



## Serum and intraerythrocyte antioxidant enzymes and lipid peroxides in children with migraine

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### Abstract:

The oxidant-antioxidant balance disorders underlie a number of acute and chronic diseases of the central nervous system (CNS). It is believed that oxidative stress plays a role in the pathogenesis of migraine.

The study objective was to assess the processes of lipid peroxidation with malondialdehyde (MDA) as its major indicator and to determine the activities of antioxidant enzymes: superoxide dismutase (SOD), glutathione peroxidase (GSH-Px) and glutathione reductase (GSSG-R) in the serum and erythrocytes of patients at developmental age with migraine with and without aura.

The study group consisted of 34 patients at the age of 10–18 years (mean  $\pm$  standard deviation:  $14.04 \pm 2.29$  years), suffering from migraine. The control group included 38 patients, aged 4–17 years (mean age  $12.11 \pm 3.46$ ).

MDA concentration and activities of SOD, GSH-Px and GSSG-R were determined in serum and erythrocytes of all the patients. In the migraine group, the MDA levels in serum and erythrocytes were statistically significantly lower than in control subjects ( $p < 0.001$ ). In the migraine group, serum GSH-Px activity was significantly higher ( $p < 0.05$ ). The GSSG-R activity in the erythrocytes of migraine children was significantly higher compared to controls ( $p < 0.001$ ). SOD activity was decreased and GSH-Px was increased (non-significantly) in erythrocytes of migraineurs.

Our results confirm the disturbances of lipid peroxidation processes in migraine and suggest the activation of antioxidant mechanisms. Its important indicator seems to be the increase in the GSSG-R activity in the erythrocytes and the GSH-Px activity in serum between migraine attacks. Further studies are necessary.

### Key words:

migraine, headaches, antioxidant enzymes, lipid peroxides

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