



Monday 30 May 2011

This free weekly bulletin lists the latest research on cerebral palsy (CP), as indexed in the NCBI, PubMed (Medline) and Entrez (GenBank) databases. These articles were identified by a search using the key term "cerebral palsy".

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## Interventions

### 1. Ortop Traumatol Rehabil. 2011 Apr 29;13(2):105-12.

#### **Surgical treatment of spastic hip dislocation - to treat or not to treat? - my personal experience.**

Stotz S.

Source: Orthopädische Universitäts-Poliklinik München-Innenstadt and Spastiker-Zentrum München.

Summary. Patients with infantile cerebral palsy often develop a typical adduction-, internal rotation- and flexion contracture of the hip, caused by a central disturbance of muscle tone coordination. This deviation leads, when verticalisation and weight-bearing of the child is absent or insufficient, to coxa valga and spastic hip dislocation. In order to prevent or correct this faulty form, soft tissue release operations or bony joint reconstructive procedures of the proximal femur and acetabular roof or, in severely impaired patients, palliative measures can be performed. The indication must be judged critically, especially in patients with total body involvement. In this paper special procedures, performed for a number of years at the Orthopedic Poliklinik of the University of Munich and the Spastiker-Zentrum (Integrationszentrum für Cerebralpareesen ICP) München ("Munich approach") are described, and the important role of surgery is discussed as part of a comprehensive rehabilitation program in patients with cerebral palsy, including sometimes also the decision, not to perform surgery.

PMID: 21602578 [PubMed - in process]

Publication Types: Editorial

### 2. MC Pediatr. 2011 May 25;11(1):42. [Epub ahead of print]

#### **Retest reliability of measuring hip extensor muscle strength in different testing positions in young people with cerebral palsy.**

Dyball KM, Taylor NF, Dodd KJ.

BACKGROUND: In young people with spastic diplegic cerebral palsy weakness of the hip extensor muscles are associated with limitations in activity. It is important that clinicians can reliably measure hip extensor muscle strength to monitor changes over time and the effects of any interventions. Previous research has demonstrated high reliability for measuring strength of all muscles of the lower limb, with the exception of the hip extensors. Therefore the aim of this study was to examine the retest reliability of measuring hip extensor strength in young people with cerebral palsy. METHODS: Using a test-retest reliability research design, 19 participants with spastic diplegic cerebral palsy (Gross Motor Function Classification System Levels II and III) (mean 19y 2mo [SD 2y 5mo]) attended two testing sessions held 12 weeks apart. Three trials with a hand-held dynamometer were taken at each testing session in supine, prone and standing. Retest reliability was calculated with Intraclass Correlation Coeffi-

cients (ICC(2,1)) and with units of measurement (kilograms) converted to a percentage strength change. RESULTS: ICC values ranged from .74 to .78 in supine, .75 to .80 in prone, and .73 to .75 in standing. To be 95% confident that real change had occurred, an individual's strength would need to increase 55 to 60% in supine, 86 to 102% in prone, and 102 to 105% in standing. To be 95% confident that real change had occurred across groups, strength would need to increase 4 to 8% in supine, 22 to 31% in prone, and 32% to 34% in standing. Higher ICC values were observed when three trials were used for testing. CONCLUSIONS: The supine testing position was more reliable than the prone or standing testing positions. It is possible to measure hip extensor strength with sufficient reliability to be able monitor change within groups using the supine position provided three trials are used during testing. However, there is insufficient reliability to monitor changes in hip extensor strength in individuals with cerebral palsy unless they exhibit very large strength increases.

PMID: 21609493 [PubMed - as supplied by publisher]

### 3. Ortop Traumatol Rehabil. 2011 Apr 29;13(2):173-83.

#### **Changes in the hip migration percentage and motor function in patients with cerebral palsy treated surgically by multilevel soft tissue release - preliminary report.**

Szczepanik M, Dudek J, Snela S, Piasek R.

Source: Institute of Physiotherapy, University of Rzeszów, Poland.

Background: Disturbed muscle balance secondary to upper motor neuron damage in the course of infantile cerebral palsy (ICP) leads to the development of progressive morphological changes in joints, especially the hip. We analysed changes in Reimers' index (hip migration percentage - MP), and functional ability in CP children after multilevel soft tissue release. Material and methods: We studied 22 patients with cerebral palsy following one-stage multilevel soft tissue release. The children were examined twice: one day before the surgery and at least 6 months (a mean of 9 months) after the procedure. Hip stability was evaluated radiographically using Reimers' index. Post-operative functional changes were analysed with the Gross Motor Function Measure-88 scale (GMFM-88). Result: Reimers' index decreased post-operatively in 20 right and 18 left hips and increased in 2 right and 4 left hips. Functional ability according to the GMFM scale increased in 17 children (by a mean of 7.1%), did not change in 3 patients with near-maximum pre-operative scores, and worsened in 2 patients. Conclusions: Our study showed that, when performed for appropriate indications, multilevel soft tissue release surgery can improve hip stability and functional ability in CP children.

PMID: 21602584 [PubMed - in process]

### 4. Ortop Traumatol Rehabil. 2011 Apr 29;13(2):144-54.

#### **Two-stage surgery in the treatment of spastic hip dislocation - comparison between early and late results of open reduction and derotation-varus femoral osteotomy combined with Dega pelvic osteotomy preceded by soft tissue release.**

Jóźwiak M, Koch A.

Source: Katedra i Klinika Ortopedii i Traumatologii Dziecięcej Uniwersytetu Medycznego im. K. Marcinkowskiego w Poznaniu.

Purpose: to present and compare early and late results of treatment of spastic hip dislocation in cerebral palsy patients. Material: We analyzed a group of 77 patients (109 hips) with hip joint dislocation (MP>80%). The patients were divided into two groups: <3 years of follow-up vs. > 3 years of follow-up. The first group thus included 64 hips (47 patients) with mean follow-up duration of 2.2 years (range 1.1-3), and the second group had 45 hips (30 patients) with mean follow-up duration of 4.8 years (range 3.2-10.2). Method: The hips were evaluated clinically and radiographically. The relation of the femoral head to the acetabulum was described as the Acetabular Index (AI) and Reimers' migration percentage (MP). Results: In Group I, AI improved from 32.2°(17°-50°) to 22.2°(6°-45°), MP improved from 98.9% (82%-100%) to 15.9% (0%- 100%). In Group II, AI improved from 28.9° (10°-62°) to 19.4° (3°-50°). The changes in AI and MP were statistically significant. Group I demonstrated a reduction in the flexion contracture from 21.1° (0°-50°) to 10.7° (0°-30°), an increase in abduction from 19.5° (0°-60°) to 29.9° (0°-60°), and

a decrease in the popliteal angle from 52.0° (0°-100°) to 34.2° (0°-85°). Group II showed a reduction in the flexion contracture from 24.6° (0°-60°) to 12.6° (0°-40°), an increase in abduction from 17.3° (-25°-80°) to 26.1° (-15°-80°), and a decrease in the popliteal angle from 61.4° (0°-120°) to 40.7° (10°-100°). These improvements were statistically significant. Conclusion: Open reduction of the hip joint combined with derotation-varus femoral osteotomy and Dega pelvic osteotomy is a very effective treatment in spastic hip joint dislocation. We observed no statistically significant deterioration of results between the groups.

PMID: 21602581 [PubMed - in process]

## 5. Epilepsy Behav. 2011 May 21. [Epub ahead of print]

### **Prolonged episode of dystonia and dyskinesia resembling status epilepticus following acute intrathecal baclofen withdrawal.**

Specchio N, Carotenuto A, Trivisano M, Cappelletti S, Vigeveno F, Fusco L.

Source: Division of Neurology, Bambino Gesù Children's Hospital IRCCS, Rome, Italy.

Spasticity is a state of sustained pathological increase in the tension of a muscle. Treatment for spasticity has been revolutionized by the introduction of intrathecal baclofen (ITB) continuous infusion. ITB is associated with a 30% rate of complications mostly as a result of catheter problems that lead to acute ITB withdrawal. We describe a 10-year-old girl with spastic quadriplegia caused by cerebral palsy successfully treated with ITB who developed dystonic-dyskinetic status following acute ITB withdrawal because of a catheter kink resolved by external manipulation. The patient presented with a subacute onset of generalized malaise characterized by anorexia, difficulty in speaking and swallowing, insomnia, worsening of hypertonus with a left predominance, and late appearance of dystonic-dyskinetic movements. Soon after hospitalization the child had a generalized tonic-clonic seizure followed by unresponsiveness. One hour later she developed multiple muscle contractions with dystonic posturing and continuous chaotic movements. She also had pyrexia, tachycardia, and hypertension. A video/EEG recording showed the nonepileptic nature of the symptoms and revealed dystonic-dyskinetic status. We report the clinical features and the video recording of the status. The prompt recognition of this life-threatening complication is essential, as rapid treatment may reduce the increased risk of death. Misdiagnosis is possible, and video/EEG monitoring is useful to this end. Although differing among patients, all symptoms are related to overexcitability of the extrapyramidal and autonomic systems.

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## 6. Eur J Phys Rehabil Med. 2011 May 23. [Epub ahead of print]

### **Applicability of a new robotic walking aid in a patient with cerebral palsy.**

Smania N, Gandolfi M, Marconi V, Calanca A, Geroin C, Piazza S, Bonetti P, Fiorini P, Cosentino A, Capelli C, Conte D, Bendinelli M, Munari D, Ianes P, Fiaschi A, Picelli A.

Source: Neuromotor and Cognitive, Rehabilitation Research Centre, Department of Neurological, Neuropsychological, Morphological and Movement Sciences University of Verona, Verona, Italy<sup>2</sup> Neurological Rehabilitation Unit, Azienda Ospedaliera-Universitaria Integrata, Verona, Italy<sup>3</sup> Department of Neurological, Neuropsychological, Morphological and Movement Sciences Neurology Section, University of Verona, Verona, Italy<sup>4</sup> Faculty of Exercise and Sport Science, University of Verona, Verona, Italy<sup>5</sup> Computer Science Department, University of Verona, Verona, Italy<sup>6</sup> Rehabilitation Unit "C. Santi", Polyfunctional Centre Don Calabria, Verona, Italy<sup>7</sup> PhD Course in Experimental Physical Medicine and Rehabilitation applied to Human Locomotor System "La Sapienza" University of Rome, Rome, Italy - nicola.smania@univr.it.

**BACKGROUND:** Gait training with the help of assistive technological devices is an innovative field of research in neurological rehabilitation. Most of the available gait training devices do not allow free movement in the environment, which would be the most suitable natural and motivating condition for training children with neurological gait impairment. **AIM:** To evaluate the potential applicability of a new robotic walking aid as a tool for gait training in non-

ambulatory children with Cerebral Palsy. DESIGN: Single case study. SETTING: Outpatient regimen. POPULATION: A 11-years-old child unable to stand and walk independently as a result of spastic tetraplegic cerebral palsy (CP). METHODS: The experimental device was a newly actuated version of a dynamic combined walking and standing aid (NF-Walker®) available in the market which was modified by means of two pneumatic artificial muscles driven by a foot-switch inserted in the shoes. The child was tested at baseline (while maintaining the standing position aided by the non-actuated NF-Walker®) and in the experimental condition (while using the actuated robotic aid). The outcome measures were: 2-minute walking test, 10-metre walking test, respiratory and heart parameters, energy cost of locomotion. RESULTS: At baseline, the child was unable to perform any autonomous form of locomotion. When assisted by the actuated aid (i.e. during the experimental condition), the child was successful in moving around in his environment. His performance was 19.63 m in the 2-minute walking test and 64 s in the 10-metre walking test. Respiratory and heart parameters were higher than healthy age-matched children both at baseline and in the experimental condition. The energy cost of gait, which was not valuable in the baseline condition, was significantly higher than normality during the experimental condition. CONCLUSION: The new robotic walking aid may help children suffering from CP with severe impairment of gait to move around in their environment. CLINICAL REHABILITATION IMPACT: This new robotic walking device may have a potential impact in stimulating the development and in training of gait in children with neurological gait impairment. Future studies are warranted in order to test this hypothesis.

PMID: 21602760 [PubMed - as supplied by publisher]

## 7. Gait Posture. 2011 May 25. [Epub ahead of print]

### Transverse plane rotation of the foot and transverse hip and pelvic kinematics in diplegic cerebral palsy.

Gaston MS, Rutz E, Dreher T, Brunner R.

Source: Royal Hospital for Sick Children, Edinburgh, UK.

External rotation of the foot associated with mid-foot break is a commonly observed gait abnormality in diplegic CP patients. Previous studies have shown a correlation between equinus and internal hip rotation in hemiplegic patients. This study aimed to determine if there was a correlation between the amount of transverse plane rotation in diplegic CP patients using kinematic data from standardised gait analysis. Lower limb data of 134 ambulant children with diplegic CP was analysed retrospectively determining the maximum change in foot, hip and pelvis rotation during loading response. Highly significant negative correlations ( $P < 0.001$ ) were found between foot and hip movements and foot and pelvic movements. Equinus at initial contact diminished the foot:hip correlation while it enhanced the foot:pelvic correlation. There was less external rotation of the foot in equinus patients ( $P = 0.012$ ) and more external rotation of the pelvis in the equinus group ( $P < 0.001$ ). This data reveal a correlation between transverse plane rotation at foot level to that at the hip and pelvis. The likely biomechanical explanation is relatively excessive transverse external rotation of the foot due to abnormalities such as mid-foot break. When under load, where the foot is fixed to the floor, internal rotation of the entire leg occurs. This is due to lever arm disease as a result of the relatively shortened foot and inefficiency of the plantar-flexion knee-extension couple. Equinus modulates the effect. When treating such patients, lever arm deformities at all levels must be considered to result in the best outcome and prevent recurrences.

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## 8. J Neuroeng Rehabil. 2011 May 21;8(1):28. [Epub ahead of print]

### Reduced short term adaptation to robot generated dynamic environment in children affected by cerebral palsy.

Masia L, Frascarelli F, Morasso P, Di Rosa G, Petrarca M, Castelli E, Cappa P.

BACKGROUND: It is known that healthy adults can quickly adapt to a novel dynamic environment, generated by a robotic manipulandum as a structured disturbing force field. We suggest that it may be of clinical interest to evaluate to which extent this kind of motor learning capability is impaired in children affected by congenital hemiparesis.

**METHODS:** We adapted the protocol already used with adults, which employs a velocity dependant viscous field, and compared the performance of a group of subjects affected by Cerebral Palsy (CP group, 7 subjects) with a Control group of unimpaired age-matched children. The protocol included a familiarization phase (FA), during which no force was applied, a force field adaptation phase (CF), and a wash-out phase (WO) in which the field was removed. During the CF phase the field was shut down in a number of randomly selected "catch" trials, which were used in order to evaluate the "learning index" for each single subject and the two groups. Lateral deviation, speed and acceleration peaks and average speed were evaluated for each trajectory; a directional analysis was performed in order to inspect the role of the limb's inertial anisotropy in the different experimental phases. **RESULTS:** During the FA phase the movements of the CP subjects were more curved, displaying greater and variable directional error; over the course of the CF phase both groups showed a decreasing trend in the lateral error and an after-effect at the beginning of the wash-out, but the CP group had a non significant adaptation rate and a lower learning index, suggesting that CP subjects have reduced ability to learn to compensate external force. Moreover, a directional analysis of trajectories confirms that the control group is able to better predict the force field by tuning the kinematic features of the movements along different directions in order to account for the inertial anisotropy of arm. **CONCLUSIONS:** Spatial abnormalities in children affected by cerebral palsy may be related not only to disturbance in motor control signals generating weakness and spasticity, but also to an inefficient control strategy which is not based on a robust knowledge of the dynamical features of their upper limb. This lack of information could be related to the congenital nature of the brain damage and may contribute to a better delineation of therapeutic intervention.

PMID: 21600031 [PubMed - as supplied by publisher]

#### **9. JPEN J Parenter Enteral Nutr. 2011 May 26. [Epub ahead of print]**

##### **Is There an Accurate Method to Measure Metabolic Requirement of Institutionalized Children With Spastic Cerebral Palsy?**

Lee SP, Cheung KM, Ko CH, Chui HC.

Source: United Christian Hospital.

**Objectives:** This study hypothesized that there is no difference between energy expenditure measured by indirect calorimetry (IC) and that estimated by predicted formulas compared with the actual intake of children with spastic cerebral palsy (CP). **METHODS:** Fifteen children aged 3 to 18 years with spastic CP and associated complications were recruited. IC was used to measure mean energy expenditure (MEE) compared with 3 predicted equations for energy expenditure (PEE), including body surface area (BSA), the recommended daily allowance (RDA), and an equation designed specifically for patients with CP. Friedman and paired t tests were used to examine the variance between PEE and MEE. Intraclass correlation coefficient (ICC) was used to explore the correlation between MEE and PEE. The pretest and posttest core temperatures were compared using the Wilcoxon signed rank test. **RESULTS:** Mean  $\pm$  standard deviation MEE was  $800.5 \pm 295.7$  kcal/d; BSA was  $1,213.4 \pm 171.2$  kcal/d; RDA was  $1,928.1 \pm 341.0$  kcal/d; and CP was  $1,603.1 \pm 215.8$  kcal/d. The actual diet intake provided  $935.3 \pm 222.9$  kcal/d. Post hoc analysis revealed a significant difference between mean MEE and PEE ( $P < .001$ ) but not mean actual intake ( $P = .128$ ). In addition, the ICC of MEE vs PEE was 0.635 at a 95% confidence interval, indicating a weak correlation. In addition, mean pretest body temperature was  $36.4^\circ\text{C} \pm 1^\circ\text{C}$ , and mean posttest body temperature was  $35.8^\circ\text{C} \pm 2^\circ\text{C}$ . **CONCLUSIONS:** The study showed that MEE was significantly different from PEE, but not from actual intake. This warrants further exploration to develop a population-specific PEE for children with spastic CP. (JPEN J Parenter Enteral Nutr. XXXX;xx:xx-xx).

PMID: 21617017 [PubMed - as supplied by publisher]

#### **10. Neuropediatrics. 2011 May 24. [Epub ahead of print]**

##### **Childhood Obesity in Ambulatory Children and Adolescents with Spastic Cerebral Palsy in Korea.**

Park ES, Chang WH, Park JH, Yoo JK, Kim SM, Rha DW.

Source: Department and Research Institute of Rehabilitation Medicine, Yonsei University College of Medicine, Seoul, Korea.

**OBJECTIVE:** Childhood obesity is an emerging health issue in Korea. We investigated the prevalence of obesity and its trend over time in ambulatory Korean children with CP. **METHODS:** We retrospectively reviewed the medical records of 1 397 children with CP between 1995 and 2008. The data were grouped into 4 time periods (1995-1997, 1998-2002, 2003-2004 and 2005-2008). The prevalence of obesity over each period and its relationship to gender, birth weight, age, and gross motor function classification system were investigated. **RESULTS:** The percentage of obese children was 5.8%, overweight children 11.2%, and underweight children 10.4%. The prevalence of obesity significantly increased from the first time period to the third time period. The prevalence of obesity found in our study was significantly lower than the report from the U.S.A. during same time period between 1994 and 2004 ( $p < 0.05$ ). The prevalence of obesity significantly decreased with age as well. **CONCLUSIONS:** The prevalence of obesity in our subjects significantly increased and has reached a plateau in recent years. Compared to the prevalence of childhood obesity in ambulatory individuals with CP in the U.S.A. study, the prevalence in our study was significantly lower.

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PMID: 21611937 [PubMed - as supplied by publisher]

### 11. *Phys Occup Ther Pediatr.* 2011 May 23. [Epub ahead of print]

#### **Tactile Assessment in Children with Cerebral Palsy: A Clinimetric Review.**

Auld ML, Boyd RN, Moseley GL, Johnston LM.

Source: Division of Physiotherapy, School of Health and Rehabilitation Sciences, The University of Queensland, Brisbane, Australia.

This review evaluates the clinimetric properties of tactile assessments for children with cerebral palsy. Assessment of registration was reported using Semmes Weinstein Monofilaments (SWMs) or exteroception. Assessment of two-point discrimination was reported using the Disk-Criminator® or paperclip methods; Single point localization and double simultaneous were reported from the Neurosensory Motor Developmental Assessment (NSMDA); graphaesthesia was reported from the Sensory Integration and Praxis Test (SIPT); and stereognosis was assessed using Manual Form Perception from the SIPT and the Klingels method (Klingels, K. et al. (2010). Upper limb motor and sensory impairments in children with hemiplegic cerebral palsy. Can they be measured reliably? *Disability and Rehabilitation*, 32(5), 409-416) and the Cooper method (Cooper, J., Majnemer, A., Rosenblatt, B., & Birnbaum, R. (1995). The determination of sensory deficits in children with hemiplegic cerebral palsy. *Journal of Child Neurology*, 10, 300-309). The SIPT and NSMDA demonstrated stronger content validity. Inter-rater reliability was excellent for SIPT (ICC = 0.99) and exteroception ( $k = 0.88$ ). Test-retest reliability was excellent for exteroception ( $k = 0.89$ ) and stereognosis (ICC = 0.86; 100%), moderate for SIPT ( $r = 0.69-0.74$ ) and poor for SWM ( $k = 0.22$ ). Together these assessments measure tactile registration and spatial perception. Temporal and textural tests are to be developed for comprehensive tactile examination.

PMID: 21599569 [PubMed - as supplied by publisher]

## Epidemiology / Aetiology / Diagnosis & Early Treatment

### 12. *Pediatrics.* 2011 May 23. [Epub ahead of print]

#### **Trends in the Prevalence of Developmental Disabilities in US Children, 1997-2008.**

Boyle CA, Boulet S, Schieve LA, Cohen RA, Blumberg SJ, Yeargin-Allsopp M, Visser S, Kogan MD.

Source: National Center on Birth Defects and Developmental Disabilities and

**Objective:** To fill gaps in crucial data needed for health and educational planning, we determined the prevalence of developmental disabilities in US children and in selected populations for a recent 12-year period. Participants and

Methods: We used data on children aged 3 to 17 years from the 1997-2008 National Health Interview Surveys, which are ongoing nationally representative samples of US households. Parent-reported diagnoses of the following were included: attention deficit hyperactivity disorder; intellectual disability; cerebral palsy; autism; seizures; stuttering or stammering; moderate to profound hearing loss; blindness; learning disorders; and/or other developmental delays. Results: Boys had a higher prevalence overall and for a number of select disabilities compared with girls. Hispanic children had the lowest prevalence for a number of disabilities compared with non-Hispanic white and black children. Low income and public health insurance were associated with a higher prevalence of many disabilities. Prevalence of any developmental disability increased from 12.84% to 15.04% over 12 years. Autism, attention deficit hyperactivity disorder, and other developmental delays increased, whereas hearing loss showed a significant decline. These trends were found in all of the sociodemographic subgroups, except for autism in non-Hispanic black children. Conclusions: Developmental disabilities are common and were reported in ~1 in 6 children in the United States in 2006-2008. The number of children with select developmental disabilities (autism, attention deficit hyperactivity disorder, and other developmental delays) has increased, requiring more health and education services. Additional study of the influence of risk-factor shifts, changes in acceptance, and benefits of early services is needed.

PMID: 21606152 [PubMed - as supplied by publisher]

### 13. *Fetal Pediatr Pathol.* 2011 May 25. [Epub ahead of print]

#### **Placental Transmission of Novel Pandemic Influenza a Virus.**

Kanmaz HG, Erdeve O, Suna Oğz S, Uras N, Celen S, Korukluoglu G, Zergeroglu S, Kara A, Dilmen U.

Source: Zekai Tahir Burak Maternity Teaching Hospital, Division of Neonatology, Ankara, Turkey.

The effects of maternal influenza on the fetus are not well understood. Viremia is believed to occur infrequently and thus vertical transmission appears to be rare. Highly pathogenic strains of influenza virus, such as avian influenza A (H5N1), are more likely to be transmitted across the placenta. Placental tissues of seven women with confirmed H1N1 infection were examined molecularly with RT-PCR and microscopically to investigate whether H1N1 virus vertically transmitted. We found no evidence for placental transmission of H1N1 virus in this study. In the absence of vertical transmission, adverse effects like neonatal seizures, encephalopathy, cerebral palsy, and even neonatal death can still occur. Since a significant knowledge gap exists for the effects of this novel virus on the fetus, further studies will be beneficial.

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### 14. *J Neuroinflammation.* 2011 May 20;8(1):55. [Epub ahead of print]

#### **Developmental regulation of the neuroinflammatory responses to LPS and/or hypoxia-ischemia between preterm and term neonates: An experimental study.**

Brochu ME, Girard S, Lavoie K, Sebire G.

**BACKGROUND:** Preterm and term newborns are at high risk of brain damage as well as subsequent cerebral palsy and learning disabilities. Indeed, hypoxia-ischemia (HI), pathogen exposures, and associated intracerebral increase of pro-inflammatory cytokines have all been linked to perinatal brain damage. However, the developmental effects of potential variations of pro- and anti-inflammatory cytokine ratios remain unknown. **Methods.** Using rat models of perinatal brain damage induced by exposures to lipopolysaccharide (LPS) and/or HI at distinct levels of maturity, we compared cytokine expression at stages of cerebral development equivalent to either preterm (postnatal day 1, P1) or term (P12) newborns. **Results.** At P1, expression of anti-inflammatory cytokine within the brain was either not modulated (IL-6, IL-10) or down-regulated (IL-1ra, TGF-1) by HI, LPS or LPS+HI. In contrast, there was at P12 an up-regulation of all anti-inflammatory cytokines studied in HI or LPS+HI condition, but not after LPS exposure. Interestingly, IL-1 was the main pro-inflammatory cytokine up-regulated moderately at P1, and strongly at P12, with a weak co-expression of TNF- observed mainly at P12. These age-dependant inflammatory reactions were also accompanied, under HI and LPS+HI conditions, at P12 only, by combined: (i) expression of chemokines CINC-1 and MCP-1, (ii) blood-brain barrier (BBB) leakage, and (iii) intracerebral recruitment of systemic immune cells such as neutrophils. In contrast, sole LPS induced IL-1beta responses mainly within white matter at P1 and mainly within

gray matter at P12, that were only associated with early MCP-1 (but no CINC-1) induction at both ages, without any recruitment of neutrophils and CD68+ cells. Conclusion. HI and LPS+HI induce pro-inflammatory oriented immune responses in both preterm and term like brains, with a maximal inflammatory response triggered by the combination of LPS+HI. The profile of these neuroinflammatory responses presented striking variations according to age: no or down-regulated anti-inflammatory responses associated with mainly IL-1 release in preterm-like brains (P1), in sharp contrast to term-like brains (P12) presenting stronger anti-and pro-inflammatory responses, including both IL-1 and TNF- releases, and BBB leakage. These developmental-dependant variations of neuroinflammatory response could contribute to the differential pattern of brain lesions observed across gestational ages in humans. This also highlights the necessity to take into consideration the maturation stage, of both brain and immune systems, in order to develop new anti-inflammatory neuroprotective strategies.

PMID: 21599903 [PubMed - as supplied by publisher]

#### **15. Gynecol Obstet Fertil. 2011 May 20. [Epub ahead of print]**

##### **Chorio-amnionitis: Clinical and biological aspects - medicolegal implications. [Article in French]**

Bessières B, Bernard P.

Source: Histo-embryologie et cytogénétique, CHU Necker, 149, rue de Sèvres, 75015 Paris, France.

The authors present fetal and maternal risks in chorio-amnionitis diseases. Major fetal risk is the increase of the rate of cerebral palsy which is growing to five. The protocol of 2011 is presented for the prevention and treatment of chorio-amnionitis in premature rupture of the membranes in relation with gestational age. A French statistical survey, period 2001 to 2006, indicates maternal risks of chorio-amnionitis. Medicolegal implications of the chorio-amnionitis diseases emphasize the importance of placental investigations and bacteriological tests.

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PMID: 21602077 [PubMed - as supplied by publisher]

#### **16. J Child Neurol. 2011 May 26. [Epub ahead of print]**

##### **Os Odontoideum as a Rare but Possible Complication in Children With Dyskinetic Cerebral Palsy: A Clinical and Neuroradiologic Study.**

Trabacca A, Dicuonzo F, Gennaro L, Palma M, Cacudi M, Losito L, De Rinaldis M.

Source: Scientific Institute IRCCS "Eugenio Medea," "La Nostra Famiglia" Unit of Neurorehabilitation I (Developmental Neurology & Functional Rehabilitation), Italy.

The authors describe a 12-year-old boy with dyskinetic (athetoid-dystonic subtype) cerebral palsy and os odontoideum. Dystonic and choreoathetotic components in cerebral palsy are movement disorders that are difficult to treat and cause major disability. Dystonic posturing causes excessive flexion, extension, and rotation of the neck. Repetitive abnormal movements in patients with this type of cerebral palsy give rise to a higher incidence of pathologic conditions affecting the craniovertebral junction. Os odontoideum is one of these pathologies, and it represents a rare anomaly of the odontoid process. There are only a few reports describing os odontoideum in children with dyskinetic cerebral palsy. This clinical and neuroradiologic study focuses on the problem of atlantoaxial instability and os odontoideum in these forms of cerebral palsy, which is too often underestimated.

PMID: 21616925 [PubMed - as supplied by publisher]