

# BLOOD EXFUSION AS A METHOD OF HEMODILUTION THERAPY IN PATIENTS WITH RESPIRATORY FAILURE AND ERYTHROCYTOSIS

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## *Abstract*

Erythrocytosis, causing blood concentration (increase of hematocrit) is frequently observed in long-term hypoxemia patients. With an incline of blood viscosity and deterioration of lung microcirculation the rate of alveolar-capillary gas diffusion decreases and hypoxemia further progresses.

The *aim* was to evaluate the effect of metered-dose blood exfusion on hemoconcentration parameters and a grade of hypoxemia in patients with respiratory failure and erythrocytosis.

*Material and methods.* 14 patients (males — 9, females — 5; age — from 38 to 71 years) with different lung diseases, complicated by respiratory failure (mMRC index of dyspnea  $\geq 3$ ) and hypoxemic erythrocytosis (hemoglobin range from 170 to 201 g/l, hematocrit — from 51 to 62 %) were examined. Blood concentration, blood gases lung ventilation and diffusion were evaluated at Day 1 of the study. After this, blood exfusion was performed in amount of 250 ml of blood from cubital vein, followed by reinfusion of 250 ml of glucose-insulin-potassium solution. A repeated examination was performed on the next following blood exfusion day (Day 2) and in one week.

*Results.* A significant decrease in blood concentration indices (hematocrit and hemoglobin) was registered at Day 2. Mentioned trend was preserved until Day 8 of follow-up. An improvement of lung diffusion capacity was noted, while lung ventilation parameters remained unchanged. A significant decrease of hypoxemia grade was observed at Day 2. A positive trend of oxygen saturation was registered at Day 8 as well.

*Conclusion.* These findings is a rationale for metered-dose blood exfusion as a hemodilution method of treatment of chronic lung diseases patients, associated with respiratory failure and hypoxemic erythrocytosis.

**Key words:** respiratory failure, hypoxemic erythrocytosis, hemodilution therapy, blood exfusion.

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