5

EFFECT OF VITAMIN A ON PREVENTION OF RETINOPATHY OF PREMATURITY(ROP)

M AHMADPOUR KACHO[1], Y ZAHEDPASHA[1], A AHMADZADEH AMIRI[2], M HAJIAHMADI[1], M FIROOZI[1] [1]AMIRKOLA CHILDREN HOSPITAL, BABOL UNIVERSITY OF MEDICAL SCIENCES , [2]AMIRKOLA CHILDREN HOSPITAL, BABOL UNIVERSITY OF MEDICAL SCIENCES, [3]OPHTALMOLOGY DEPARTMENT, MAZANDRAN UNIVERSITY OF MEDICAL SCIENCES, [4]DEPATMENT OF SOCIAL MEDICINE, BABOL UNIVERSITY OF MEDICAL SCIENCES, [5]AMIRKOLA CHILDREN HOSPITAL, BABOL UNIVERSITY OF MEDICAL SCIENCES (IRAN)

BACKGROUND: Retinopathy of prematurity (ROP) is a retinal vascular disorder frequently seen in premature infants. Several agents have been used for prevention of ROP in high risk premature neonates.

OBJECTIVE: To evaluate the efficacy of prophylactic high dose vitamin A on prevention of retinopathy of prematurity in preterm infants addmited to NICU or newborn services.

MATERIAL AND METHODS: Sixthy preterm infants randomly assigned to treatment group (Vitamin A 1500 IU / intramuscular three time /week for four weeks) or no treatment(control) group . Inclusion criterias were all infants with a gestational age less than or equal to 29 week or a birthweight less than or equal to 1500 grams and also all newborn with a gestational age 29–34 week or a birthweight 1500–2000 with an unstable clinical course.All of these infants examined by a retinologist at 4 weeks after birth or at 31–33 week of postconceptional age.The retinologist was unaware about the vitamin A supplementation and group assignment .The following examination was repeated based on the findings of the first examination.All infants wiht high grade ROP reffered for laser or cryotherapy .Data analysed by SPSS software and a p-value less than 0.05 considered to be significant.

RESULTS: Ten(33%)infants in vitamin A group and eighteen(60%) infant in control group developed ROP but this difference was not significant (Pvalue 0.069). High grade ROP and requirement for treatment for ROP including laser or crayotherapy has not got any significant differences between tow groups(Pvalue 1.000)

CONCLUSION: Prophylactic high dose vitamin A in high risk neonate could not reduce the incidence and seviority of ROP.

6

IMPACT OF ALLERGENS EXPOSURE ON BRONCHIAL REACTIVITY AND INFLAMMATION IN ATOPIC CHILDREN WITH ASTHMA

R. AMELIO[1], A. CAPASSO[1], C. CAPRISTO[1], N. FUSCO[1], M. MANZO[1], N. MAIELLO[1] [1]II UNIVERSITÀ DEGLI STUDI DI NAPOLI (ITALY)

Background: Allergens exposure is a cause of asthma exacerbation for atopic asthmatic patients. A rise of allergens concentration (spring, autumn) induces increased bronchial inflammation and reactivity and reduces tolerance to physical exercise. The aim of our study was to value bronchial reactivity and inflammation in children with mild persistent asthma in spring and in winter (season with a lower allergens presence).

Methods: 34 asthmatic children aged 8 to 14 years (18 M, 16 F) were selected and divided in two groups: Group I - patients with positive skin prick test to House Dust Mites (HDM); Group II - patients with positive skin prick test to pollen (Grass, Olea). All patients effected before the study prick test and RAST to common aero-allergens: we considered positive a weal diameter of 3 mm, with equivalent RAST class-2. Subjects selected underwent spirometry (FEV1 value >80% of predicted), FENO (nitric oxide in exhaled air), methacoline challenge test, and standardized treadmill exercise challenge in spring and in winter. Every test was effected in different days. None had take anti asthmatic therapy for at least two weeks and ß2 long acting drug for 48 hours before the study. The results obtained were statistically analised by couples (t Student's test).

Results: There was a great difference about bronchial reactivity and inflammation in two considered season. During winter time, FENO values were significantly reduced in both groups compared to spring time ($p<0,005$); however, a greater decrease of bronchial reactivity (to methacoline and physical exercise) in patients with HDM allergy ($p<0,005$) were occurred compared to pollen group ($p<0,1$).

Conclusions: Allergens exposure is an important condition to modify bronchial reactivity and inflammation in atopic children with mild persistent asthma: these preliminary data could also demonstrate that perennial allergens induce greater bronchial inflammation than seasonal allergens.

7

COMBINED TREATMENT WITH CUROSURFÁ AND BECLOMETHASONE IN AN ELBWI AFFECTED BY SEVERE CHRONIC LUNG DISEASE

G. ANCORA[1], F. SANDRI[1], L. MARVULLI[1], S. SOFFRITTI[1], G. FALDELLA[1] [1]INSTITUTE OF NEONATOLOGY, UNIVERSITY OF BOLOGNA (ITALY)

Background. Glucocorticoids have been used successfully in the amelioration of chronic lung disease (CLD). Unfortunately, higher risk of adverse neurological outcome has been reported in newborns treated with systemic steroids. The ideal treatment of CLD would be a topical steroid with a low absorption given directly to the alveoli so improving clinical efficacy and decreasing side effects. Inhaled steroids have been used at this purpose but drug delivery was extremely variable ranging from 0.04 to 53.2%. Exogenous surfactant has been proposed as a possible vehicle for drugs such as antibiotics. Recently, it has been shown to be a good vehicle for steroids too, while maintaining its surface properties. We report a case of extremely severe respiratory insufficiency in a newborn affected by CLD in which a combined treatment with Curosurf® and beclomethasone was used.

Case report. Male newborn, outborn, 495 g BW, GA 24 weeks born by cesarean section due to abruptio placentae. No antenatal steroids were given. He was intubated at birth and mechanically ventilated (MV). A prophylactic dose of Curosurf® was given. A patent ductus arteriosus was closed by i.v. ibuprofen. No others cardiac defects were present. Because of respiratory deterioration on the 2nd week of life (requirement of supplemental oxygen increased to 80% in MV) he received dexamethasone at tapering doses for 10 days. Microbiological cultures remained sterile. At the end of treatment no relevant improvement was seen, requirement for supplemental oxygen was 0.9–1 in MV. Chest X-ray showed severe CLD with a cystic pattern. Diverse treatment strategies such as low dose nitric oxide, Curosurf® instillation, bronchoalveolar lavage, chest physiotherapy were used without effect. On the 44th day of life due to respiratory deterioration and intractable hypoxemia (tcSatO2 75–85% with FiO2 1 in SIPPV, PIP 25 cmH2O, paO2 31.7 mmHg) parental consent was obtained and the newborn was treated with a mixture of Curosurf® (80 mg/kg) and beclomethasone (400 mcg/kg). Few hours after treatment the tcSatO2 was >90%, paO2 69 mmHg with FiO2 0.85. Treatment was continued for 6 days; the newborn remained stable, with a normal oxygenation in SIPPV (FiO2 0.85–1). There were no adverse effects during treatment. Systemic betamethasone was continued at tapering doses for others 10 days. He was extubated on the 70th day of life on nCPAP and later on reintubated several times to be broncho-aspirated. He was discharged at 3 months of age without supplemental oxygen. Cranial US shows no anomalies.

Conclusions. Surfactant may be a useful vehicle for steroid administration in the prevention and treatment of CLD. This treatment has not shown short term adverse effects and has permitted survival in our extremely ill patient. Further studies are needed in order to evaluate the usefulness and safety of this approach.

8

EFFECT OF DEXAMETHASONE ON NEURONAL NUCLEAR CALCIUM INFLUX IN THE DEVELOPING FETAL GUINEA PIG

E.K. ANDAY[1], S.J. HANDLEY[1], Q.M. ASHRAF[1], O.P. MISHRA[1] [1]DREXEL UNIVERSITY COLLEGE OF MEDICINE , [2]DREXEL UNIVERSITY COLLEGE OF MEDICINE, [3]DREXEL UNIVERSITY COLLEGE OF MEDICINE, [4]DREXEL UNIVERSITY COLLEGE OF MEDICINE (USA)

Background: Endogenous steroids are known to be essential for normal brain development. Pre-and postnatal glucocorticoids however, are associated with increased risk for adverse neurological outcome through mechanisms that are not clear, but may lead to alterations of cell structure and function.

Objective: The present study tests the hypothesis that prenatal dexamethasone given at critical points in gestation will result in increased neuronal nuclear Ca++-influx, leading to activation of caspase -3 and 9 which triggers the apoptotic pathway and that this mechanism is dependent on gestational age.

Design/Methods: Two groups of fetal guinea pigs were studied, at 35 (n=8) and 45 (n=8) days gestation. Saline (Sa), 0.5ml/dose, or dexamethasone (Dx), 0.4mg/kg/dose was injected i.p. into the mother daily x 2 days. Fetal guinea pig brains were harvested at 72 hours post Sa or Dx injection. Nuclei were isolated and ATP-dependent Ca++-influx was determined. Cytosolic caspase-3, and -9 activity was determined. Caspase activity was determined spectrofluorometrically and expressed as nmoles/mg protein/hr.

Results: Ca++-influx at 35d was 6.42+/-2.0 (Sa) and 7.42+/-3.4 (Dx), an increase of 16%; at 45d was 5.63+/-2.3 (Sa) and 10.5+/-2.1 (Dx), an increase of 80%. Caspase-3 activity at 35d was 13.3 +/-1.3 (Sa) and 13.9+/-1.9 (Dx); at 45d was 12.8+/-0.8 (Sa) and 9.53+/-1.01 (Dx), a decrease of 25%. Caspase-9 activity at 35d was 3.52+/-0.3 (Sa) and 3.39+/-0.2 (Dx); at 45d was 3.46+/-0.2 (Sa) and 2.49+/-0.2 (Dx), a decrease of 28%. The data show that antenatal Dexamethasone resulted in increased Ca++-influx in neuronal nuclei of fetal guinea pigs without altering caspase-3 or -9 activity.

Conclusions: We conclude that Dexamethasone activates neuronal nuclear membrane mechanisms that initiate the apoptotic cascade and increase with gestational age. We speculate that Dexamethasone modifies nuclear membrane mechanisms of Ca++ influx and leads to cellular injury through an apoptotic pathway independent of caspase expression.

9

BARORECEPTOR REFLEX FUNCTION IN NEWBORNS: THE EFFECT OF POSTCONCEPTIONAL AGE

P ANDRIESSEN[1], S BAMBANG OETOMO[1], C PETERS[2], G OEI[3,4], C BLANCO[5] [1]MÁXIMA MEDICAL CENTER, NEONATAL INTENSIVE CARE UNIT , [2]MÁXIMA MEDICAL CENTER, DEPARTMENT OF CLINICAL PHYSICS, [3]MÁXIMA MEDICAL CENTER, DEPARTMENT OF GYNAECOLOGY & OBSTETRICS, [4]EINDHOVEN UNIVERSITY OF TECHNOLOGY, FACULTY OF BIOMEDICAL ENGINEERING, [5]ACADEMIC HOSPITAL MAASTRICHT, DEPARTMENT OF PEDIATRICS, DIVISION OF NEONATOLOGY (THE NETHERLANDS)

Introduction: The baroreceptor reflex (BR) is the most prominent short-term compensator during blood pressure (BP) challenges.

Aim: To study the effect of postconceptional age (PCA, gestational age + postnatal age) on baroreceptor reflex sensitivity (BRS) in 32 infants (PCA, range: 28–42 wk) during quiet sleep state in the first days after birth.

Method: Cross-spectral power analysis between systolic blood pressure (SBP) and R-R fluctuations, using fast Fourier transform, was estimated in a low frequency (LF, 0.04–0.15 Hz), high frequency (HF, individualized between p-10 and p-90 value of respiratory frequency), and total frequency band (0.04–1.5 Hz). BRS was estimated using transfer function analysis (transfer gain or BRS, ms/mmHg; phase, s) between LF fluctuations of SBP and R-R.

Results: With PCA the mean R-R interval and LF-, HF-, and total spectral power of R-R interval series increased significantly. PCA significantly correlated with LF transfer gain (BRS = 1.1 x PCA - 30 ms/mmHg, $r = 0.80$, $p < 0.01$). Median BRS was 4.6 (IQR, 3.1–5.4), 7.5 (IQR, 5.2–10.1) and 15.0 (IQR, 11.8–19.7) ms/mmHg for infants with a PCA between 28–32 wk (n=16), 32–37 wk (n=10), and 37–42 wk (n=6), respectively. For LF transfer phase no differences between PCA groups were found: SBP fluctuations lead R-R interval changes by approximately 3 s. BRS correlated significantly with LF-, HF-, and total spectral power values of the R-R interval series. By contrast, BRS did not show a significant correlation with the spectral values of SBP series.

Conclusion: This study demonstrates that the capability of the BR to buffer spontaneous occurring BP fluctuations by R-R interval changes is limited in very preterm infants, but increases with PCA. An immature BR function may contribute to conditions that predispose to cerebral hemorrhagia/ischemia in the preterm infant. BR maturation with gestation seems to be an effect of progressive parasympathetic activity.

10

EPIDEMIOLOGY OF PYRIDOXINE-DEPENDENT SEIZURES IN THE NETHERLANDS

J BEEN[1], V BOK[2], P ANDRIESSEN[2], W RENIER[3] [1]ACADEMIC HOSPITAL MAASTRICHT, DEPARTMENT OF PEDIATRICS , [2]MÁXIMA MEDICAL CENTER, DEPARTMENT OF PEDIATRICS, [3]RADBOUD UNIVERSITY NIJMEGEN MEDICAL CENTER, DEPARTMENT OF CHILD NEUROLOGY (THE NETHERLANDS)

Background: Pyridoxine-dependent epilepsy is a rare cause of seizures in childhood and epidemiologic data on pyridoxine dependency are scarce. Classically, the diagnosis is definitely established when convulsions recur after withdrawal of pyridoxine and cease again after a second trial of pyridoxine (Baxter P. Pyridoxine-dependent and pyridoxine-responsive seizures. Dev Med Child Neurol 2001:416–20).

Objectives: To study the epidemiology of pyridoxine-dependent epilepsy in The Netherlands, and to determine whether the diagnosis is based upon the appropriate criteria.

Methods: Nationwide all university hospitals (n=10) and departments of paediatric or neonatal neurology (n=17) were asked to report known cases of pyridoxine-dependent seizures. Birth incidences were calculated using national data on life births from 1991 to 2003. The criteria of definite, probable, and possible cases of pyridoxine-dependent seizures were applied as published by Baxter (Baxter P. Epidemiology of pyridoxine dependent and pyridoxine responsive seizures in the UK. Arch Dis Child 1999:431–3).

Results: Response was received from all 10 university hospitals and 94% of paediatric or neonatal neurology departments. Thirteen patients were reported. Five definite (38%), two probable (15%), and four possible cases (31%) were identified. Two cases (15%) did not meet criteria for either of these groups. The birth incidence was 1:396 000 for definite and probable cases and 1:252 000 when possible cases are included.

Conclusions: Thus far, epidemiologic data on pyridoxine-dependent seizures were only available from the UK and Ireland. A higher incidence is found in The Netherlands, in accordance to earlier suggestions of a regional difference. The study shows that the diagnosis is often made without performance of a formal trial of withdrawal. We want to emphasize the importance of confirming the diagnosis, concerning the consequences as for individual prognosis, the potential side effects of prolonged pyridoxine substitution, and the possibility of treating the mother in case of future pregnancies.