932

A RETROSPECTIVE STUDY OF PACKED RED BLOOD CELL TRANSFUSION IN NECROTISING ENTEROCOLITIS

B. Thyagarajan, A. Shirsalkar

Neonatal Intensive Care Unit, Queens Hospital, Romford, UK

Aims: We evaluated the role of packed red blood cell (PRBC) transfusion on the causation of necrotising enterocolitis (NEC) in neonates.

Methods: In a retrospective observational study (April 08-March 09), we compared neonates who developed NEC after PRBC transfusion (transfusion group) to neonates who developed NEC without blood transfusion (controls).

Results: Over the one year period, 20 neonates developed NEC (2/1000 live births). Gestation less than 30 weeks (75%) and birth weight less than 1500 grams (93.3%) were the most common risk factors. Nine (55.6%) babies had received a recent PRBC transfusion. The gestational age of the transfusion group (27.5 weeks) was comparable to the control group (26.89 weeks). NEC developed at a mean post natal age of 42 days in the transfusion group against 19.2 days in controls. 50% of babies in the transfusion group were Black African ethnicity compared to 14.3% in the control group. Perforating NEC developed in 22.2% of babies in the transfusion group (42.8% in the control group). An abnormal antenatal ultrasound scan (23.1%), maternal smoking (25%), antepartum haemorrhage (21.4%), chorioamnionitis (33.3%) and emergency caesarean section delivery (40%) were moderately associated with NEC, but were not significantly different between the groups. There was a bimodal pattern of onset. Early symptoms developed within 72 hours (mean 2.6 days) of the packed red cell transfusion in five (55.6%) babies and late symptoms developed at mean 10.6 days.

Conclusions: There is a close association between blood transfusion and NEC. Black African babies and older babies are at increased risk.

933

NITRIC OXIDE AND LIPID PEROXIDATION ARE INCREASED AND ASSOCIATED WITH DECREASED ANTIOXIDANT ENZYME ACTIVITIES IN CHILDREN WITH NOSOCOMIAL PNEUMONIA

D. Dmytriiev, O. Katilov, K. Dmytriieva

Vinnitsa National Medical University, Vinnitsa, Ukraine

Background: Nitric oxide (NO), hydroxyl radical (OH*), superoxide anion (O₂⁻) and hydrogen peroxide (H₂O₂) are free-radicals released in oxidative stress. Superoxide dismutase (SOD), glutathione peroxidase (GSHPx) and catalase (CAT) are antioxidant enzymes, mediating defense against oxidative stress. Excess NO and/or defective antioxidants cause lipid peroxidation, cellular dysfunction and death. Nosocomial pneumonia (NP) the leading cause of death in children.

Methods: NO, lipid peroxidation and the catalytic activity of SOD, GSHPx and CAT were measured in a group of 12 patients with nosocomial pneumonia (5 boys, 7 girls; 8.02 +/- 3.70 years) and compared with age- and sex-matched healthy control subjects without NP (7 boys, 7 girls; 8.42 +/- 3.40 days).

Results: All patients with NP had significantly ($p < 0.001$) higher plasma NO levels over control subjects (40.18 +/- 8.81 vs. 20.22 +/- 3.19 micromol/l). On the other hand, SOD and GSHPx activities were significantly lower in both RBCs and plasma of patients with NP than in control subjects (RBCs-SOD, 3400.00 +/- 400.22 vs. 5302.10 +/- 403.10 U/g Hb, $p < 0.001$; plasma-SOD, 500.01 +/- 50.00 vs. 710.10 +/- 40.10 U/g protein, $p < 0.001$; RBCs-GSHPx, 600.10 +/- 40.02 vs. 702.10 +/- 40.12 U/g Hb, $p < 0.001$; plasma-GSHPx, 90.20 +/- 10.10 vs. 138.80 +/- 9.06 U/g protein, $p < 0.001$). In addition, plasma NO levels were negatively correlated with SOD and GSHPx activities.

Conclusions: This study demonstrated for the first time that NO, the most abundant free-radical in the body, might be implicated in the pathophysiology of NP.