

Mondays 2 + 9 January 2012

**Cerebral Palsy Alliance** is delighted to bring you this free weekly bulletin of the latest published research into cerebral palsy.

Our organisation is committed to supporting cerebral palsy research worldwide - through information, education, collaboration and funding. This free weekly bulletin is just one of our activities. Please find out more at [www.cpresearch.org.au](http://www.cpresearch.org.au)

**Professor Nadia Badawi**

Macquarie Group Foundation Chair of Cerebral Palsy  
PO Box 560, Darlinghurst, New South Wales 2010 Australia

## Interventions and Management

### 1. Disabil Rehabil. 2011 Dec 26. [Epub ahead of print]

#### **A comparison of activity, participation and quality of life in children with and without spastic diplegia cerebral palsy.**

Calley A, Williams S, Reid S, Blair E, Valentine J, Girdler S, Elliott C.

Edith Cowan University, School of Exercise, Biomedical and Health Sciences.

**Purpose:** To measure activity, participation and QoL in children with CP and to determine how these differ from a comparable group of typically developing (TD) children. **Method:** A total of eleven males and eight females with CP ranging in age from 5 to 12 years (mean age 7 years 10 months, SD 1 year 10 months; GMFCS level I-II) and 19 age and sex matched TD peers were recruited. Activity was measured using Paediatric Activity Card Sort (PACS), 6-Minute Walk Test and Timed Up and Go Test (TUG). Participation was measured using the assessment of Life Habits (LIFE-H) and quality of life was measured using the Cerebral Palsy Quality of Life Questionnaire (CP-QoL). **Results:** TD children performed more activities of personal care than children with CP, as assessed via the PACS,  $t(40) = 3.266$ ,  $p = 0.002$ . TD children participate in more life habits than children with CP across all the LIFE-H domains except that of relationships. Results from the CP-QoL indicate that TD children experience a greater QoL in the domains of functioning,  $t(40) = 2.824$ ,  $p = 0.007$ , and participation and physical health,  $t(40) = 3.543$ ,  $p = 0.001$ , than children with CP. **Conclusions:** These findings encourage the development of therapeutic interventions that aim to reduce these imbalances at all levels of the International Classification of Functioning, Disability and Health. [Box: see text].

[PMID: 22200241](https://pubmed.ncbi.nlm.nih.gov/22200241/) [PubMed - as supplied by publisher]

### 2. Eur J Paediatr Neurol. 2011 Dec 23. [Epub ahead of print]

#### **Psychosocial adjustment in a Dutch sample of children with cerebral palsy.**

Vles GF, Hendriksen RG, Vles JS, Kessels AG, Hendriksen JG.

Department of Child Neurology, Maastricht University Medical Centre, P.O. Box 5800, 6202 AZ Maastricht, The Netherlands.

**BACKGROUND:** Over the last couple of years, there has been increasing interest for QoL in children with CP.

Psychosocial adjustment in these children remains underrepresented in current literature. AIMS: To describe psychosocial adjustment in children with CP by means of the Psychosocial Adjustment and Role Skills Scale III (PARS-III), to describe the psychometric properties of this questionnaire, to identify a cut-off score for psychosocial maladjustment and to investigate the relationship between patient characteristics (i.e. predictive factors) and psychosocial adjustment. METHODS: The parents of 93 children with CP (59 boys, 34 girls; mean age 12.3 years, SD 3.8; 4-18; GMFCS 1: 28, GMFCS 2: 5, GMFCS 3: 19, GMFCS 4: 18, GMFCS 5: 23) completed the PARS-III and the Child Behavior Checklist (CBCL) concerning the psychosocial and behavioral functioning of their child. RESULTS: Cronbach's alpha-coefficient for the PARS-III was 0.89 indicating good internal consistency. High correlation with the CBCL was found. Confirmatory factor analysis confirmed the 6 domain structure of the PARS-III. Overall, children with CP achieved lower psychosocial adjustment scores compared to healthy children. A cut-off score (1 SD below the mean) of 78 was found. When predicting psychosocial maladjustment in children with CP, less gross motor function, hand function, communication skills and bilateral involvement of CP are the most important factors, but these can only explain 36% of variation in psychosocial adjustment. CONCLUSION: Using the by-proxy version of the PARS-III it was found that children with CP are reported to achieve lower psychosocial adjustment scores than healthy children.

Copyright © 2011 European Paediatric Neurology Society. Published by Elsevier Ltd. All rights reserved.

[PMID: 22197464](#) [PubMed - as supplied by publisher]

### **3. Gait Posture. 2011 Dec 27. [Epub ahead of print]**

#### **Compressive tibiofemoral force during crouch gait.**

Steele KM, Demers MS, Schwartz MH, Delp SL.

Department of Mechanical Engineering, Stanford University, USA.

Crouch gait, a common walking pattern in individuals with cerebral palsy, is characterized by excessive flexion of the hip and knee. Many subjects with crouch gait experience knee pain, perhaps because of elevated muscle forces and joint loading. The goal of this study was to examine how muscle forces and compressive tibiofemoral force change with the increasing knee flexion associated with crouch gait. Muscle forces and tibiofemoral force were estimated for three unimpaired children and nine children with cerebral palsy who walked with varying degrees of knee flexion. We scaled a generic musculoskeletal model to each subject and used the model to estimate muscle forces and compressive tibiofemoral forces during walking. Mild crouch gait (minimum knee flexion 20-35°) produced a peak compressive tibiofemoral force similar to unimpaired walking; however, severe crouch gait (minimum knee flexion >50°) increased the peak force to greater than 6 times body-weight, more than double the load experienced during unimpaired gait. This increase in compressive tibiofemoral force was primarily due to increases in quadriceps force during crouch gait, which increased quadratically with average stance phase knee flexion (i.e., crouch severity). Increased quadriceps force contributes to larger tibiofemoral and patellofemoral loading which may contribute to knee pain in individuals with crouch gait.

Copyright © 2011 Elsevier B.V. All rights reserved.

[PMID: 22206783](#) [PubMed - as supplied by publisher]

### **4. J Pediatr Rehabil Med. 2011 Jan 1;4(3):219-23.**

#### **Daily care activities and hip pain in non-ambulatory children and young adults with cerebral palsy.**

Bischof FM, Chirwa TF.

School of Therapeutic Sciences, University of the Witwatersrand, Gauteng, South Africa.

Hip movement pain was identified in 13 (32.5%) of 40 children and young adults with cerebral palsy who were in residential care. All of the participants were non-ambulatory (Level IV and V of the GMFCS), and their ages ranged from 8 to 26 years (median 16.5 years). Ten of the 13 participants had unilateral hip dislocation and three had bilateral dislocations. Degenerative hip changes were identified on radiographs of the painful dislocated hips. The

occurrence of pain during a daily episode of washing, dressing, and transfer was recorded using non-verbal indicators. Washing of the lower body elicited significantly more pain responses than dressing ( $p=0.008$ ) and transfer ( $p < 0.001$ ). None of the participants had daily pain during all of the care activities. Pain was present in 1/3 of the patients and was intermittent in nature, indicating that conservative management can be considered for persons with cerebral palsy at Levels IV and V of the GMFCS who have established hip dislocations and this type of pain. This management could include medication, attention to seating and positioning, and careful handling during daily care activities.

[PMID: 22207098](#) [PubMed - in process]

##### **5. *Pediatr Phys Ther.* 2012 Spring;24(1):64-8.**

###### **Effects of constraint-induced movement therapy on gait, balance, and functional locomotor mobility.**

Zipp GP, Winning S.

Department of Graduate Programs in Health Sciences (Dr Zipp), Seton Hall University, South Orange, and Department of Physical Therapy and General Rehab (Ms Winning), Children Specialized Hospital, Toms River and Mountainside, New Jersey.

**PURPOSE:** This study reports the secondary effects of a constraint-induced movement therapy (CIMT) protocol on spatial temporal parameters of gait, balance, and functional locomotor mobility in children with cerebral palsy. **METHODS:** Sixteen children (4-12 years old) participated in a 3-week CIMT program. Participants were tested on the first and last day of the CIMT program using the Standardized Walking Obstacle Course (SWOC), the Pediatric Balance Scale (PBS) and the GAITRite Gold system (CIR Systems, Inc, Havertown, Pennsylvania). **RESULTS:** Wilcoxon signed rank tests were used on all pre- and posttests. Only the spatial temporal parameters of cadence and velocity differed significantly, with 12 subjects displaying a faster cadence ( $P = .02$ ) and 10 subjects displaying a faster velocity ( $P = .05$ ). **CONCLUSION:** In this pilot study, CIMT was found to promote changes in 2 spatial temporal parameters of gait. However, no changes were noted in the participant's measures on the SWOC and PBS.

[PMID: 22207472](#) [PubMed - in process]

##### **6. *J Pediatr Rehabil Med.* 2011 Jan 1;4(3):205-17.**

###### **Five-year outcome of state-wide hip surveillance of children and adolescents with cerebral palsy.**

Kentish M, Wynter M, Snape N, Boyd R.

Queensland Cerebral Palsy Health Service, Royal Childrens Hospital, Brisbane, QLD, Australia.

This study reports the five-year outcomes of a prospective population-based study of clinical hip surveillance for children with cerebral palsy (CP) according to evidence-based standards of care. Systematic hip surveillance commenced in Queensland, Australia as a state-wide program in 2005. Queensland represents a dispersed population across a large geographical area, creating unique challenges in terms of service delivery. Over five years, 1,115 children with CP were recruited, representing 73% of the expected population based on 1.9 to 2.1 per 1,000 live births. Standardized clinical and radiological assessments have been provided, with a median follow-up of 1.2 years (range 1 month - 8 yrs). Of the 1,115 children, 423 (38%) have been discharged and 692 (62%) remain on surveillance with 314 (28%) identified as having hip displacement with Migration Percentage (MP) equal to or greater than 30% ( $\geq 30$ ). The incidence of marked hip displacement ( $MP \geq 30$ ) was directly related to gross motor function, classified according to the gross motor function classification system (GMFCS), with distribution of GMFCS I=10, (3%), II=40 (13%), III=53 (43%), IV=96 (59%), and V=115 (64%). This state-wide surveillance program has been successful in correctly identifying children with hip displacement ( $MP \geq 30$ ), fast tracking children for orthopedic review and discharging those at minimal risk. No child has progressed to dislocation while on surveillance without orthopedic review.

[PMID: 22207097](#) [PubMed - in process]

**7. J Pediatr Rehabil Med. 2011 Jan 1;4(3):183-95.****The consensus statement on Hip Surveillance for Children with Cerebral Palsy: Australian Standards of Care.**

Wynter M, Gibson N, Kentish M, Love S, Thomason P, Kerr Graham H.

Royal Children's Hospital, Brisbane, QLD, Australia.

The 'Consensus Statement on Hip Surveillance for Children with Cerebral Palsy: Australian Standards of Care' ('Standards of Care') provides a clear and concise guideline for inclusion of hip surveillance into current services. The 'Standards of Care' have been developed by a multidisciplinary working group for the education and information of all health professionals working with children with CP and their families. The 'Standards of Care' were developed through extensive review of the literature and garnering of expert opinion from professionals working in the area within Australia and New Zealand. A formalized external consensus process was conducted from 2007 to 2008 and the 'Consensus Statement on Hip Surveillance for Children with Cerebral Palsy: Australian Standards of Care' became the basis for best practice around Australia in 2008. It has been endorsed by The Australasian Academy of Cerebral Palsy and Developmental Medicine (AusACPDM). Prospective longitudinal study will evaluate both effectiveness and cost/benefit outcomes of this recommended hip surveillance standard of care.

[PMID: 22207095](#) [PubMed - in process]

**8. J Pediatr Rehabil Med. 2011 Jan 1;4(3):171-82.****The development of Australian Standards of Care for Hip Surveillance in Children with Cerebral Palsy: How did we reach consensus?**

Wynter M, Gibson N, Kentish M, Love S, Thomason P, Kerr Graham H.

Royal Children's Hospital, Brisbane, QLD, Australia.

Progressive hip displacement is the second most common deformity in children with cerebral palsy (CP) [1]. For many decades, the methods of monitoring hip health and development in children with CP varied widely between facilities. Recently, systematic population based studies have identified some of the factors and characteristics of children with CP who would most benefit from hip surveillance [2,3]. Health services providing hip surveillance within Australia identified a need for clinical guidelines to assist in provision of comprehensive and best practice health care for children with CP across all patient demographics. Guidelines providing clear, evidence based information on specific timing for commencement, frequency, and discharge have not previously been published. This article analyses the supportive evidence for comprehensive hip surveillance, discusses the development of draft guidelines in Australia, and describes the process for achieving national consensus resulting in the Consensus Statement on Hip Surveillance for Children with Cerebral Palsy: Australian Standards of Care. These standards of care are being followed in clinical facilities across Australia and are endorsed by the Australasian Academy of Cerebral Palsy and Developmental Medicine (AusACPDM).

[PMID: 22207094](#) [PubMed - in process]

**9. J Pediatr Rehabil Med. 2011 Jan 1;4(3):237-8.****Hip surveillance for children with cerebral palsy: Are the Australian standards the gold standard?**

[No authors listed]

[PMID: 22207101](#) [PubMed - in process]

**10. J Pediatr Rehabil Med. 2011 Jan 1;4(3):235-6.****Hip surveillance for children with cerebral palsy: Are the Australian standards the gold standard?**

Narayanan UG.

University of Toronto, Divisions of Orthopaedic Surgery and Child Health Evaluative Sciences, The Hospital for Sick Children, Bloorview Research Institute, Toronto, ONT, Canada.

[PMID: 22207100](#) [PubMed - in process]

**11. J Pediatr Rehabil Med. 2011 Jan 1;4(3):197-203.****Hip displacement and overall function in severe cerebral palsy.**

Zarrinkalam R, Rice J, Brook P, Russo RN.

The Department of Paediatric Rehabilitation, Women's and Children's Health Network, Women's and Children's Hospital Campus, North Adelaide, SA, Australia.

**Objective:** The aim of this study was to investigate the relationship between hip displacement (HD) in individuals with severe cerebral palsy with function and quality of life (QOL). The second aim was to identify differences in these outcomes when comparing surgical and non-surgical management for HD. **Design:** Cross-sectional study of 26 participants born between 1988 and 1998 who had hip displacement on their most recent hip radiograph. **Method:** Caregivers completed the Caregiver Priorities and Child Health Index of Life with Disabilities (CPCHILD©) questionnaire. Hip migration percentage and a validated hip classification were used. **Results:** Significant positive correlation coefficients (CC) were found for mobility and comfort (CC=0.620,  $p = 0.001$ ) as well as for QOL and comfort (CC=0.683,  $p < 0.001$ ). Orthopedic hip surgery was associated with better scores for mobility (median [95% CI]); surgery vs. none; (36.1 [27.7, 44.4]) vs (25.6 [22.2, 29.8]) and personal care, (32.1 [27.1, 43.2]) vs (25.9 [22.7, 30.8]). Severity of HD had no significant association with comfort or QOL. **Conclusion:** Mobility and personal care scores were significantly better in children who had undergone reconstructive hip surgery. However, QOL and pain scores were not associated with the severity of hip displacement or undertaking reconstructive hip surgery.

[PMID: 22207096](#) [PubMed - in process]

**12. J Pediatr Rehabil Med. 2011 Jan 1;4(3):163-9.****Is arthrodesis the end in spastic hip disease?**

Fucs PM, Svartman C, Assumpção RM, Yamada HH, Rancan DR.

Neuromuscular Clinic, Department of Orthopaedics and Traumatology, Santa Casa Medical School and Hospitals, São Paulo, Brazil.

**Introduction:** The purpose of this study was to evaluate the long term results of 19 painful dislocated hips in patients with spastic cerebral palsy (CP) who were treated with hip arthrodesis and internal fixation. **Patients and Methods:** The study included 19 patients with spastic CP with a mean age of 17 years and five months (min 10+11 and max 30+8) at the time of surgery. There were 11 tetraplegics, 5 diplegics, 2 diplegics with athetosis, and one hemiplegic. Functionally, 4 patients were community ambulators, 2 were household, and 13 were non-ambulators. Six patients had previous hip procedures prior to arthrodesis. The main surgical indications were pain and too much joint destruction to reconstruct the hip. The mean follow-up period was 11 years and one month. **Results:** All patients showed bone union and pain relief, and postural improvement was seen in almost all patients. Four patients needed revision, with implant change and bone graft for delayed union. In two cases, the hip arthrodesis ended up being converted into a Castle procedure due to difficulties in positioning and/or increasing spinal deformity. **Conclusion:** Hip arthrodesis is a reasonable option in treating painful spastic subluxated and dislocated hips in CP, primarily in unilateral cases and in patients with ambulatory ability.

[PMID: 22207093](#) [PubMed - in process]

**13. J Rehabil Med. 2011 Dec 21. doi: 10.2340/16501977-0930. [Epub ahead of print]****Face and construct validity of the Gait Deviation Index in adults with spastic cerebral palsy.**

Maanum G, Jahnsen R, Stanghelle JK, Sandvik L, Larsen KL, Keller A.

Sunnaas Rehabilitation Hospital, Nesoddtangen, Norway. E-mail: grethe.manum@sunnaas.no.

**Objective:** To investigate face and construct validity of the Gait Deviation Index (GDI) in adults with spastic cerebral palsy. The International Classification of Functioning, Disability and Health (ICF) was used as a framework, defining gait and walking as the manner or style of walking ("body function"), and the execution of gait ("activity"), respectively. **Design:** A cross-sectional study. **Methods:** Participants: 66 adults with spastic cerebral palsy, mean age 37 years, and previously collected data on 50 healthy adults (reference population). Variables: GDI from three-dimensional gait analysis, Gross Motor Function Classification System (GMFCS), 6-min walk test (6MWT), Timed Up and Go (TUG), and Physiological Cost Index (PCI). **Results:** Mean GDI was 74.3 in adults with cerebral palsy, and 101.1 in the reference population. A significant difference in GDI was found between the reference population and GMFCS level I ( $p < 0.001$ ), between I and II ( $p < 0.001$ ), but not between II and III ( $p = 0.633$ ). The associations between GDI and 6MWT, TUG and PCI were  $r = 0.30$ ,  $r = -0.30$ , and  $r = -0.56$ , respectively. **Conclusion:** GDI demonstrated similar distributional properties as those reported in children with cerebral palsy, suggesting satisfactory face validity. Low correlations between GDI and 6MWT/TUG reflect that gait and functional walking/mobility are different constructs, implicating the importance of selecting outcomes in all ICF domains when evaluating walking ability in adults with spastic cerebral palsy.

[PMID: 22214985](#) [PubMed - as supplied by publisher]

**14. Spine (Phila Pa 1976). 2012 Jan 2. [Epub ahead of print]****Scoliosis in a Total Population of Children with Cerebral Palsy.**

Måns PB, Gunnar H, Henrik LP, Statistician WP, Lena W.

1. Department of Orthopaedics, Lund University Hospital, SE-221 85 Lund, Sweden. 2. Division of Paediatrics, Department of Clinical Sciences Lund, Lund University, SE-221 00 Lund, Sweden 3. Swedish National Competence Centre for Musculoskeletal Disorders, Lund University Hospital, SE-221 85 Lund, Sweden.

**Study Design.** Epidemiological total population study based on a prospective follow-up CP registry. **Objective.** To describe the prevalence of scoliosis in a total population of children with CP, to analyse the relation between scoliosis, gross motor function and CP subtype, and to describe the age at diagnosis of scoliosis. **Summary of Background Data.** Children with cerebral palsy (CP) have an increased risk of developing scoliosis. The reported incidence varies, partly due to different definitions and study groups. Knowledge of the prevalence and characteristics of scoliosis in an unselected group of children with different CP types and levels of function is important for health care planning and for analysing the risk in an individual child. **Methods.** A total population of 666 children with CP, aged 4-18 years 1 January 2008, followed with annual examinations in a healthcare program was analysed. Gross motor function (GMFCS level), CP subtype, age at clinical diagnosis of scoliosis, and the Cobb angle at the first radiographic examination were registered. **Results.** Of the 666 children 116 (17%) had mild and a further 76 (11%) had moderate or severe scoliosis based on clinical examination. Radiographic examination showed a Cobb angle  $>10$  degrees in 54 (8%) children and  $>20$  degrees in 45 (7%) children. The risk of developing scoliosis increased with GMFCS level and age. In most children the scoliosis was diagnosed after 8 years of age. Children in GMFCS level IV or V had a 50% risk of having moderate or severe scoliosis by the age of 18, while children in GMFCS level I or II had almost no risk. **Conclusions.** The incidence of scoliosis increased with GMFCS level and age. Observed variations related to CP subtype were confounded by GMFCS, reflecting the different distribution of GMFCS levels in the subtypes. Follow-up programs for early detection of scoliosis should be based on the child's GMFCS level and age.

[PMID: 22218299](#) [PubMed - as supplied by publisher]

**16. NeuroRehabilitation. 2011 Jan 1;29(4):413-9.****Radial extracorporeal shock wave therapy (rESWT) in the treatment of spasticity in cerebral palsy: A randomized, placebo-controlled clinical trial.**

Vidal X, Morral A, Costa L, Tur M.

Cerebral Palsy Association (ASPACE), Centre Pilot Arcàngel Sant Gabriel, Barcelona, Spain Blanquerna School of Health Science, Universitat Ramon Llull, Barcelona, Spain.

**Aim:** The aim of this study was to evaluate the efficacy and safety of radial extracorporeal shock wave therapy (rESWT) in the treatment of spasticity in patients with cerebral palsy. **Methods:** Fifteen patients with spastic cerebral palsy, 12 men and 3 women, aged 10-46 years (mean age 31). The 15 patients presented 40 spastic muscles that were divided in three groups using a computerized random-number generator. The first group, received rESWT in spastic muscle. The second group received rESWT in spastic muscle + rESWT in antagonist muscle. The third group received placebo. Range of motion and Ashworth Scale were performed. This study is a randomized, placebo-controlled clinical trial. The patients were treated in 3 sessions at intervals of one week. **Results:** There are significant differences between groups treated with rESWT and group placebo. A significant decrease in the Ashworth Scale, an increase in the range of motion, were observed in all patients that were treated with rESWT. Positive results were maintained for at least 2 months after treatment. **Interpretation:** The treatment with rESWT is more effective than placebo in decreasing spasticity of patients with CP.

[PMID: 22207070](#) [PubMed - in process]

**17. J Neurosci Nurs. 2012 Feb;44(1):36-42.****Appreciating life: being the father of a child with severe cerebral palsy.**

Appelbaum MG, Smolowitz JL.

Janice L. Smolowitz, EdD DNP ANP, is a senior associate dean and professor of clinical nursing at Columbia University School of Nursing, New York, NY.

This phenomenological study examined the experience of being the father of a child with severe cerebral palsy (CP). Participants were selected using purposive sampling. Two interviews were conducted with 6 English-speaking, biological fathers whose children with CP (ages 5-27 years) were enrolled in a residential and day school in northeastern United States. Audiotaped interviews were transcribed, and thematic analysis was conducted using van Manen's methodology. Themes identified were as follows: Lost in birth; My beautiful unique child; Illness as a way of life...you can't get used to it and after a while it feels like no one cares; Partners-loyalty and commitment; How the world receives my child; Healthcare providers-I'm here; Torn...when your child can't live at home...finding a place to live and grow; and Faith. Clinicians should encourage, value, and include fathers' input during discussions of medical and social problems and when developing long-term care plans. Further research exploring the experiences of fathers of children with CP should be conducted.

[PMID: 22210303](#) [PubMed - in process]

**18. Paediatr Anaesth. 2012 Feb;22(2):179. doi: 10.1111/j.1460-9592.2011.03698.x.****In reply: absence of perioperative analgesia in children with cerebral palsy: how justified is it?**

Kim SH, Chang CH, Shin YS.

Department of Anesthesiology and Pain Medicine, Kangnam Sacred Heart Hospital, Hallym University College of Medicine, Seoul, South Korea Department of Anesthesiology and Pain Medicine, Anesthesia and Pain Research Institute, Yonsei University College of Medicine, Seoul, South Korea Email: ys shin@yuhs.ac.

[PMID: 22211646](#) [PubMed - in process]

19. Paediatr Anaesth. 2012 Feb;22(2):178. doi: 10.1111/j.1460-9592.2011.03699.x.

**Absence of perioperative analgesia in children with cerebral palsy: how justified is it?**

Makkar JK, Singh NP.

Department of Anaesthesia and Intensive Care, Postgraduate Institute of Medical Education and Research, Chandigarh, India Department of Anaesthesia and Pain Management, Alchemist Hospital, Chandigarh, India Email: jeet1516@gmail.com.

[PMID: 22211644](#) [PubMed - in process]

---

## Prevention and Cure

---

20. Am J Obstet Gynecol. 2011 Oct;205(4):296-7.

**Magnesium sulfate for fetal neuroprotection.**

Rouse DJ.

Alpert Medical School of Brown University and Maternal-Fetal Medicine Specialist, Women & Infants Hospital of Rhode Island, Providence, RI, USA.

[PMID: 22083052](#) [PubMed - indexed for MEDLINE]

21. Am J Obstet Gynecol. 2011 Oct;205(4):296-7.

**Magnesium sulfate for neuroprotection in patients at risk for early preterm delivery: not yet.**

Sibai BM.

Department of Obstetrics and Gynecology, University of Cincinnati, College of Medicine, Cincinnati, OH, USA.

[PMID: 22083053](#) [PubMed - indexed for MEDLINE]

22. Rev Bras Ginecol Obstet. 2011 Jun;33(6):265-70.

**Magnesium sulphate for fetal neuroprotection.**

Costa Fda S, Lopes L, Brennecke S.

[PMID: 21877014](#) [PubMed - indexed for MEDLINE]

23. Eur J Health Law. 2011 Dec;18(5):521-30.

**A French hospital sentenced for unreasonable obstinacy.**

Manaouil C, Gignon M, Jardé O.

Amiens University Hospital, Forensic and Medical Law Unit, France. manaouil.cecile@chu-amiens.fr

On 2 June 2009, the Nimes administrative court condemned the Hospital of Orange (France) for unreasonable

obstinacy after neonatal resuscitation. On 14 December 2002, an apparently stillborn child was resuscitated after approximately 30 minutes of foetal distress. Cardiac activity was recovered, but the child has since suffered from severe disabilities. The court did not find any fault committed by the hospital regarding maternal care. However, the hospital was sentenced to compensate for the injuries caused by unreasonable obstinacy. According to the court, the medical team should have taken into account the harmful neurological consequences of prolonged foetal distress. The court did not condemn the act of resuscitation itself, but its excessive length. This court ruling serves as a basis for reflection regarding the limits by which unreasonable obstinacy should be set.

[PMID: 22128520](#) [PubMed - indexed for MEDLINE]

**24. J Pediatr. 2011 Dec;159(6):1049; author reply 1049-50. Epub 2011 Sep 29.**

**Periventricular leukomalacia and neurodevelopmental outcome.**

Resch B, Resch E, Maurer U, Mueller W.

Comment on

J Pediatr. 2011 Jul;159(1):86-91.e1.

[PMID: 21962604](#) [PubMed - indexed for MEDLINE]

**25. Dev Med Child Neurol. 2011 Dec 27. doi: 10.1111/j.1469-8749.2011.04165.x. [Epub ahead of print]**

**Bilateral alterations in somatosensory cortical processing in hemiplegic cerebral palsy.**

Nevalainen P, Pihko E, Mäenpää H, Valanne L, Nummenmaa L, Lauronen L.

BioMag Laboratory, Hospital District of Helsinki and Uusimaa, HUSLAB, Helsinki University Central Hospital, Helsinki Brain Research Unit, Low Temperature Laboratory, Aalto University School of Science, Espoo Department of Child Neurology, Helsinki University Central Hospital, Helsinki Helsinki Medical Imaging Centre, Department of Radiology, Helsinki University Central Hospital, Helsinki Department of Clinical Neurophysiology, Hospital for Children and Adolescents, Helsinki University Central Hospital, Helsinki, Finland.

**Aim:** In individuals with cerebral palsy (CP), cerebral insults during early development may induce profound reorganization of the motor representation. This study determined the extent of alterations in cortical somatosensory functions in adolescents with hemiplegic CP with subcortical brain lesions. **Method:** We recorded somatosensory evoked magnetic fields in response to hand area stimulation from eight adolescents with hemiplegic CP (five females and three males; mean age 14y 6mo, SD 2y 3mo) and eight age- and sex-matched healthy comparison adolescents (mean age 15y 4mo, SD 2y 4mo). All participants in the CP group had purely subcortical brain lesions in magnetic resonance images. **Results:** The somatosensory representation of the affected limb was contralateral (i.e. ipsilesional), but detailed inspection of the evoked responses showed alterations bilaterally. In the primary somatosensory cortex, the representation areas of digits II and V were in both hemispheres closer to each other in participants with CP than in comparison participants [ANOVA main effect group  $F(1,14) = 5.58$ ;  $p = 0.03$ ]. In addition, the morphology of median nerve evoked fields was altered in the participants with CP. **Interpretation:** In hemiplegic CP, modification of the somatosensory cortical network extends beyond what would be expected based on the unilateral symptoms and the anatomical lesion. Further understanding of the functional alterations in the sensorimotor networks may aid in developing more precisely designed rehabilitation strategies.

© The Authors. Developmental Medicine & Child Neurology © 2011 Mac Keith Press.

[PMID: 22211315](#) [PubMed - as supplied by publisher]

**26. Neurobiol Dis. 2011 Dec 13. [Epub ahead of print]****NO-dependent protective effect of VEGF against excitotoxicity on layer VI of the developing cerebral cortex.**

El Ghazi F, Desfeux A, Brasse-Lagnel C, Roux C, Lesueur C, Mazur D, Remy-Jouet I, Richard V, Jégou S, Laudenbach V, Marret S, Bekri S, Prevot V, Gonzalez BJ.

EA "NeoVasc" 4309, Laboratory of Microvascular Endothelium and Neonate Brain Lesions, Rouen Institute for Biomedical Research, European Institute for Peptide Research (IFR 23), University of Rouen, Rouen, France.

In industrialized countries, cerebral palsy affects 2.5‰ of preterm and term infants. At a neurochemical level, the massive release of glutamate constitutes a major process leading to excitotoxicity and neonatal brain lesions. Previous studies, conducted in the laboratory, revealed that, in ( $\delta/\delta$ )VEGF(A) transgenic mice, glutamate-induced brain lesions are exacerbated suggesting that VEGF(A) could play a protective action against excitotoxicity. Using a model of cultured cortical brain slices, the aim of the study was to characterize the central effects of VEGF against glutamate-induced excitotoxicity in neonates. Exposure of brain slices to glutamate induced a strong increase of necrotic cell death in the deep cortical layer VI and a decrease of apoptotic death in superficial layers II-IV. When administered alone, a 6-h treatment with VEGF(A) had no effect on both apoptotic and necrotic deaths. In contrast, VEGF(A) abolished the glutamate-induced necrosis observed in layer VI. While MEK and PI3-K inhibitors had no effect on the protective action of VEGF(A), L-NAME, a pan inhibitor of NOS, abrogated the effect of VEGF(A) and exacerbated the excitotoxic action of glutamate. Calcimetry experiments performed on brain slices revealed that VEGF(A) reduced the massive calcium influx induced by glutamate in layer VI and this effect was blocked by L-NAME. Neuroprotective effect of VEGF(A) was also blocked by LNIO and NPLA, two inhibitors of constitutive NOS, while AGH, an iNOS inhibitor, had no effect. Nitrite measurements, electron paramagnetic resonance spectroscopy and immunohistochemistry indicated that glutamate was a potent inducer of NO production via activation of nNOS in the cortical layer VI. In vivo administration of nNOS siRNA promoted excitotoxicity and mimicked the effects of L-NAME, LNIO and NPLA. A short-term glutamate treatment increased nNOS Ser1412 phosphorylation, while a long-term exposure inhibited nNOS/NR2B protein-protein interactions. Altogether, these findings indicate that, in deep cortical layers of mice neonates, glutamate stimulates nNOS activity. Contrasting with mature brain, NO production induced by high concentrations of glutamate is neuroprotective and is required for the anti-necrotic effect of VEGF (A).

Copyright © 2011. Published by Elsevier Inc.

[PMID: 22209711](#) [PubMed - as supplied by publisher]

**27. Neuron Glia Biol. 2012 Jan 5:1-3. [Epub ahead of print]****Glutamate receptors: the cause or cure in perinatal white matter injury?**

Fields RD.

Nervous System Development and Plasticity Section, The Eunice Kennedy Shriver National Institute of Child Health and Human Development, National Institutes of Health, Bethesda, MD, USA.

Glutamate toxicity from hypoxia-ischaemia during the perinatal period causes white matter injury that can result in long-term motor and intellectual disability. Blocking ionotropic glutamate receptors (GluRs) has been shown to inhibit oligodendrocyte injury in vitro, but GluR antagonists have not yet proven helpful in clinical studies. The opposite approach of activating GluRs on developing oligodendrocytes shows promise in experimental studies on rodents as reported by Jartzie et al., in this issue. Group I metabotropic glutamate receptors (mGluRs) are expressed transiently on developing oligodendrocytes in humans during the perinatal period, and the blood-brain-barrier permeable agonist of group I mGluRs, 1-aminocyclopentane-trans-1,3-dicarboxylic acid (ACPD), reduces white matter damage significantly in a rat model of perinatal hypoxia-ischaemia. The results suggest drugs activating this class of GluRs could provide a new therapeutic approach for preventing cerebral palsy and other neurological consequences of diffuse white matter injury in premature infants.

[PMID: 22217580](#) [PubMed - as supplied by publisher]

### **Subscribe to CP Research News**

To subscribe to this research bulletin, please complete the online form at [www.cpresearch.org/subscribe/researchnews](http://www.cpresearch.org/subscribe/researchnews) You can bookmark this form on the home screen of your smart phone and also email the link to a friend.

To unsubscribe, please email [researchnews@cerebralpalsy.org.au](mailto:researchnews@cerebralpalsy.org.au) with 'Unsubscribe' in the subject line, and your name and email address in the body of the email.