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KAWASAKI DISEASE- A PROSPECTIVE CLINICAL APPRAISAL

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INTRODUCTION Kawasaki disease is replacing rheumatic fever as the most common cause of acquired heart disease. The clinical appraisal of Kawasaki disease in Indian scenario is being recently recognized. We are reporting eight typical cases of Kawasaki disease.

AIMS To study the clinical spectrum of Kawasaki disease To study the utility of investigatory tools. To study the efficacy of Intravenous Immunoglobulins vs methylprednisolone.

MATERIALS AND METHODS: Children with fever and rash were screened for Kawasaki diseases per the guidelines of International Kawasaki disease criteria. All children of suspected Kawasaki disease were subjected to 2D-COLOUR DOPPLER and ECG for cardiac involvement and those with cardiac involvement were followed for coronary aneurysms irrespective of nature of treatment. The children were divided into two groups, first group were treated with 2gm/kg Immunoglobulin as a single dose infusion over a period of 12 hrs and aspirin therapy whereas the second group received Methyl prednisolone 30mg/kg /day for 5 days and aspirin. Aspirin is used initially in the dose of 30–50mg/kg/day in 4 divided doses for 2 weeks followed by 2–5mg/kg/day as a single dose until the platelet count returned to normal. All the data is analysed and tabulated.

RESULTS A total of 8 cases were reported in 2 year period, 7 were females and 1 was male. All the cases were younger than 6 years of age. Cardiac involvement was seen in 50% of cases. Response to intravenous immunoglobulins is dramatic and complete within 2 days, whereas response to methylprednisolone is incomplete and prolonged. Coronary aneurysm was seen in one child who was treated with methylprednisolone. Time taken for platelet count to come to normal is unaffected by nature of therapy.

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INCREASED PARENTERAL AMINO ACID INFUSION HAS ONLY A TRANSIENT EFFECT ON WHOLE BODY RATE OF PROTEOLYSIS AND DE NOVO GLUTAMINE SYNTHESIS IN LBW INFANTS

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Early administration of parenteral nutrition to LBW infants has been advocated in order to (a) meet the nutrient needs and (b) achieve intrauterine growth velocity. We have examined the impact of high parenteral amino acids on whole body protein/nitrogen turnover in low birth weight infants (<1500g, <32 weeks gestation) at <48 h and at 3–5 d after birth.

Phenylalanine, glutamine, leucine N and urea turnover were measured using stable isotopic tracers while the infants were receiving parenteral amino acids at 1.5 g.kg-1.d-1 for 24h and when receiving 3.0 g.kg-1.d-1 either for 5h or for 20h.

	Short 1.5g (20 h)		Prolonged 3.0g (5h)		1.5g (20h)		3.0g (20h)	
	Early (<48h)							
Phenylalanine Ra	71 ± 16	64 ± 14*	79 ± 16	74 ± 16				
Urea Ra	523 ± 153	480 ± 135*	364 ± 107	560 ± 74*				
Late (3-5d)								
Phenylalanine Ra	60 ± 14	51 ± 14*	66 ± 14	61 ± 9				
Urea Ra	506 ± 140	426 ± 110*	474 ± 336	851 ± 427*				

*p<0.01; mean±SD, μmoles.kg-1.h-1

Protein breakdown (phenylalanine Ra) decreased when amino acid at 3.0 g.kg-1.d-1 were infused for 5h and then reverted back to basal state at 20h. The associated decrease in urea Ra was also transient. High amino acid load and thus increased anaplerotic flux caused a significant increase in leucine N Ra and de novo glutamine synthesis.

Conclusion: Amino acid load only has a transient impact on whole body protein turnover. Additional intervention strategies need to be developed in order to achieve a growth-promoting effect of such interventions.

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THE IMPORTANCE OF SUPPORTIVE ENVIRONMENTAL MECHANISMS IN EMOTIONAL STABILITY DURING ADOLESCENCE. CROSS-SECTIONAL STUDY IN GREECE.

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Background: Relevant information from studies and empirical observations suggest that supportive environment -families, schools, peers- do play a significant role in emotional balance during adolescence.

Aim: We examined the relationship between supportive environmental mechanisms with the emotional stability in the process of puberty.

Methods and population: Pre-coded questionnaires were disseminated to the last grade of senior high school pupils (18-year-olds) across the country. Finally, 3415 self-completed questionnaires were returned from a representative sample of Greek adolescents. Behaviour was estimated by Youth Self Report (YSR, 1991 profile, Achenbach) and disturbance was defined as the score above the 98th percentile included. Demography, family structure and personal relationships were regressed against the dichotomy normal/deviant for all children and from each YSR subscale.

Results: Adolescents who have supportive friends score themselves lower on the subscales Withdrawn, Anxious/Depressed, Social Problems and Internalising behaviour (p=0.001). Indeed, regression confirmed that these adolescents have a much lower risk of deviation at the same scales (OR=0.096/CI=0.049–0.187, OR=0.311/CI=0.148–0.655, OR=0.164/CI=0.087–0.310, OR=0.185/CI=0.092–0.370 respectively). Logistic regression analysis also revealed that parental concern for their children's friends and leisure activities play a protective role in their emotional and behavioural stability. What seems to risk it, is the premature start of their sex life, a fact that doubles the chance of deviation on almost all scales.

Conclusions: Adolescents may pass easier through this unstable phase of life by sharing it with their peers exchanging feelings and experiences. It seems that family structure becomes less important in shaping the behaviour of adolescents, whereas it is substantial for parents to be close and aware of choices made by their children. The early start of sex life seems to be a hazard for their balance, as it is difficult for them to rationalise their emotions and cope with them.

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NEONATAL RADIOGRAPHY: RADIATION DOSE IN ASSOCIATION WITH IMAGE QUALITY

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Background/Aims: Premature or seriously ill neonates, often undergo a considerable number of radiographic examinations during their stay in the Neonatal Intensive Care Unit. The increased radiosensitivity of neonates due to the highly mitotic state of their cells in conjunction with longer life expectancy, increase the risk of radiation induced cancer. This highlights the importance of minimising radiation dose, while maintaining satisfactory image quality. An optimisation study concerning radiation dose and image quality in neonatal radiography is presented.

Methods: Neonates were categorised into 4 groups, according to birth weight (<1000g, 1000–1499g, 1500–2499g, >2500g). For a total of 190 chest and chest-abdomen radiographs, exposure parameters (tube voltage-kVp, product of tube current and exposure time-mAs, field size) were recorded. Entrance surface dose (ESD) was estimated and Dose-Area product (DAP) was measured directly. Assessment of image quality was performed blindly by two independent observers (a radiologist and a paediatrician) based on the visibility of certain anatomical features and catheters, using a 5-grade scale.

Results: ESD values increased with neonatal weight and demonstrated a wide variation, ranging from 15.2 to 60.3microGy (mean 31.6microGy). A wide variation was also observed in DAP values (0.23–0.92microGym2, mean 0.41microGym2). Evaluation of image quality revealed the feasibility to achieve satisfactory image quality (total image quality score >70%) using both high and low kVp techniques. Higher tube voltage techniques resulted in lower ESD values due to the increased beam penetration and the decreased mAs applied.

Conclusions: The majority (98.5%) of ESD values are in accordance with the reference level of 50microGy recommended by the National Radiological Protection Board. However, results advocate that the use of high kVp techniques could result to further reduction in radiation dose, without degradation of image quality. Wide dose variations highlight the need of establishing standard examination protocols for neonatal radiography, with respect to weight.

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APNEA OF PREMATURITY: ASSOCIATION WITH NEURODEVELOPMENTAL OUTCOME?

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Background: Idiopathic apnea of prematurity is a very common problem in preterm infants that may require pharmacologic or respiratory intervention and delay hospital discharge. Several authors have shown that apneas, especially associated with hypoxemia and/or bradycardia, decrease cerebral blood flow which may induce brain injury.

Aim: To investigate the association of apnea in preterm infants with subsequent neurodevelopmental outcome when compared with matched controls without apnea.

Methods: 28 infants < 32 gestational weeks and / or < 1500g birth weight with recurrent apnea (> 3 per 24 hours) were matched with 28 infants the same gestational age without apnea. All infants were assessed at 24 months corrected for prematurity (Bayley II and neurological examination).

Results: Gender distribution, mean gestational age, birth weight, days of mechanical ventilation, CPAP and days of oxygen were similar in both groups. The average length of hospital stay was longer in patients with apnea. There was no significant difference between the mean MDI and/or PDI of infants with apnea when compared with those of infants without apnea.

Factors	Infants with apnea Median (IQR)	Infants w/o apnea Median (IQR)	significance/p
Gender (male)	50%	57%	0.59*
Gestational age (weeks)	30.1 (29.9;31.8)	30.2 (29.4;31.5)	0.89*
Birth weight (g)	1325 (1116;1560)	1340 (1115;1700)	0.71*
O2 (days)	23 (8;33)	24 (0;46)	0.17*
CPAP (days)	8 (0;25;8.5)	11 (0;16)	0.33*
Mech vent. (days)	1 (0;2)	1 (0;1)	0.54*
Length of stay (days)	66 (58;73)	47 (26;54)	0.03*
MDI	82.5 (71.8;86.8)	84.9 (73.8;97.5)	0.61*
PDI	79.6 (66;88)	82.1 (71.9;7.3)	0.28*

X Chi-square test
*Mann-Whitney U-Test

Conclusion: Power analysis with alpha=0.05 and beta=0.2 reveals that the sample size of 56 suffices to exclude a possible difference of more than 11 points within the Bayley II scales (equivalent to 0.75 of a standard deviation of 15) when comparing infants with apnea to controls.

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DIFFUSION WEIGHTED IMAGING: CORRELATION BETWEEN APPARENT DIFFUSION COEFFICIENT, BRAINSTEM AUDITORY EVOKED POTENTIALS, AND NEURODEVELOPMENTAL OUTCOME

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Background: Prematurity is a well-known risk factor of brain damage. Diffuse white matter injury appears to be more prevalent compared to focal cystic lesions among very preterm infants. Apparent diffusion coefficient (ADC) on diffusion weighted imaging (DWI) is a quantitative measure of molecular diffusion of water. Decrease in ADC relates to maturation and integrity of developing brain.

Objective: To investigate whether ADC values correlate with neurosensory measurements and with neurodevelopmental outcome in very preterm infants.

Design/Methods: A prospective follow-up study comprised 30 infants born before 32 weeks of gestation with birth weight under 1000 g. Conventional magnetic resonance imaging (MRI), DWI, and measurements of brainstem auditory evoked potentials (BAEPs) were performed at term. ADC was measured in six white matter regions. Neurodevelopmental outcome was assessed at two years of corrected age. The study was approved by the ethics committee of Oulu University Hospital.

Results: ADC in pons correlated with latency of wave III in BAEP measurements (r = 0.62, P = 0.018). 33.8% of the variability in latency of wave III was explained by ADC in pons (P = 0.017). A negative correlation was found between scores on gross motor subscale and ADC in corona radiata (r = -0.401, P = 0.038). Furthermore, after dividing the children into three groups according to the scores on gross motor and eye-hand coordination subscales, children with the lowest scores (< - 1SD) had the highest ADC in corona radiata (P<0.05). ADC below 1.28 had sensitivity of 75% and specificity of 96% in finding differences between the groups on gross motor subscale (P = 0.005) and sensitivity of 43% and specificity of 100% in finding differences on eye-hand coordination subscale (P = 0.013).

Conclusions: ADC in a specific brain region on DWI predicts abnormalities in later neurodevelopmental outcome and identifies infants who would benefit from neurologic follow-up.