

Monday 31 May 2010

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. *Yonsei Med J.* 2010 Jul;51(4):579-84.

#### **Short-term effects of combined serial casting and botulinum toxin injection for spastic equinus in ambulatory children with cerebral palsy.**

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

Department and Research Institute of Rehabilitation Medicine, Yonsei University College of Medicine, 250 Seongsan-ro, Seodaemun-gu, Seoul 120-752, Korea. [iamchangwh@naver.com](mailto:iamchangwh@naver.com).

**Purpose:** The purpose of this paper is to test the hypothesis that combination therapy of serial cast and botulinum toxin type A (BTX-A) injection can further enhance the effects of a BTX-A injection in ambulant children with cerebral palsy (CP) who have an equinus foot. **Materials and Methods:** Children in group A (30 legs of 21 children) received a serial casting application after an injection of BTX-A, and children in group B (25 legs of 17 children) received only a BTX-A injection. Assessments were performed before the intervention and 1 month after the intervention. **Results:** After the intervention, there were significant improvements in tone, dynamic spasticity, and passive range of motion (ROM) in both groups. However, the changes were greater in group A than in group B. Dimension D (standing) in Gross Motor Function Measure (GMFM)-66 was significantly improved in group A but not in group B. On the other hand, there were no significant changes in dimension E (walking, running, jumping) in GMFM-66 in either group. **Conclusion:** The results of our study suggest that a serial casting application after BTX-A injection can enhance the benefits of BTX-A injection in children with cerebral palsy.

PMID: 20499426 [PubMed - in process]Free Article

### 2. *Augment Altern Commun.* 2010 Jun;26(2):122-35.

#### **Implementing augmentative and alternative communication in inclusive educational settings: a case study.**

Stoner JB, Angell ME, Bailey RL.

Illinois State University, Normal, 61790, USA. [jbstone@ilstu.edu](mailto:jbstone@ilstu.edu) <[jbstone@ilstu.edu](mailto:jbstone@ilstu.edu)>

The purpose of this study was to describe a single case of augmentative and alternative communication (AAC) implementation. Case study methodology was used to describe the perspectives of educational team members regarding AAC implementation for Joey, a high school junior with athetoid cerebral palsy. Benefits included greater intelligibility for Joey and subsequent comfort of the staff. Facilitators of Joey's AAC system use included the team's student-focused disposition and willingness to implement use of the device, Joey's increased intelligibility, peers' acceptance of the technology, and the resulting increase in Joey's socialization. Limited team cohesiveness, problem solving, and communication were the true barriers in this case. Implications of these facilitators and

barriers are discussed and recommendations for school-based AAC implementation are made.

PMID: 20497075 [PubMed - in process]

### **3. Augment Altern Commun. 2010 Jun;26(2):97-107.**

#### **Assessing comprehension of spoken language in nonspeaking children with cerebral palsy: application of a newly developed computer-based instrument.**

Geytenbeek JJ, Heim MM, Vermeulen RJ, Oostrom KJ.

VU University Medical Centre, The Netherlands. J.Geytenbeek@vumc.nl <J.Geytenbeek@vumc.nl>

This paper describes the development of an instrument to assess comprehension of spoken language in children with severe cerebral palsy (CP) who cannot speak, and for whom standard language assessment measures are not appropriate due to severe motor impairment. This instrument, the Computer-Based instrument for Low motor Language Testing (C-BiLLT), was administered to 42 children without disabilities (aged 14 months to 60 months) and to 18 children with severe CP (age 19 months to 71 months). Preliminary data showed that the instrument was acceptable to the children. Convergent validity was investigated by correlating C-BiLLT scores with test results on the well-established Reynell Developmental Language Scales (RDLS). Clinical implications and recommendations for future research are discussed.

PMID: 20497073 [PubMed - in process]

### **4. J Child Neurol. 2010 Jun;25(6):794.**

#### **Response to correspondence on "outcome measures used in studies of botulinum toxin in childhood cerebral palsy: a systematic review".**

Baird MW.

NeuroDevelopmental Center Akron children's Hospital Akron, Ohio.

PMID: 20508239 [PubMed - in process]

### **5. J Child Neurol. 2010 Jun;25(6):793-4.**

#### **Correspondence on "outcome measures used in studies of botulinum toxin in childhood cerebral palsy: a systematic review".**

Bares M, Minks E, Husárová I, Ferencová K.

St. Anne's Teaching Hospital Masaryk University and Brno Movement Disorders Centre Brno, Czech Republic.

PMID: 20508237 [PubMed - in process]

### **6. J Child Neurol. 2010 Jun;25(6):694-700.**

#### **Upper extremity function and occupational performance in children with spastic cerebral palsy following lower extremity botulinum toxin injections.**

Keren-Capelovitch T, Jarus T, Fattal-Valevski A.

Department of Occupational Therapy, Stanley Steyer School of Health Professions, Sackler Faculty of Medicine, tlnzvkrn@netvision.net.il.

We studied the effect of botulinum toxin A injections to the lower extremities of spastic cerebral palsy children on upper limb body function and occupational performance. A total of 16 children with spastic cerebral palsy, aged 2 to 8 years, Gross Motor Function Classification System levels I-IV, referred to a child neurology outpatient clinic for botulinum toxin A injections to the lower limbs, underwent 4 assessments: 1 month prior to injection, immediate pre injection, and at 1 and 5 to 6 months post injection. Three tools were used to test everyday function (Canadian Occupational Performance Measure and the Pediatric Evaluation of Disability Inventory) and upper extremity body function (Quality of Upper Extremity Skills Test). Significant improvement was documented between the immediate preinjection and the 2 postinjection assessments, indicating that improvement lasted for at least 6 months. Botulinum toxin A injections to the lower extremities in children with cerebral palsy improve upper limb body function and occupational performance.

PMID: 20508235 [PubMed - in process]

#### **7. J Pediatr Orthop. 2010 Jun;30(4):396-402.**

##### **Level of improvement determined by PODCI is related to parental satisfaction after single-event multilevel surgery in children with cerebral palsy.**

Lee KM, Chung CY, Park MS, Lee SH, Choi IH, Cho TJ, Yoo WJ.

Department of Orthopaedic Surgery, Seoul National University Bundang Hospital, Bundang-Gu, Sunnam, Kyungki, Korea.

**BACKGROUND:** This study was performed to determine changes in Pediatric Outcomes Data Collection Instrument (PODCI) scores after single-event multilevel surgery (SEMS), and to evaluate the relationship between the improvements of PODCI scores and parental satisfaction after SEMS. **METHODS:** Demographic data, preoperative and postoperative PODCI, functional assessment questionnaire (FAQ) walking scales, and self-reported parental satisfaction with SEMS were obtained from 61 parents of ambulatory patients with cerebral palsy [40 male, 21 female, mean age 10 y 2 mo (SD 3 y 8 mo), mean follow-up 2 y 2 mo]. Postoperative improvements in each subscale of PODCI and FAQ were analyzed, and multiple regression analysis was performed to identify the factors that contributed significantly to postoperative parental satisfaction. Rasch analysis was performed for the PODCI subscale that was clinically relevant. **RESULTS:** FAQ, transfers/basic mobility, sports/physical activity, and global function subscales of PODCI significantly improved after SEMS. Age, gross motor function classification system level, and the amount of improvement in sports/physical activity subscale were found to affect parental satisfaction to SEMS significantly. However, the subscale showed insufficient item responses, and ceiling and floor effects. **CONCLUSIONS:** Although changes in sports/physical activity subscale were relatively small, they were found to affect parental satisfaction with SEMS significantly. These indicate that clinicians and researchers should pay attention to sports and physical activities in patients with cerebral palsy. **LEVEL OF EVIDENCE:** Diagnostic level I.

PMID: 20502242 [PubMed - in process]

#### **8. J Pediatr Orthop. 2010 Jun;30(4):357-64.**

##### **Varus derotation osteotomy for the treatment of hip subluxation and dislocation in GMFCS level III to V patients with unilateral hip involvement. Follow-up at skeletal maturity.**

Canavese F, Emara K, Sembrano JN, Bialik V, Aiona MD, Sussman MD.

Department of Pediatric Orthopedics, Shriners Hospital for Children, Portland, OR 97239, USA. canavese\_federico@yahoo.fr

**PURPOSE:** Hip displacement is common in children with cerebral palsy (CP). The risk of hip displacement is related to gross motor function level as graded with the Gross Motor Function Classification System (GMFCS). Most clinicians agree that surgical treatment is indicated for progressive hip subluxation in patients with CP. However, it is unclear whether unilateral bony surgery and musculotendinous release is effective in cases in which the contralateral hip is well seated. The purpose of this study is to describe the fate of the original and the contralateral hip of severely involved patients with CP, GMFCS III to V, with unilateral hip subluxation or dislocation treated by unilateral femoral osteotomy with or without pelvic osteotomy along with unilateral or bilateral soft tissue release when

the contralateral hip was well seated followed to skeletal maturity. **METHODS:** A continuous group of GMFCS III to V CP patients with unilateral hip subluxation or dislocation who underwent soft tissue release (adductor and iliopsoas) and unilateral intertrochanteric varus, rotation and shortening osteotomy with or without pelvic osteotomy are included. All patients were clinically and radiologically followed from the time of presentation until skeletal maturity. **RESULTS:** Twenty-seven children and adolescents with GMFCS level III, IV, and V met the inclusion criteria. Two patients (7.4%) were GMFCS III, 5 (18.5%) were GMFCS IV and 20 (74.1%) GMFCS V. The male:female ratio was almost 1 (13 boys and 14 girls). At the time of chart and radiograph review, the average age of this patient group was 20.4 years (range: 14 to 25 y). Twelve patients (44%) required subsequent bony surgical management of the contralateral hip for subluxation or dislocation after the index procedure. Initially, in all cases there was pelvic obliquity with the operative side higher, which reversed in cases in which the contralateral hip deteriorated, and did not reverse when the contralateral hip remained stable. Nine of them were treated with femoral varus osteotomy alone and 3 underwent a combination of femoral and pelvic osteotomy. Three of these 12 (25%) patients had revision of the first hip and bony correction of the contralateral hip. Age at surgery did not seem to have a significant effect on maintaining reduction or in preventing the contralateral hip to deteriorate. **CONCLUSIONS:** The rates of recurrence of the original hip and contralateral hip subluxation and dislocation after unilateral bony surgery in GMFCS III to V spastic patients are higher than those of other earlier series. However, in this series patients were followed until skeletal maturity. It is prudent to warn families of the possibility of long-term subluxation or dislocation of the original hip and development of the hip dysplasia requiring surgery on the contralateral side. Consideration should be given to adductor and iliopsoas release and bony surgery on the contralateral side in a GMFCS level III to V child undergoing surgery for hip displacement, even when the hip seem radiologically normal. If unilateral bony surgery is carried out, close radiological follow-up of both hips is recommended. It also seems that unilateral hip surgery alters the forces maintaining pelvic alignment, which can lead to destabilization of the contralateral hip. **LEVEL OF EVIDENCE:** Case series. Level IV.

PMID: 20502236 [PubMed - in process]

## 9. BMC Public Health. 2010 May 26;10(1):280. [Epub ahead of print]

### **Study protocol: Determinants of participation and quality of life of adolescents with cerebral palsy: a longitudinal study (SPARCLE2).**

Colver AF, Dickinson HO, Sparcle SG.

**BACKGROUND:** Children and adults with impairments such as cerebral palsy have lower participation in life situations than able-bodied people. Less is known about their subjective perception of their lives, called their quality of life. During adolescence, rapid physical and psychological changes occur; although these may be more difficult for disabled than for able-bodied adolescents, little research has examined the lives of disabled adolescents. In 2003-4 a European Union funded project, SPARCLE, visited 818 children aged 8-12 years with cerebral palsy, sampled from population-based registers in nine European regions. The quality of life reported by these disabled children was similar to that of the general population but their participation was lower; levels of participation varied between countries even for children with similar severity of cerebral palsy. We are currently following up these children, now aged 13-17 years, to identify (i) to what extent contemporaneous factors (pain, impairment, psychological health and parental stress) predict their participation and quality of life, (ii) what factors modify how participation and quality of life at age 8-12 years are associated with participation and quality of life in adolescence, and (iii) whether differences between European countries in participation and quality of life can be explained by variations in environmental factors. **METHODS:** Trained researchers will visit families to administer questionnaires to capture the adolescents' type and severity of impairment, socio-demographic characteristics, participation, quality of life, psychological health, pain, environmental access and parental stress. We will use multivariable models (linear, logistic or ordinal) to assess how adolescent participation, quality of life, psychological health, pain, environmental access and parental stress, vary with impairment and socio-demographic characteristics and, where possible, how these outcomes compare with general population data. For participation and quality of life, longitudinal analyses will assess to what extent these are predicted by corresponding levels in childhood and what factors modify this relationship. Structural equation modelling will be used to identify indirect relationships mediated by other factors.

PMID: 20504349 [PubMed - as supplied by publisher]

**10. J Clin Endocrinol Metab. 2010 May 25. [Epub ahead of print]****Risk of Corrected QT Interval Prolongation after Pamidronate Infusion in Children.**

Rothenbuhler A, Marchand I, Bougnères P, Linglart A.

Department of Pediatric Endocrinology and Diabetology, French Reference Center for Rare Diseases of the Calcium and Phosphate Metabolism, Hôpital Saint Vincent de Paul, Assistance Publique/Hôpitaux de Paris, Université Paris Descartes and Institut National de la Santé et de la Recherche Médicale, Unité 986, 75014 Paris, France.

**Background:** Hypocalcemia carries a risk of cardiac conduction incidents and death. Hypocalcemia is a frequent adverse effect of pamidronate. **Objective:** The objective of this study was to investigate whether pamidronate infusion lengthens the ventricular repolarization in children. **Design and Methods:** Thirty-four children with cerebral palsy and severe osteoporosis were treated for approximately 1 yr with pamidronate (three times per year). Calcemia and corrected QT interval (QTc) (in which the QT interval is a measure between the Q and T waves in the electrical cycle of the heart) were measured before and after each cycle of intravenous infusions. **Results:** Pamidronate decreased calcemia in all patients from 2.40 to 2.21 mM ( $P < 0.0001$ ) and increased QTc from 390 to 403 ms ( $P < 0.0001$ ), with 7.4% of postinfusion QTc becoming longer than 440 ms. QTc at baseline was significantly correlated to final QTc ( $P < 0.0001$ ;  $r(2) = 0.27$ ). **Conclusions:** Because we observed a lengthening in QTc after bisphosphonate infusion, we recommend that children treated with pamidronate should receive attention as to other possible risk factors of prolonged QT and have a preinfusion and postinfusion measurement of their QTc.

PMID: 20501688 [PubMed - as supplied by publisher]

**11. Dev Med Child Neurol. 2010 May 24. [Epub ahead of print]****Behavioural and emotional symptoms of preschool children with cerebral palsy: a population-based study.**

Sigurdardottir S, Indredavik MS, Eiriksdottir A, Einarsdottir K, Gudmundsson HS, Vik T.

State Diagnostic and Counselling Centre, Kopavogur, Iceland.

**Aim:** To describe behavioural and emotional symptoms among Icelandic preschool children with cerebral palsy (CP). **Method:** Children with congenital CP, assessed with the Child Behavior Checklist/1(1/2)-5 (CBCL/1(1/2)-5) and Caregiver-Teacher Report Form (C-TRF), were enrolled in the study. A comparison group was recruited from the general population. Thirty-six children (53% males) with CP were assessed at a mean age of 4 years 11 months (SD 5mo, range 4-6y); 26 (72%) had bilateral distribution of symptoms and 32 (89%) had spastic CP. Thirty (83%) were at Gross Motor Function Classification System levels I or II and six at levels III or IV. For comparison, 110 (43% males) and 120 (48% males) children were assessed with the CBCL/1(1/2)-5 and the C-TRF respectively, at a mean age of 4 years 6 months (SD 6mo, range 4-6y). **Results:** Sixteen children (48%) with CP had high scores on total problems scale of the CBCL/1(1/2)-5 and 20 (65%) on the C-TRF compared with 18% of the comparison group, both on the CBCL/1(1/2)-5 and the C-TRF ( $p < 0.001$ ). Children with CP had higher scores on all subscales of the CBCL/1(1/2)-5 and the C-TRF, except somatic complaints. Attention difficulties, withdrawn, aggressive behaviour, and anxious/depressed symptoms were most pronounced among children with CP. **Interpretation:** A large proportion of preschool children with CP have substantial behavioural and emotional difficulties, which need to be addressed in their treatment.

PMID: 20497458 [PubMed - as supplied by publisher]

**12. Dev Med Child Neurol. 2010 May 24. [Epub ahead of print]****Epilepsy in hemiplegic cerebral palsy due to perinatal arterial ischaemic stroke.**

Wanigasinghe J, Reid SM, Mackay MT, Reddihough DS, Harvey AS, Freeman JL.

University of Colombo, Lady Ridgeway Hospital, Sri Lanka.

**Aim:** The aim of this study was to describe the frequency, risk factors, manifestations, and outcome of epilepsy in

children with hemiplegic cerebral palsy (CP) due to perinatal arterial ischaemic stroke (AIS). Method: The study group comprised 63 participants (41 males, 22 females) from a population-based CP register whose brain imaging showed perinatal AIS. Information collected included occurrence of neonatal seizures, family history of epilepsy, motor function and epilepsy onset, treatment, and outcome. Electroclinical findings were classified according to seizure semiology, seizure type, and epilepsy syndrome. Results: Mean age of participants at the time of study was 10 years 6 months (SD 4y 7mo, range 4-20y). Gross Motor Function Classification System levels I and II were reported in 96% of participants, and Manual Ability Classification System levels I and II were reported in 79% of children. Thirty-four children (54%) developed epilepsy. Term delivery and more severe motor impairment were associated with epilepsy, but neonatal seizures and family history of epilepsy were not. Initial seizures were epileptic spasms, focal seizures, or myoclonic seizures. Focal seizure semiology suggested Rolandic or occipital seizure origin in the majority of children. Focal epileptic discharges in children with focal seizures had features of idiopathic partial epilepsy. Only 15% of children had active epilepsy 10 years after onset. Interpretation: Despite a high incidence of epilepsy in children with hemiplegic CP due to AIS, the prognosis for seizure remission is good. Many children have clinical features, electroencephalography findings, and remission typical of idiopathic partial epilepsy.

PMID: 20497457 [PubMed - as supplied by publisher]

### 13. Dev Med Child Neurol. 2010 May 24. [Epub ahead of print]

#### **Anthropometric measures: poor predictors of body fat in children with moderate to severe cerebral palsy.**

Kuperminc MN, Gurka MJ, Bennis JA, Busby MG, Grossberg RI, Henderson RC, Stevenson RD.

Department of Pediatrics, University of Virginia School of Medicine, Charlottesville, VA, USA.

Aim: This purpose of our study was to assess and compare anthropometric measures of adiposity and direct measurement of percentage body fat by dual emission X-ray absorptiometry (DXA) in children with cerebral palsy (CP). We also compared our results in children with CP with results from a national sample of typically developing children from the National Health and Nutrition Examination Survey. Method: Anthropometry and DXA were obtained from 58 participants with CP (25 females, 33 males; Gross Motor Function Classification System levels III-V; mean age 13y 1mo [SD 3y], range 8-18y). Height was estimated from knee height, which was measured with knee height calipers; weight was measured on a sitting scale. The relation between percentage body fat measured by DXA and z-scores of each of the anthropometric measures (body mass index, mid-upper arm circumference, triceps skinfold, and mid-upper arm fat area) was assessed by linear models. Agreement analysis was performed to assess the ability of each anthropometric measure to predict percentage body fat by DXA. Results: None of the anthropometric measures were adequately associated with percentage body fat by DXA. All anthropometric methods tended to underestimate percentage body fat in children with CP. Interpretation: Single anthropometric measures do not perform well in predicting percentage body fat in children with or without CP. Further work is needed to develop clinically useful and simple assessments that will predict percentage body fat and to determine the relation between percentage body fat and health to guide clinical practice.

PMID: 20497455 [PubMed - as supplied by publisher]

### 14. Dev Med Child Neurol. 2010 May 24. [Epub ahead of print]

#### **Prevalence and clinical presentation of constipation in children with severe generalized cerebral palsy.**

Veugelers R, Benninga MA, Calis EA, Willemsen SP, Evenhuis H, Tibboel D, Penning C.

Intellectual Disability Medicine, Department of General Practice, Erasmus MC, Rotterdam, the Netherlands.

Aim: Our aim was to study the prevalence and characteristics of constipation in children with profound multiple disabilities, as data in this area are scarce. Method: A cross-sectional observational study was performed in specialized day-care centres and schools in the Netherlands. The study included 152 children (81 males, 71 females; mean age 9y 6mo, SD 4y 6mo). Intellectual disability ranged from moderate (7%) to profound (52%) in all participants who also had severe motor disabilities (83% classified at Gross Motor Function Classification System level V). We collected data on defaecation characteristics, food and fluid intake, and laxative consumption using standardized bowel diaries and interviews. Constipation was defined as (1) scybalous, pebble-like, hard stools in over a

quarter of defaecations in combination with a defaecation frequency of less than three times per week during a 2-week study period; (2) large stools palpable on abdominal examination; or (3) laxative use or manual disimpaction of faeces. Results: Of the studied population, 57% were constipated and 55% used laxatives, 27% of whom showed symptoms of constipation. Daily intakes of water and fibre were below the required standards in 87% and 53% of participants respectively, without a proven relation to constipation. Interpretation: Constipation is a common problem in children with severe disabilities. Laxative use is high but dosing is frequently inadequate to prevent symptoms.

PMID: 20497454 [PubMed - as supplied by publisher]

#### 15. Dev Med Child Neurol. 2010 May 24. [Epub ahead of print]

##### **The effect of gastrostomy tube feeding on body protein and bone mineralization in children with quadriplegic cerebral palsy.**

Arrowsmith F, Allen J, Gaskin K, Somerville H, Clarke S, O'Loughlin E.

Department of Gastroenterology, The Children's Hospital at Westmead, New South Wales, Australia.

**Aim:** The aim of this study was to investigate the effect of gastrostomy tube feeding on body protein and bone mineralization in malnourished children with cerebral palsy (CP). **Method:** Children aged between 4 and 18 years with spastic quadriplegic CP (Gross Motor Function Classification System level V) were recruited from the Children's Hospital at Westmead to participate in this prospective cohort study. The children had measurements of anthropometry (weight, height, and skinfold), bone mineral content (BMC) by dual-energy X-ray absorptiometry, and total body protein (TBP) by neutron activation analysis before and after gastrostomy tube feeding. Comparison data were collected prospectively from age-matched healthy children and extracted from databases for this study. **Results:** A total of 21 children (nine females, 12 males) participated in the study (median age 8y 5mo; interquartile range [IQR] 6y 9mo-11y 10mo). The median length of time of gastrostomy feeding was 19.4 months (IQR 7.7-29.9mo). Significant ( $p < 0.05$ ) improvements were found in the median values for weight (15.4-23.3kg), weight standard deviation scores (SDS; -4.8 to -3.0), height (105.4-118.3cm), per cent body fat (10.7-16.3), TBP (2.4-3.4kg), TBP per cent predicted for height (83.4-99.0), and BMC (469-626g). No significant increases were found in height SDS, TBP per cent predicted for age, or BMC SDS for age or height. **Interpretation:** Malnourished children with quadriplegic CP showed significant increases in body fat and protein with gastrostomy tube feeding. No significant change in bone mineralization predicted for age or height was observed.

PMID: 20497453 [PubMed - as supplied by publisher]

#### 16. Eur J Paediatr Neurol. 2010 May 19. [Epub ahead of print]

##### **Neurophysiological changes induced by the botulinum toxin type A injection in children with cerebral palsy.**

Frascarelli F, Di Rosa G, Bisozzi E, Castelli E, Santilli V.

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In the last few years botulinum toxin type A (BTX-A) has been widely used in the management of spasticity in children with cerebral palsy in order to reduce hypertonicity and improve functional outcomes enhancing motor skill development. The botulinum toxin injection seems to interact with intrafusal and extrafusal fibers producing a reduction of hypertone both through synaptic blockade and inhibition of stretch reflex loop and these changes may influence not only the spinal cord but also the central nervous system (CNS). The purpose of our study was to determine the neurophysiological changes induced by the BTX-A through an evaluation of cortical somatosensory Evoked Potential (SEP) and Soleus H wave, that is the index of excitability of stretch reflex loop. Eighteen children with Cerebral Palsy (CP), aged between 5 and 12, were recruited at Children's Hospital "Bambino Gesù" of Rome. All children were evaluated with appropriate clinical scales before and 1 month after the BTX-A injection. Neurophysiological measurements were performed before, and 1 month after botulinum toxin injection through lower limb

SEPs, M-wave and Soleus H wave recording. After the injection the results showed a statistically significant improvement both of clinical scales and the neurophysiological variables. These findings suggest that spasticity itself can be considered as a factor affecting the cortical SEPs. And even though it seems that BTX-A does not have any direct central effect on sensory pathways we suppose an indirect mechanism on modulation of afferent fibers Ia due to the modification induced by BTX-A to central loop reflex. Copyright © 2010 European Paediatric Neurology Society. Published by Elsevier Ltd. All rights reserved.

PMID: 20493744 [PubMed - as supplied by publisher]

#### **19. J Appl Biomech. 2010 May;26(2):134-41.**

##### **The influence of swimming start components for selected olympic and paralympic swimmers.**

Burkett B, Mellifont R, Mason B.

Faculty of Science, Health and Education, University of the Sunshine Coast, Sippy Downs, QLD, Australia.

This study compared the components of the 15-m swimming start for 20 international male Olympic and Paralympic swimmers. The time, distance, and velocity components for freestyle swimming were measured. There were significantly ( $p < .05$ ) different absolute and relative swim start measures among the swimming groups. Using stepwise regression three variables significantly influenced the start to 15-m time: (i) underwater velocity, (ii) free swim velocity, and (iii) whether the swimmer had cerebral palsy. This new knowledge provides useful information for swimmers and coaches on which components to prioritize, along with the practical applications of improving the streamline position to increase underwater velocity and to ensure that the transition from underwater to surface breakout occurs at the optimal time for maximum free swim velocity.

PMID: 20498484 [PubMed - in process]

#### **21. Orthop Nurs. 2010 May-Jun;29(3):169-73; quiz 174-5.**

##### **Locomotor treadmill training for children with cerebral palsy.**

Mattern-Baxter K.

Department of Physical Therapy, University of the Pacific, Stockton, CA, USA.

Due to a rise in the incidence of cerebral palsy, this diagnosis is increasingly encountered by orthopaedic nurses. The majority of children with cerebral palsy have difficulty with ambulation. Because ambulation is important for orthopaedic and cardiopulmonary development, as well as independence with activities of daily living, the achievement of ambulation is an important therapeutic goal for these children. Locomotor treadmill training is a relatively new method that is used to teach children how to walk and make their ambulation more efficient. This article reviews the underlying principles of locomotor treadmill training and examines related literature for children with cerebral palsy.

PMID: 20505484 [PubMed - in process]

#### **22. Paediatr Nurs. 2010 May;22(4):14-9.**

##### **The needs of children and young people with cerebral palsy.**

Parkes J, Hill N.

Queen's University Belfast.

Because cerebral palsy (CP) is a sufficiently common condition of childhood and adolescence, the number and needs of these children and young people with cerebral palsy are monitored by centres across the UK (Surman et al 2006) and Europe (Surveillance of Cerebral Palsy in Europe 2000). This article describes the epidemiology of CP

in childhood using data derived from the Northern Ireland Cerebral Palsy Register, which is one of the longest running CP registers in Europe. The findings presented here are similar to, and representative of, the epidemiology of CP in the western world (Dolk et al 2006).

PMID: 20503684 [PubMed - in process]

### **23. Rehabil Psychol. 2010 May;55(2):188-93.**

#### **Inspection time and attention-deficit/hyperactivity disorder symptoms in children with cerebral palsy.**

Shank LK, Kaufman J, Leffard S, Warschausky S.

Department of Physical Medicine and Rehabilitation, University of Michigan, 325 East Eisenhower Parkway, Ann Arbor, MI 48108-5744, USA.

**OBJECTIVE:** To examine between-groups differences in the associations between aspects of processing speed assessed with an inspection time task and attention-deficit/hyperactivity disorder (ADHD) symptoms. **RESEARCH DESIGN:** Two groups comprising 34 children with cerebral palsy (CP) and 70 nonaffected peers (control), ages 8-16 years, participated in a prospective correlational study. Measures included a visual inspection time task and the Conners' Parent Rating Scale-Revised: Long Version. **RESULTS:** Children with CP exhibited significantly slower processing speed and more symptoms of inattention and hyperactivity than controls. Significant associations between inspection time and ADHD symptoms were found only in the control group. **CONCLUSIONS:** Findings have implications for clinical assessment and understanding of attentional risks associated with CP.

PMID: 20496973 [PubMed - in process]PMCID: PMC2877285 [Available on 2011/5/1]

### **24. Phys Occup Ther Pediatr. 2010 Feb;30(1):1-3.**

#### **Virtual reality: we are virtually there.**

Snider L, Majnemer A.

PMID: 20170427 [PubMed - indexed for MEDLINE]

### **25. Chir Narzadow Ruchu Ortop Pol. 2010 Jan-Feb;75(1):30-4.**

#### **Split posterior tibial tendon transfer as a selected technique of treatment of spastic equino-varus deformity in children [Article in Polish]**

Lipczyk Z, Golański G, Flont P, Niedzielski KR.

Klinika Ortopedii i Traumatologii, Instytut, Centrum Zdrowia Matki Polki w Łodzi.

Equinovarus deformity is one of the most common deformities seen in patients with cerebral palsy. During years between 1993 and 2004 in 36 patients with cerebral palsy 46 operative procedures of split posterior tibial tendon transfer to peroneus brevis muscle were performed to correct varus deformity of the foot. Additionally equinus was corrected by lengthening lengtheninglengthening of the calcaneal tendon in 42 cases and in 4 cases by gastrocnemius recession according to Baker modification of Vulpius procedure. Children's age at the time of operation was between 3.5 and 16 years of age (average 7.5). In our cohort of 36 patients there were 10 cases of quadriplegia (28%), 12 cases of hemiplegia (33%), 12 cases of paraparesis inferior (33%) and 2 cases of monoplegia (6%). 25 patients with 34 operated feet (73.9%) reported for final examination. Follow-up period was from 18 months to 11 years (average 5.5 years). At final examination we evaluated clinical effectiveness of gait, passive and active range of movement, plantograms, and subjective evaluation of patient and patients' parents. Wearing of orthoses and orthopaedic footwear was noted. The results were divided into groups according to Green's classification. There were 67.6% of very good results, 23.6% of good results and 8.8% of poor results. Basing on our experience in treatment of spastic equinovarus deformity of the foot in children with cerebral palsy we stand, that split posterior tibial tendon transfer can bring good results and is a valuable surgical technique in treatment of equinovarus deformity.

PMID: 20496775 [PubMed - in process]

**26. Z Orthop Unfall. 2009 Nov-Dec;147(6):721-6. Epub 2009 Aug 28.**

**Parental enquiries before frequenting the outpatient paediatric orthopaedic consultation--focus Internet [Article in German]**

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**PURPOSE:** Every day several million people are seeking for answers to medical problems via the internet. In particular parents, whose children are affected by systemic diseases, orthopaedic defective positions, anomalies or deformities, use the internet to increase their knowledge. Concerning this situation there is a lack of studies in the current literature. **METHODS:** We investigated parental preparation to the outpatient paediatric orthopaedic consultation at our University Hospital with respect to internet enquiries or further sources of information using a standardised questionnaire. We assessed age and educational background of the parents, local hardware equipment and general habits of internet use. In particular, we retrieved parental use of search machines (e.g., Google.de, Yahoo.de), general medical websites (e.g., netdoktor.de) and websites from self-help groups (e.g., klumpfussskin-der.de). **RESULTS:** In total, 288 out of 300 questionnaires (96%) were evaluated. More than half of the parents (57%) were over 35 years of age and 78% were women. 82% of the study population had access to the internet at home and 70% used the internet regularly. More than 80% obtained information about the orthopaedic diseases of their child beforehand. Age and educational background of the parents were not significantly correlated with the extent of enquiries ( $p > 0.05$ ). 90% of the parents, using the internet as source of information, frequented internet search machines; approximately one third used general medical websites. In particular in clubfeet we observed a highly significant ( $p < 0.001$ ) tendency of parents to frequent websites from self-help groups. 60% of the study population assessed the internet information as useful; 92% will frequent the internet as source of information again. One third of the respondents is going to discuss the obtained internet information with the physician. **CONCLUSIONS:** The internet is an important source of information for parents in the field of paediatric orthopaedics. Treating physicians will be increasingly confronted with the results of parental internet enquiries. Georg Thieme Verlag KG Stuttgart, New York.

PMID: 20183750 [PubMed - indexed for MEDLINE]

## Epidemiology / Aetiology / Diagnosis & Early Treatment

*Please note: This is not yet a comprehensive outline of cerebral palsy prevention literature. It is expected that more research will be included when the search terms are expanded to include key terms other than "cerebral palsy". It is a work-in-progress and it will be expanded in coming months.*

### 27. Stem Cells. 2010 May 21. [Epub ahead of print]

#### **Ephb3 Inhibits the Expansion of Neural Progenitor Cells in the SVZ by Regulating p53 During Homeostasis and Following Traumatic Brain Injury.**

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Ephrins and Eph receptor(s) have recently been implicated in regulating neurogenesis in the adult subventricular zone (SVZ) and rostral migratory stream (RMS). Here, we examined the role of ephrinB3-EphB3 signaling in mediating the SVZ response to traumatic brain injury (TBI). Analysis of EphB3 expression showed co-localization with glial fibrillary acidic protein (GFAP)-positive neural stem progenitor cells (NSPCs) and doublecortin-positive neuroblasts, while ephrinB3 was expressed outside the neurogenic region. TBI resulted in a significant reduction in EphB3 expression, which coincided with enhanced NSPC survival and proliferation at 3 and 7 days post-injury. Analysis of mice lacking either ephrinB3 (ephrinB3<sup>-/-</sup>) or EphB3 (EphB3<sup>-/-</sup>) showed a significant increase in bromodeoxyuridine (BrdU) incorporation and Ki67 immunoreactivity in the SVZ. Interestingly, cell death was dissimilar between knockout mice, where cell death was reduced in EphB3<sup>-/-</sup> but increased in ephrinB3<sup>-/-</sup> mice. Lateral ventricle infusion of soluble pre-clustered ephrinB3-Fc reversed the proliferative and cell death defects in ephrinB3<sup>-/-</sup> but not EphB3<sup>-/-</sup> mice and prevented TBI-induced proliferation in wild type NSPCs. Coincidentally, tumor suppressor p53 expression was increased following EphB3 stimulation and is reduced in the absence of either EphB3 or ephrinB3. Furthermore, pharmacological inhibition and siRNA knockdown of p53 attenuated ephrinB3-Fc mediated growth suppression while having no effect on cell death in cultured NSPCs. These data demonstrate that EphB3 signaling suppresses NSPC proliferation in a p53-dependent manner, induces cell death in the absence of ligand stimulation and is transiently reduced in the SVZ to initiate the expansion and survival of endogenous adult NSPCs following TBI.

PMID: 20496368 [PubMed - as supplied by publisher]

### 28. Acta Paediatr. 2010 May;99(5):684-9.

#### **Neurodevelopment of children born very preterm and free of severe disabilities: the Nord-Pas de Calais Epipage cohort study.**

Charkaluk ML, Truffert P, Fily A, Ancel PY, Pierrat V; Epipage study group.

Collaborators (14) Djebbar A, Lucidarme S, Morisot C, Racoussot S, Bourlet A, Chenaud M, Enchéry S, Rousseau S, Gournay AM, Poher M, Robin E, Delebarre G, Pindi B, Zaoui-Grattepanche C.

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Comment in:

Acta Paediatr. 2010 May;99(5):642-4.

**AIM:** To describe the development of very preterm children free of cerebral palsy or severe sensory impairment in the domains of gross and fine motor functions, language and sociability at a corrected age of 2 years; to identify factors associated with performances in each domain. **METHODS:** A total of 347 children born in 1997 before 33 weeks of gestation, part of the EPIPAGE population-based cohort study, had their psychomotor development assessed with the Brunet-Lezine scale. **RESULTS:** The study population had a mean gestational age of 30.1 +/- 2.0

weeks. Lower developmental quotients (DQ) were observed in the study group compared to the reference sample (96 +/- 13 vs 104 +/- 8,  $p < 0.01$ ). Fine motor function, language and sociability were all affected with a  $p$  value  $< 0.01$ . Multivariate analysis showed that duration of intubation and parents' educational and occupational levels were the only variables significantly related to each developmental domain ( $p < 0.01$ ). **CONCLUSIONS:** Children very preterm and free of severe disabilities had mild delays in multiple areas of development. The mechanisms by which neonatal factors played a role need further investigation. However socioeconomic status had a great impact on development and our results underline the need for improved support of socioeconomically disadvantaged parents after a preterm birth.

PMID: 20491713 [PubMed - in process]

**29. J Neurol Neurosurg Psychiatry. 2010 May;81(5):585-6.**

**Stroke in the puerperium treated with intra-arterial rt-PA.**

Rønning OM, Dahl A, Bakke SJ, Hussain AI, Deilkås E.

PMID: 20460599 [PubMed - indexed for MEDLINE]

