ERYTHROPOIETIN SERUM LEVELS, ANAEMIA, BLOODTRANSFUSIONS AND RETINOPATHY OF PREMATURITY IN PRETERM INFANTS

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Aim

This study evaluated the longitudinal relationship between serum Erythropoietin (EPO) levels and anaemia, blood transfusions, and retinopathy of prematurity (ROP) requiring treatment in very preterm infants.

Background

Preterm infants with anaemia are treated with recombinant human erythropoietin (rhEPO). It is debated whether rhEPO treatment is a risk factor for ROP or not.

Study subjects and methods

We studied 78 infants with gestational age (GA) < 28 weeks with a mean (SD) GA at birth of 25.4 (1.4) weeks and mean (SD) birth weight of 797 (223) grams, 28% (22/78) required ROP treatment.

- EPO: serum were analyzed at postnatal days 1, 7, 14, 28 and at postmenstrual age 32, 36 and 40 weeks.
- Haemoglobin: analyses of routine blood samples according to local guidelines and on clinical indications.
- Anaemia was defined as haemoglobin ≤ 110 g/L.
- The dates and volumes of blood transfusions were recorded.

Result 1: EPO levels at postnatal day 7 was higher

Mean EPO levels was higher at postnatal day 7 (14.2 mIU/mL vs 10.8 mIU/mL, $p=0.003$) in infants requiring treatment compared to in infants not requiring treatment for severe ROP.

Conclusions

Elevated serum EPO level was not a risk factor for ROP that required treatment, after adjusting for GA at birth anaemia.

Anaemia during first postnatal week was found to be an independent risk factor for ROP requiring treatment.

Result 2: Anaemia was more frequent in infants treated for ROP

During postnatal week 1, infants requiring ROP treatment more frequently developed anaemia (42.9% vs 8.0%, $p=0.003$).

Result 3: EPO levels associated with anaemia but not ROP

When comparing infants without or with anaemia; EPO levels at postnatal day 7 were not significantly different between infants that required ROP treatment or not; no anaemia (mean 8.5 vs 10.4 mIU/mL, $p=0.14$) and with anaemia (mean 21.6 vs 18.1 mIU/mL, $p=0.82$).

- Blood transfusion was not found to be a significant risk factor for ROP requiring treatment when adjusting for GA at birth.
- In multivariable analyses adjusted for GA at birth, anaemia during postnatal week 1 (OR 6.94, 95% CI 1.05 - 45.75, $p=0.044$) remained as risk factors for ROP requiring treatment, but elevated EPO level postnatal day 7 was no longer significant.

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