

By measuring these two parameters characterizing the redox status of the organism, significant relation could be revealed between the nutrition and management and the antioxidant system of the geese. For a more detailed interpretation of this effect, further parameters related with main elements of the antioxidant system would need to be analysed. Such data could help to find adequate compounds as feed additives supporting the antioxidant system

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The effect of the fluid resuscitation method and the n-acetylcysteine supplementation on the oxidative stress response after severe burn injury

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The hypovolaemia, followed by burn injury, induces severe oxidative stress in the body. Our previous study has proven that intrathoracic blood volume index (ITBVI) is a better target parameter of fluid resuscitation, than hourly urine output (HUO). There are only few data in the literature regarding to the effectiveness of antioxidant therapy after burn injury. The aim of our study was to analyze the effect of the fluid resuscitation method and the n-acetylcysteine (NAC) supplementation on the oxidative stress response after severe burn injury.

Twenty-seven patients were involved to our study. In Group I (n=8) the fluid resuscitation was guided by the HUO, in Group II (n=8) by the ITBVI. In Group III (n=11) the ITBVI guided fluid replacement was supplemented with NAC administration during the study period. Venous blood samples were taken from patient on admission and on the next 5 consecutive days. We measured the blood-, and oxidative stress parameters (malondialdehyde (MDA), reduced glutathion (GSH), protein sulfhydryl (PSH) groups in plasma, the activities of superoxide dismutase (SOD), catalase (CAT) and myeloperoxidase (MPO) enzymes, and PMA induced free radical generating capacity (ROS). Blood samples from healthy volunteers (n=9) served as the control.

There was no significant difference between the groups regarding to age and burned body surface. There was a higher survival in the NAC treated group. White blood cell count normalized by the 3rd day in all groups, but the relative number of granulocytes was significantly ($p<0.05$) higher, the relative number of lymphocytes was significantly ($p<0.05$) lower in the HUO Group. The marked granulocytosis and lymphocytopenia were on the mend in the NAC Group. The MDA level was elevated ($p<0.05$) all along, the ROS from the third day ($p<0.05$) during the observation period compared to the Control Group. MDA in the plasma was lower, the ROS was higher in the NAC Group. The GSH and PSH level, as well as the SOD activity was significantly lower ($p<0.05$), the CAT activity was significantly higher ($p<0.05$) in the HUO and ITBVI Groups compared to the Control Group. There was no significant difference between the patient groups. NAC supplementation significantly increased the PSH levels and the GSH level normalized earlier. The NAC treatment had no effect on the SOD and CAT activity compared to the ITBVI Group.

The ITBVI guided fluid resuscitation has a beneficial effect on the prooxidant state of the body, but it has no effect on the prooxidant parameters. The adjuvant NAC treatment improved the survival of the patients, increased the endogenous, non-enzymatic antioxidant capacity, but didn't reduce the prooxidant parameters and the activation of the white blood cells.

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