

## **Abstract**

**Background:** Nitric oxide (NO) may be related to the pathogenesis of several morbidities in extremely preterm infants, including late-onset adrenal insufficiency. However, eosinophilia is observed under pathological conditions with adrenal insufficiency. Therefore, this study explored postnatal changes in NO levels and eosinophil counts in extremely preterm infants with and without morbidities.

**Methods:** Nineteen extremely preterm infants with a median gestational age of 27.0 weeks and median birth weight of 888 g were enrolled in this study. Serum levels of nitrogen oxides (NOx) and peripheral blood eosinophil counts were measured at birth and every 2 weeks thereafter. Morbidities of the study group were diagnosed using a single criterion.

**Results:** Serum NOx levels (mean  $\pm$  standard deviation) were  $22.5 \pm 14.9$   $\mu\text{mol/L}$ ,  $51.2 \pm 23.7$   $\mu\text{mol/L}$ ,  $42.4 \pm 15.2$   $\mu\text{mol/L}$ , and  $33.8 \pm 9.4$   $\mu\text{mol/L}$  at birth, and 2, 4, and 6 weeks of age, respectively. The serum NOx level at 2 weeks of age was significantly higher than that at birth and 6 weeks of age. Eosinophil counts, which increase with adrenal insufficiency, were measured simultaneously, were  $145 \pm 199$   $/\mu\text{L}$ ,  $613 \pm 625$   $/\mu\text{L}$ ,  $466 \pm 375$   $/\mu\text{L}$ , and  $292 \pm 228$   $/\mu\text{L}$  at birth, and 2, 4, and 6 weeks of age, respectively. These values showed that the eosinophil count was significantly higher at 2 weeks of age than at birth and 6 weeks of age. The serum NOx level of infants without chorioamnionitis was significantly increased at 4 weeks of age, and the eosinophil count of infants with necrotizing enterocolitis was significantly increased at 2 weeks of age. No correlation with the NOx level or eosinophil count was observed in infants with late-onset circulatory collapse.

**Conclusion:** Postnatal serum NOx levels and eosinophil counts were significantly correlated with each other and peaked at 2 weeks of age.