Results This meta-analysis includes 18 studies encompassing data on 13.755 very preterm/VLBW infants. Very preterm/VLBW infants with perinatal infections have poorer mental (–0.25 SD, $p<0.001$) and motor development (–0.37 SD, $p<0.001$) compared to very preterm/VLBW infants without infections. Mental development is most impaired by necrotizing enterocolitis (NEC, –0.40 SD $p<0.001$) and meningitis (–0.37 SD $p<0.001$). Motor development is most impaired by NEC (–0.66 SD $p<0.001$). Chorioamnionitis did not affect mental or motor development (–0.05 SD, $p=0.37$ and 0.19 SD, $p=0.082$).

Conclusions Postnatal infections have detrimental effects on mental and motor development in very preterm/VLBW infants. This effect adds up to the well-known detrimental effect of prematurity and highlights the importance of infection prevention in these vulnerable infants.

411 COMPARISON OF REGIONAL CEREBRAL BLOOD FLOW DISTRIBUTION AFTER AEROSOLIZED VERSUS INSTILLED SURFACTANT IN PRETERM LAMBS

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Background Rapid Intratracheal instillation of surfactant (SF) in preterm neonates with respiratory distress syndrome (RDS) has been associated with cerebral haemodynamic disturbances. Aerosolized surfactant might potentially avoid these disturbances through a gradual improvement of lung function.

Objetive To compare carotid blood flow (CBF) and regional cerebral blood flow (RCBF) distribution in preterm lambs after treatment with instilled or aerosolized surfactant.

Methods 12 preterm lambs (133d GA) were randomized to receive instilled (SF-Bolus, n=6) or aerosolized (SF-Aero, n=6) surfactant. CBF was measured at foetal life, baseline, 5, 15 and 30 minutes after the initiation of surfactant therapy and thereafter, every 30 minutes until the end of the experiment. RCBF was determined using coloured microspheres technique at foetal life and 5, 60, 180 and 360 minutes after the start of surfactant therapy. Brain samples of striatum, thalamus and hippocampus grouped as inner zones, cortical zones and cerebellum and brain-stem (CB-B) were analyzed. ANOVA, p<0.05.

Results Following SF-Bolus administration a marked increase in CBF was observed for the first 30 min in comparison to SF-Aero group. 1 hour after treatment, however, both groups had similar CBF values. Immediately after SF instillation and during the ventilatory support, RCBF in inner (thalamus and hippcampus) and in CB-B zones was increased in SF-bolus group in comparison with SF-Aero group. No significant differences were detected in cortical blood flow.

Conclusion In preterm lambs with RDS, aerosolized surfactant produced a different cerebral haemodynamic pattern than did SF bolus instillation. These observations should be carefully explored (FIS10/00943).

412 COMBINATION OF GENOMIC TECHNOLOGIES AND CONSANGUINITY IN ORDER TO IDENTIFY PATHOGENIC VARIANTS IN RECESSIVE DISORDERS

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Consanguinity and inbreeding increase the sharing of alleles among individuals; thus a considerable number of autosomal recessive phenotypes occur in offspring(s) of consanguineous couples. We have collected samples from consanguineous families with different phenotypes of unknown etiology that are compatible with autosomal recessive transmission, in order to identify the responsible functional genomic variation. 42 families of different ethnic background have been collected so far. From each family, DNA from the patient(s), unaffected siblings and the parents is extracted. Samples are i/analyzed by array-CGH for the detection of homozygous deletions; ii/genotyped with a 720K SNP-array in order to identify Runs of Homozygosity and the areas of the genome that could include the causative variant; iii/exome sequenced (one affected individual/family). Mean coverage is 130x and 98.2% of the coding region of RefSeq is covered at least 8x. By comparing the genotyping and sequencing data, we found that Single Nucleotide Variants (that passed the quality threshold) were detected with a specificity of 99.95%, sensitivity of 97.7%, Positive Predictive Value 99.2% and Negative Predictive Value 98.6%. On average we identified 21901 variants/exome. So far we analysed 26 families and identified the causative variation in known genes in 3 of them:VLDLR, FKTN and DMP1. In 12 families 23 candidate genes/variants have been identified(more than 1 candidate genes/family). In 11 families the likely molecular defect has not been identified. Consanguineous families provide an opportunity to identify pathogenic variants responsible for recessive phenotypes and rapidly fill in the gap between genotype and phenotype.

Poster Symposium Presentations - Nursing

413 EFFECTIVENES OF THE CALA-DOL, A NEW NON PHARMACOLOGICAL METHOD TO REDUCE PAIN IN CHILDREN UNDERGOING INTRAMUSCULAR IMMUNIZATION: RANDOMIZED CONTROLLED TRIAL

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Background and Aims Procedural pain due to immunization is often untreated due to the limited effectiveness of available methods. The aim of this study is to value the effectiveness of a psychosomatic technique called Cala-Dol for the reduction of pain caused by immunization in children.

Materials and methods: Randomized controlled trial. 500 children aged 3 to 13 undergoing intramuscular vaccination against meningitis in the deltoid muscle were enrolled and randomized into two groups. Group A received standard care (no intervention), group B received the Cala-Dol technique. Cala-Dol consists in a combination of local cutaneous stimulation with two small rubber balls -one smooth and one with soft protrusions- and distraction. The cost of the devices is 2 Euros. Two Pain was measured with a 0–10 faces Wong scale (up to 7 years) or a 0–10 Visual analog scale (VAS).

Results Mean pain score in Group B (2.2, sd 1.89) was significantly lower than pain score in Group A (3.38, sd 1.84, p=0.0001). Children were stratified according to age. With regards to age, pain score

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means were significantly lower in Group B at all ages from 3 to 8, in particular in children from 3 to 6 (Group B: 1.91, sd 1.88, Group A: 3.94, sd 1.54, p=0.00001), but not from age 9 to 13.

Conclusion Our study shows that the Cala-Dol technique is an effective, simple and inexpensive way to reduce pain caused by intramuscular immunization in the deltoid muscle in in children aged 3 to 9.

414 SCREENING DEVELOPMENTAL DOMAINS IN PRETERM CHILDREN: DIAGNOSTIC VALIDITY OF "PARENTS' EVALUATION OF DEVELOPMENTAL STATUS: DEVELOPMENTAL MILESTONES" (PEDS:DM) ASSESSMENT LEVEL

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Background/aims Very preterm children (VPT-born < 29 weeks gestation) are at high risk for delay across a range of developmental domains. The diagnostic utility of the Parents' Evaluation of Developmental Status: Developmental Milestones (PEDS:DM) Assessment Level in screening for children with i)domain specific and ii) global cognitive delay was assessed in VPT children.

Method Cross-sectional cohort of infants at 2 and 4-years corrected age for prematurity during 2010. Parents completed the PEDS:DM-Assessment Level in correctly identifying language, motor, self-help and social-emotional domain development which was compared with a blinded 2-year Bayley Scales of Infant Development III, 4-year Wechsler Preschool and Primary Scale of Intelligence-Third Edition and for both ages a Neurosensory Motor Development Assessment and Adaptive Behaviour Assessment System-Second Edition. Diagnostic validity-screening test characteristics were determined for each domain and global cognition.

Results Complete data was available on 149/192 (2-years, N=73 and 4-years, N=76) children. The prevalence for developmental delay using each tools standardized mean ->2 (SD) was lower in all domains and for global-cognition compared to the established cut-off PEDS:DM domain scores (≥25%-16th percentile). Sensitivity and specificity were consistently high (predominately >70%) as was the negative predictive value (>77%). The positive predictive value was lower reflecting the high over-referral rate. Mothers stated they found the assessment useful in articulating their infants' developmental strengths and weaknesses by domains.

Conclusion This parent friendly tool has good diagnostic utility for identifying domain specific and global cognitive delay and can be used to enhance surveillance, and would be useful in resource restricted environments.

415 PARENTS' EVALUATION OF DEVELOPMENTAL STATUS (PEDS:DM) AND THE PARENTING RELATIONSHIP IN CHILDREN BORN VERY PRETERM

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Background/aim Differences in parenting children born very-preterm (VPT < 29 weeks gestation) with and without developmental delay has not been fully described. This study examines the association between parent-reported child developmental status, psychosocial-risk and the parenting-relationship in VPT children.

Methods Cross-sectional hospital-cohort of infants at 2 and 4-years corrected age for prematurity during 2010. Uni-multivariate analysis examined the association between developmental delay (DD) (scores -≥2SD in ≥2 domains-gross/fine motor, receptive/expressive language, social-emotional and self-help using Parent Evaluations of Developmental Status-Developmental Milestones-(PEDS:DM)-Assessment-Level) and parenting-relationship (score -≥1SD in ≥1 domain-attachment, involvement, discipline-practices, parenting confidence and relational frustration assessed by the Parenting Relationship Questionnaire). Outcomes are for the total cohort and by age-group, adjusted for psychosocial-risk (≥4/11 risks on Brigance Observations of Psychosocial-Risk Scale).

Results Cohort data is available on 165/192, 86% (2-years, N=80; 4-years, N=85) children which showed parenting a child with DD was associated with higher parenting-relationship problems for the total cohort (OR 3.2, 95%CI 1.5, 7.0, p<0.01) who experienced greater difficulties in attachment (OR 3.2, 95%CI 1.1, 10.3, p =0.04) and parenting confidence (OR 4.7, 95%CI, 2.1, 11.5, p<0.01) compared to the non-delayed group. Differences by age group were (2-year-group, attachment; OR 7.3, 95%CI 1.4, 37.0, p =0.02) and (4-year-group, parenting confidence; OR 16.0, 95%CI 4.4, 57.3, p<0.01) found.

Conclusion Mothers of VPT children with DD may require additional parenting support; strengthening early attachment may impact latter parenting confidence in these families. Examining these findings in relation to child behavior and possible pathways for intervention is planned.

416 IMPACT OF EXERCISE ON LOWER ACTIVITY LEVELS IN CHILDREN WITH ACUTE LYMPHOBLASTIC LEUKEMIA: A RANDOMIZED CONTROLLED TRIAL FROM TURKEY

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Background and Aims Children with Acute lymphoblastic leukemia (ALL) exhibit body function disorders and activity limitations at an early stage. A study assessing the impact of activities and health-related quality of life of initiatives physical exercise in children with ALL were not found in Turkey. This study was carried out to determine the effects of an exercise program on both physical parameters and on quality of life in children with ALL.

Methods A total of 41 children with ALL at two university hospitals were accepted into the study. Due to the demise of one of the children in the trial group, the study was completed with 19 trial and 21 control patients, a total of 40 children and their parents. The two groups were formed by randomized selection. The study was implemented in the children's homes and in the clinical environment and in the period 2007–2008.

Results When the trial subjects were assessed in terms of their mean scores in the 9-Minute Walk Test, the Timed Up and Down Stairs Test, the Timed Up and Go Test, the measurements of their leg muscle strength, their hemoglobin and hematocrit tests, a decidedly significant increase was seen compared to the control group (p<0.05).

Conclusions Regular and systematic exercise regimens implemented by children with ALL have resulted in improved testing results, enhanced physical performance, and better laboratory results compared to a control group and to children's scores prior to the initiation of such a program.

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