370

IMPROVED NUTRIENT INTAKE AND POSTNATAL WEIGHT GAIN IN PRETERM INFANTS AFTER ESTABLISHMENT OF A NEONATAL NUTRITION SUPPORT TEAM.

P TAMMINGA[1], J.H. KOK[1], A.A.M.W. VAN KEMPEN[1] [1]ACADEMIC MEDICAL CENTER, DEPT.OF NEONATOLOGY, (THE NETHERLANDS)

Background: Adequate nutrient intake is essential to prevent postnatal growth retardation in preterm infants. In January 2002 a neonatal nutrition support team (NNST) was introduced in our Neonatal Intensive Care in order to increase the awareness of the importance of optimum nutrition as part of the overall patient treatment. The NNST focused on optimization of energy and protein intake and postnatal growth. We hypothesize that the establishment of a NNST improves nutrient intake and postnatal weight gain in preterm infants.

Aim: To evaluate: 1. the computerized energy and protein prescription; 2. the effect on postnatal growth in preterm infants, before (<2002) and after (>2002) the establishment of a NNST.

Study Design: Nutrient prescription and body weight were recorded using a computerized prescription system (PDMS) for all newborn infants admitted between July 1999 and December 2004. PDMS provides a quick and complete overview of the amount of fluid, nutrients and medication prescribed, and records these data in a database. Data from preterm infants <32 weeks gestational age, admitted within 72 hours after birth and staying >3 days, were included in the analysis (n=871).

Results: Gestational age and birth weight were comparable: <2002: 29.3 ± 1.7 weeks and 1206 ± 326 g; >2002: 29.4 ± 1.7 weeks and 1226 ± 352 g. Energy and protein prescriptions increased significantly over the years, as did percent weight gain from birth weight in the first 4 postnatal weeks (P<0.001). Weight gain expressed as days to regain birth weight was better in the group >2002: 11.3 ± 4.5 vs. 12.9 ± 4.9 days in the group <2002 (p<0.001).

Conclusions: The establishment of a NNST in our Neonatal Intensive Care resulted in increased energy and protein prescription, and improved postnatal weight gain in preterm infants.

371

MOLECULAR AND BIOINFORMATIC DETECTION OF BACTERIAL INFECTION IN PRETERM DELIVERY

S TAN[1], R CAHILL[1], G DOUGAN[1], P O'GAORA[1], D PICKARD[1], N KENNEA[1], M SULLIVAN[1], R FELDMAN[1], A D EDWARDS[1] [1]IMPERIAL COLLEGE (UK)

Background: A large number of bacterial species have been identified in fetal membranes after preterm labour associated with intrauterine infection by microbiological culture. In this study we have investigated a molecular and bioinformatic approach to organism identification which surmounts the need for specific and diverse microbiological culture conditions required by conventional methods.

Methods: Samples of fetal membranes were taken from 37 preterm infants, and 6 normal term controls delivered by Caesarean section, in which bacteria had been detected by in situ hybridisation of 16S ribosomal RNA using a generic probe. Degenerate primers were designed to amplify bacterial 16S ribosomal DNA by polymerase chain reaction and used to amplify bacterial DNA from human fetal membranes. Amplicons were cloned, sequenced and bacteria identified bioinformatically by comparison of sequences with known bacterial DNA genomes. In situ hybridisation using an organism specific probe was then used to confirm the presence of the commonest identified organism in tissue samples.

Results: Bacterial DNA amplified from 15/43 samples, all from preterm deliveries, and the bioinformatic approach identified organisms in all cases. Multiple bacteria were identified including Mycoplasma hominis, Pasturella multocida, Pseudomonas PH1, Eschericia coli, Prevotella bivia, but not Lactobacillus or other vaginal commensals, arguing against contamination by vaginal organisms. The commonest organism Fusobacterium nucleatum was found in 9/15 (60%) of samples. 10 of the 12 samples obtained after prolonged membrane rupture were positive for bacterial DNA, and 7 of these (70%) contained DNA from Fusobacterium nucleatum. PCR positive tissues were re-probed with Fusobacterium-specific antisense oligonucleotide, and Fusobacteria were visualised in PCR positive fetal membranes.

Conclusions: Bacteria from fetal membranes may be reliably identified by molecular and bioinformatic methods. Further work is warranted to investigate the apparent linkage between Fusobacterium nucleatum, fetal membrane rupture and preterm delivery.

372

NEONATAL OUTCOME AFTER PREGNANCY COMPLICATED BY THICK HETEROGENEOUS (JELLYLIKE) PLACENTA (JLP)

FM TANDOI[1], L RAIO[4], M AGOSTI[1], F GHEZZI[3], A MALEK[4], M NELLE[2] [1]DEPARTMENTS OF NEONATOLOGY (ITALY), [2]DEPARTMENTS OF NEONATOLOGY (SWITZERLAND), [3]DEPARTMENTS OF OBSTETRICS AND GYNECOLOGY (ITALY), [4]DEPARTMENTS OF OBSTETRICS AND GYNECOLOGY (SWITZERLAND)

Background: The sonographic feature of thick heterogeneous placenta is strongly associated with an adverse pregnancy outcome and often with perinatal death. The aim of this study is to describe the short term outcome of infants who survived to this condition.

Methods: A thick heterogeneous (jellylike) placenta was defined, at prenatal ultrasound, as a thick placenta with a patchy decrease of echogenicity, which quivered like jelly to sharp abdominal pressure. Consecutive newborns with a prenatal diagnosis of thick heterogeneous placenta (cases) were matched for gestational age to healthy neonate with a normal placenta (controls). The short term outcome of this neonates was compared with the normal featured placenta infants. Student t-test and Mann-Whitney test were used for statistical purposes.

Results: Seven cases were compared with 7 controls. Weight, length and head circumference at birth are significantly lower in cases. The significant difference between the two groups was evident for weight, length, and head circumference at birth. The comparison of clinical characteristics between the two groups is more significant on the respiratory side in terms the needs of respiratory support as days under N-CPAP (p< 0.05) and incidence of PPHN. No significance seems to be present in the comparison of the two groups for the other characteristics. The proportion of newborn who had at least one adverse event was higher in cases (5/7) than in controls (2/7).

Conclusions: Thick heterogeneous (jellylike) placenta affect growth during pregnancy; this effect is significantly present at birth. About lungs maturation and development, the result of this analysis shows that the offspring of JLP mothers could develop some respiratory conditions that lead to a respiratory insufficiency and longer respiratory support. Because of the small number of cases, further investigations and a big cohort of these infants are necessary to confirm these results.

373

DECREASED INCIDENCE OF RETINOPATHY OF PREMATURITY (ROP) OVER THE LAST DECADE IN THE UTRECHT AREA OF THE NETHERLANDS.

JUM TERMOTE[1], A HOOGERWERF[1], M RAMADHANI[2], MJ VAN SCHOONEVELD[3], NE SCHALIJ-DELFOS[4] [1]DEPARTMENT OF NEONATOLOGY, WILHELMINA CHILDREN'S HOSPITAL / UNIVERSITY MEDICAL CENTRE, , [2]JULIUS CENTRE FOR HEALTH SCIENCES AND PRIMARY CARE, UNIVERSITY MEDICAL CENTRE,, [3]DEPARTMENT OF OPHTHALMOLOGY, UNIVERSITY MEDICAL CENTRE,, [4]DEPARTMENT OF OPHTHALMOLOGY, LEIDEN UNIVERSITY MEDICAL CENTRE (THE NETHERLANDS)

Background/aim: To retrospectively analyse incidence and risk factors of ROP in two 3-year periods, a decade apart in a NICU of a tertiary perinatal centre in the Utrecht area, The Netherlands.

Methods: Data of 450 infants with a birth weight (BW) <1500 g and/or a gestational age (GA) < 32 weeks admitted to our NICU between 2001–2003 (second period) were compared to those of 343 infants admitted between 1991–1993 (first period). Incidence and severity of ROP were analysed for both periods as well as risk factors for ROP. Statistics: Chi-square, Fisher exact and logistic regression.

Results: Survival rate was increased in the second period compared to the first period (86.9% vs. 92.2%, p=0.019). Incidence of ROP decreased significantly (39.9% in 1991–1993 vs. 24.4% in 2001–2003, p<0.001), together with the incidence of severe ROP (stage > 2) (3.8% in 1991–1993 vs. 1.3% in 2001–2003, p=0.025). Percentage of infants treated remained the same (0.9% in 2001–2003 vs. 0.6% in 1991–1993, p=0.117). In infants with a BW <1000 g the incidence of ROP decreased significantly (65.5% in 1991–1993 vs. 50.4% in 2001–2003, p=0.014), the incidence of severe ROP remained the same (8.4% in 1991–1993 vs. 4.3% in 2001–2003, p=0.175). For infants with a BW >=1000 g the incidence of ROP decreased significantly (26.3% in 1991–1993 vs. 12.6% in 2001–2003, p<0.001), that of severe ROP tended to decrease (1.3% in 1991–1993 vs. 0.0% in 2001–2003, p=0.073). GA, BW, duration of artificial ventilation and postnatal steroids were independent risk factors for ROP.

Conclusion: In the Utrecht area the incidence of ROP and severe ROP has significantly decreased over the last decade. However, in infants with a BW <1000g the incidence of severe ROP remained unchanged. GA, BW, duration of artificial ventilation and postnatal steroids were significant risk factors for ROP.

374

PROTEOMICS ANALYSIS OF HUMAN MILK FAT GLOBULE MEMBRANE PROTEINS

E BERTINO[1], A COSCIA[1], T TESTA[1], L BONI[1], D MAIORCA[1], L DILEO[1], G GIUFFRIDA[2], D FORTUNATO[2], A CONTI[2], C FABRIS[1] [1]CATTEDRA DI NEONATOLOGIA, DIP.TO SCIENZE PEDIATRICHE, UNIVERSITÀ DI TORINO , [2]CNR-ISPA (ITALY)

BACKGROUND: in the past few years, the main role of human milk in infant nutrition has been progressively recognised not only for nutritional but also for biological aspects. Human milk fat globule membrane protein (HMFGMP) composition is still largely unknown, although accounting for 2–4% of total milk proteins, and contains several important biologically active components. HMFGMPs have been so far poorly studied because of their high hydrophobicity which limits their solubilisation.

AIM: this work aimed to update the structural proteome of human MFGMPs and to create an annotated 2-DE database available online.

METHODS: human milk from healthy mothers was collected from day 0 to 4 after delivery and pooled. After centrifugation of the specimens, MFGMPs were solubilized and extracted with a double extraction procedure. They were subsequently isolated by two-domensional electrophoresis and investigated by matrix-assisted laser desorption/ionisation-time of flight mass spectrometry (MALDI-ToF). Identification was performed using three software packages available on the web (Swiss-prot, PeptIdent, MS-Fit and Profound).

RESULTS AND DISCUSSION: in this work we have updated the map of the human MFGMPs described in our previous studies, through the identification of 107 proteins among the over 300 spots isolated by 2-DE. The annotated 2-DE map we have elaborated is now available online on http://www.csaapz.to.cnr.it/proteoma/2DE. There is increasing evidence of biological functions of MFGMPs: most of these proteins result to have an immunological role (anti-infectious and protective against inflammatory processes) and contribute to the defence mechanisms of the newborn, as well as to the development of the gastroenteral system of infants.

CONCLUSIONS: bovine MFGMPs are usually lost during the technological treatments of cow's milk for the preparation of formulated milks for feeding term and preterm infants. The results of this paper on the identification of major MFGMPs will contribute to improve the composition of cow's milk derived infant formulas.

375

USEFULNESS OF PRENATAL GROWTH VELOCITY CHARTS TO DETECT SMALL FOR GESTATIONAL AGE FETUSES.

V. CIRIMINNA[1], E. BERTINO[2], P. GAGLIOTI[1], T. TESTA[2], C. FABRIS[2], T. TODROS[1] [1]UNITÀ DI MEDICINA MATERNO-FETALE, UNIVERSITÀ DI TORINO , [2]CATTEDRA DI NEONATOLOGIA, UNIVERSITÀ DI TORINO (ITALY)

Objective: to compare the use of velocity charts and distance charts in screening small for gestational age fetuses (SGA).

Methods: We studied 78 SGA and 62 appropriate for gestational age (AGA) fetuses We defined AGA as birth weigth (BW) between 10 -90 centiles and SGA as BW < 10 centile for gestational age according to neonatal Italian standards (1). Each fetus had at least two ultrasound scanning of Head Circumference (HC), Femur Lenght (FL) and Abdominal Circumference (AC) measured at least six weeks apart; growth velocity was calculated as the difference between two measurements divided by the time interval in weeks. The prenatal diagnosis of SGA was made when the value of each biometric variable or its growth velocity were < 10 centile of the distance charts (2) or the velocity charts respectively (3). Sensitivity, specificity, positive (PPV) and negative (NPV) predictive values were calculated for each type of chart.

Results: There was no difference in the accuracy of the test, when distance or velocity charts were used for HC. For AC the sensitivity was significantly higher when velocity charts were used (sensitivity:62%; 95% IC: 0,51–0,73) compared to distance charts (sensitivity:29%; 95% CI:0,2–0,41). The sensitivity was also significantly higher for FL: 61,5%; 95% CI: 0,49–0,72 for velocity charts and 33%; 95% CI: 0,23–0,45 for distance charts. No difference was found for specificity, PPV and NPV.

Conclusion:Our results suggest that the use of velocity charts, instead of the widely used distance charts, could improve the sensitivity of screening SGA, without changing the specificity. (1) Parazzini F, et al. Ann Ost Gin Med Perin 1991; 112: 203–246 (2) Di Battista E, et al. Acta Obstet Gynecol Scand 2000; 79: 165–173 (3) Bertino E, et al. Archives of disease in Childhood 1996; 74: F10-F15