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CLINICAL FEATURES AND RADIOLOGIC FINDINGS IN NEONATAL CANDIDA MENINGITIS: A 8-YEAR EXPERIENCE

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Background: Candida species are becoming one of the most common pathogens associated with nosocomial infection in the neonatal intensive care units (NICU). This study was undertaken to investigate clinical features and radiologic findings of meningitis complicating candida sepsis in the neonates.

Methods: Eighty-seven neonates with candida sepsis were enrolled who were admitted in the NICU of Dongsan Medical Center, Keimyung University from Jan. 1997 to Dec. 2004. Retrospective analysis of the medical records and radiologic images performed.

Results: The common species of candida sepsis were C. albicans (62%), C. parapsilosis (27%) and others such as C. guilliermondii(7%), C. glabrata (2%) and C. tropicalis (2%), and CNS involvement developed in 13(15%) of the 87 patients. Almost all the causative organism was C. albicans (92%) and the other was C. parapsilosis (8%) in 13 cases with meningitis. Findings of CSF study at the early stage of infection were variable: pleocytosis showed in 10(77%), elevated protein and candidal isolation in 7(54%) respectively, and hypoglycorrhachia was inconsistent. Between the two groups of patients who had candida sepsis (group 1: with meningitis, group 2: without meningitis), demographic characteristics were similar distribution, but fever or seizure at onset of infection was more common in group 1 (P<0.05). Also, mortality rate was higher in group 1, but statistically not significant. Cerebral microabscesses showed in 10(91%) in 11 cases with serial ultrasound examinations and 7(78%) in 9 cases with magnetic resonance studies which were performed at late time. Common complications of amphotericin-B therapy were hypokalemia, thrombocytopenia and anemia but usually reversible.

Conclusions: Candida meningitis is common in neonates with C. albicans sepsis (P<0.05) and findings of CSF study were variable so that serial ultrasound examinations may help in the correct diagnosis of CNS involvement.

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POSTNATAL ADMINISTRATION OF DEXAMETHASONE FOR WEANING OFF THE VENTILATOR HAS SHORT TERM CONSEQUENCES FOR THYROID FUNCTION

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Background: Corticosteroids can alter thyroid hormone metabolism. Preterm born neonates are at risk of low T4 and T3 serum levels, these low levels are associated with impaired developmental outcome. Preterm infants who cannot be weaned from the ventilator are treated with dexamethasone, but adverse effects on developmental outcome are known. Because the harmful effects of both postnatal dexamethasone and low T4 on brain development it is important to know whether dexamethasone in these infants alters thyroid function.

Objective: To assess how thyroid function is affected in newborns receiving dexamethasone and who could not be weaned off the ventilator.

Methods: 17 ventilated infants to be started on postnatal dexamethasone treatment were included. T4, T3, rT3, TSH and Cortisol was determined before and either 6 (n=8) or 9 (n=9) hours after administration of the first dose of dexamethasone. Wilcoxon signed ranks test for paired differences was used for comparing hormone levels before and after dexamethasone administration.

Results: Median (range) of gestational age was 27 2/7(25-29) weeks, median birthweight 820(615-1470) g, age at first dose 19(9-48) days. 6 hours after dexamethasone TSH significantly decreased from 2.3 to 1.1 mU/L. T4 did not change. T3 decreased from 0.63 to 0.55 nmol/L, while rT3 increased from 0.78 to 0.85 nmol/L, however these changes were not significantly different. After 9 hours a significant decrease of T4 (82 to 70 nmol/L) and T3 (1.1 to 0.88), while a significant rT3 increase (0.8 to 0.95) was found. Cortisol decreased after 6 and 9 hours.

Conclusion: Postnatal dexamethasone negatively affects thyroid function in the preterm infant at risk of chronic lung disease. The data suggest a downregulation of deiodinase I or upregulation of deiodinase III. Whether these effects are of clinical importance with respect to the impaired developmental outcome of dexamethasone-treated infants has to be resolved.

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THE MOSAIC PROJECT: ETHICAL DECISION-MAKING POLICIES OF EUROPEAN MATERNITY AND NEONATAL UNITS

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Introduction: In the project Models of OrganiSing Access to Intensive Care for very preterm births in Europe (MOISA), the maternity and neonatal units policies towards ethical decision-making were explored. (1)

Methods: Ten regions in Denmark, Belgium, France, Germany, Italy, the Netherlands, Poland, Portugal and UK participated. A total of 105 maternity and neonatal units with at least 5 annual births or admissions at 22-31 weeks were surveyed by means of a structured questionnaire in 2003.

Results: In 32/105 maternity and 31/105 neonatal units, written protocols for forgoing treatment of extremely preterm deliveries or newborns were available. In 50 of the 82 neonatal units where decisions to withdraw treatment are made, parents are involved in the decision-making. The minimum gestational age at which a caesarean section is performed varies. In most maternity units, the limit of 24 weeks (n=31), 25 weeks (n=16) or 26 weeks (n=18) is adopted in case of acute distress of a non-malformed foetus. In 22 units no policy exists. In cases where parents are against aggressive treatment only 17 units would perform a caesarean section before 26 weeks. Most maternity units (59/105) follow a policy of multidisciplinary decision-making about active resuscitation before 25 weeks of gestational age. In case of severe congenital anomalies, this proportion is even higher (83/105). In 62/105 hospitals, an ethics committee is available. However, in 24 the committee is never involved in clinical decision-making and in 27 only in selected cases.

Conclusions: Twenty-four weeks of gestation is the most common lower limit of active treatment, although there are wide variations between individual units. Neonatologists usually participate in obstetrical decisions. Most neonatal units involve parents in ethical decision-making. Decisions usually are taken without consultation of ethics committees.

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CLINICAL CONSEQUENCES OF FETAL INFLAMMATORY RESPONSE

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Background: Fetal inflammatory response is frequent in severe prematurity. Conflicting data has been published concerning its clinical consequences. Aims: (i) to study the relation between umbilical cord cytokine levels and neonatal outcome; (ii) to correct the results for gestational age.

Methods: In 163 premature newborns born between 23+0 - 30+6 (median 28+6) wks of g.a. umbilical serum levels of IL-1beta, IL-6, and IL-8 were measured (ELISA). Data concerning mortality, early and late onset infections, NEC, ICH, PVL, ROP, PDA, RDS requiring ventilation, surfactant use, and CLD were collected and compared with umbilical cytokine levels. Adjusted analyses using multiple logistic regression were performed after correction for gestational age.

Results: Although a number of correlations between cytokine levels and clinical events were found, only these remained significant after correction for gestational age: RDS requiring ventilation and IL-8>25pg/ml or IL-6>20pg/ml, surfactant use and IL-8>25pg/ml or IL-1beta>10pg/ml, CLD or death and IL-8>25pg/ml.

Discussion: The occurrence of prenatal inflammation is increasing with prematurity, therefore high umbilical cord cytokine levels are more frequently found in more premature newborns. After correction for gestational age high cytokine levels remained associated with worse early respiratory adaptation and possibly CLD development. We did not find correlation with other neonatal morbidities. Our findings support the hypothesis that severe fetal inflammatory response may be detrimental at least to respiratory functions in severe prematurity.

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RESPIRATORY SYMPTOMS IN VERY LOW BIRTH WEIGHT INFANTS WITH RADIOLOGICALLY CLASSIFIED BRONCHOPULMONARY DYSPLASIA (PRELIMINARY RESULTS)

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Background/Aim: At present, the diagnosis of bronchopulmonary dysplasia (BPD) is usually based on the duration of oxygen supplementation. The aim of this study was to assess whether very low birth weight (VLBW, <1500 g) infants with cystic chest X-ray findings neonatally have more respiratory symptoms and medications during the first year of life than those without. Patients. 21 VLBW infants with cystic (cBPD), 23 with hazy-opaque (leaky lung syndrome, LLS) and 35 without radiological BPD findings (no-BPD group) were prospectively recruited. A paediatric radiologist and a neonatologist categorised the chest X-ray findings blinded for the neonatal characteristics of the cases.

Methods: Respiratory symptoms were assessed according to a validated scoring system at follow-up visits at 3 months' intervals. Use of inhaled corticosteroids, prescribed due to symptoms, was recorded at each visit.

Results: The cBPD patients had more often intercostal retractions at 6 months of age than the no-BPD group (13 (93%) vs. 16(52%), p=0.021). At 12 months, data were available for 16 cBPD, 15 LLS and 19 no-BPD cases and the frequencies of intercostal retractions were 11(69%), 9(60%) and 11(58%), respectively (not significant). No differences were found in the remaining retraction parameters. Use of inhaled corticosteroids was more common in the cBPD than in the no-BPD group at 6 months (4(21%) vs. 1(3%), p=0.003) and at 9 months (6(29%) vs. 0(0%), p=0.006). No association was found between intercostal retractions and the use of inhaled corticosteroids.

Conclusions: VLBW infants with cystic chest X-ray findings seem to have more often intercostal retractions and use of inhaled medications at 6-9 months' age compared to cases without. Regardless of radiological findings, more than a half of all VLBW cases may present with retractions still at one year of age.

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THYMUS SIZE AS A PROGNOSTIC SIZE IN BRONCHOPULMONARY DYSPLASIA

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BDP is major cause of premature neonates mortality and morbidity. Causes of BDP are oxygen toxicity, injuries caused by ventilators and respiratory volumes, perinatal inflammations. Chorioamnionitis is related to thymus functions through the intrauterine actions of cytokines. The purpose is to check the reliability of the chest X-Ray as prognostic sign in the development of BDP.

Method: 34 chest X-Rays, taken from VLBW neonates, within the first 6 hours after birth, were reviewed. The following criteria were taken into account: 1 Mechanical ventilation = or > 3 days within the first week after birth. 2 Need for O2 administration for 28 days after birth. 3 Radiological findings of BDP in the chest X-Ray. Moreover, 34 chest X-Rays of VLBW neonates who did not develop BDP were reviewed. Thymus size was measured as a ratio between thymus diameter on the level of velum and thorax diameter(CT/T). Statistic analysis was performed by using ANOVA and t-test.

Results: ANOVA method:34 neonates complied with the criteria of the study. Another 34 neonates were considered as witnesses. The mean CT/T of the first group was 0,33 and of the second group was 0,42. We found F=15,5>rate criterion F=7,035 with freedom degrees 1/66. Error probability was 1%. By this mean CT/T of the witnesses is statistically higher than the one of the patients with BDP. T-test: t=-3,93 with t-critical double-sided=2,66. This method confirms that CT/T of witnesses is higher than CT/T of the patients.

Discussion: The results show that the chest X-Ray within the first hours of life of VLBW premature neonates has prognostical value in the development of BDP. Small thymus size at birth shows that all mechanisms related to BPD have been activated intrauterus.