D50 x dXe. Data were evaluated by bivariate and multivariate analyses. RESULTS AND DISCUSSION: The validity of this type of analysis depends on the homogeneity of the population and on the variability of the studied parameters, conditions that can be filled by patients who undergo bariatric surgery by the technique of Roux-en-Y gastric bypass since they will suffer feeding restrictions that have great impact on their blood composition. The erythrocyte stability presented stronger correlations with the hematologic parameters. The combined variable of stability, D50 x dXe, was more sensitive to changes in blood variables. CONCLUSIONS: Pathway analysis revealed that an increase in hemoglobin leads to decreased stability of the cell, probably through a process mediated by an increase in mean corpuscular volume. Furthermore, an increase in the mean corpuscular hemoglobin (MCH) leads to an increase in erythrocyte membrane stability, probably because higher values of MCH are associated with smaller quantities of red blood cells and a larger contact area between the cell membrane and ethanol present in the medium.

Key words: membrane stability, erythrocyte, chaotropic action, bariatric surgery, feeding restriction
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