

Endogenous antioxidant markers, oligo- and macro-elements in hypertensive, pre-hypertensive and normotensive school - age children

Jesús Isaías Alfonso Rodríguez¹, Danay Heredia Ruiz¹, Douglas Fernández Caraballo¹, Marianela Ballesterero Hernández¹ y Carmen Patricia Alfonso González².

1 Universidad de Ciencias Médicas de Villa Clara

2 Hospital Universitario Celestino Hernández Robau. Miembro del Capítulo de Anatomía Patológica de Villa Clara

Abstract

Introduction: nowadays, hypertension is a health problem worldwide and our country is not excluded from this disease. In recent years, this situation has increased in childhood. It states that there is presence of reactive oxygen species in hypertension, as well as, oxidative damage and affectation of antioxidant defenses.

Objective: to evaluate the manifestation of oxidative stress markers through some of the components of the endogenous antioxidant system and oligo- and macro-elements in hypertensive, pre-hypertensive and normotensive school - age children.

Materials and Methods: 628 children aged 8-11 years constituted the universe. They were classified according to their blood pressure. Superoxide dismutase was determined by means of Marklund's method, catalase by Aebi's method and reduced glutathione by Sedlak's one. Determinations of zinc, copper, potassium and magnesium were made using flame atomic absorption spectrometry. The Mann-Whitney, Kruskal-Wallis and Student's Tests were used with a significance level of $p < 0.05$.

Results: superoxide dismutase and catalase activity decreased in the total group of hypertensive children while superoxide dismutase activity and zinc concentrations only decrease in pre-hypertensive children. Superoxide dismutase and catalase activity and magnesium concentrations decreased in female hypertensive and pre-hypertensive children; male hypertensive only had affectations in superoxide dismutase and magnesium concentrations. Hypertensive children aged 8 years showed a decrease in the activity of the studied enzymes and the concentration of reduced glutathione. Magnesium concentrations decreased in hypertensive children aged 9 years. **Conclusion:** affectations of the endogenous antioxidant system were found, as well as zinc and magnesium concentrations in hypertensive and pre-hypertensive children.

Keywords: antioxidant markers, hypertension, children.