NIRS: An Innovative Approach to the Diagnosis of Neonatal Seizures

Gasimov, Faik (School: Baku European Lyceum)

Problem: Infant mortality and early disability. Objective: To assess the informativeness of NIRS in the early diagnosis of neonatal seizures. Methods. The study involved 60 newborns with hypoxic-ischemic brain damage, who were divided into 2 groups: a group with 30 seizures and another with 30 non-seizures. 20 healthy newborns were included in the control group. The examination was performed using the INVOS OXIMETER using the NIRS method. Examinations were performed in newborns in the first 3-5 days of life, and neurological status was checked at the age of 6-9 months. Then the arithmetical mean and median of the infrared spectrographic results were found for each group. Results: In I group, regional saturation's arithmetical mean (M) made up 94% and median (Me) made up 95%. In II group these indicators were respectively 85.3% and 85%. In the control group, regional saturation met the accepted standards (M-68.2%, Me-70.5%). Children with regional saturation of 85-95% are at high risk for seizures. Children with infrared spectrographic scores of 75-85% should be evaluated for hypoxic-ischemic brain damages. Thus, in the future children born with asphyxia will be examined with INVOS OXIMETER. Based on the obtained data, it will be possible to determine the severity of brain damage and provide efficient medical care (erythropoietin, hypothermia). This will help to prevent neonatal death and early disability. NIRS allows the detection of metabolic disorders in the brain in a quick, and non-invasive way. It demonstrates the urgency of choosing the optimal method for the early diagnosis of seizures.

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