

Monday 11 April 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. *J Bone Joint Surg Am.* 2011 Apr;93(7):655-61.

Functional outcomes following single-event multilevel surgery of the upper extremity for children with hemiplegic cerebral palsy.

Smitherman JA, Davids JR, Tanner S, Hardin JW, Wagner LV, Peace LC, Gidewall MA.

Department of Orthopaedic Surgery, Greenville Hospital System University Medical Center, 701 Grove Road, Greenville, SC 29605.

BACKGROUND: Outcomes following single-event multilevel surgery of the upper extremity for children with cerebral palsy have not been well described in the literature. Since 1996, all children with hemiplegic cerebral palsy at our institution thought to be candidates for upper extremity surgery have had serial Shriners Hospital for Children Upper Extremity Evaluation performed for both clinical decision making and outcome assessment. The goal of the current study was to determine the functional outcomes, as described by the Shriners Hospital for Children Upper Extremity Evaluation, following single-event multilevel surgery of the upper extremity in children with hemiplegic cerebral palsy. **METHODS:** The study design was a retrospective, case-control series. The case group consisted of forty children with hemiplegic cerebral palsy who underwent upper-extremity single-event multilevel surgery. The control group consisted of twenty-six children with hemiplegic cerebral palsy who had not received any upper-extremity interventions. The spontaneous functional analysis, dynamic positional analysis, and grasp-release analysis sections of the Shriners Hospital for Children Upper Extremity Evaluation were compared between the two groups. **RESULTS:** The operative and nonoperative groups were comparable with respect to age ($p = 0.09$), sex ($p = 0.97$), initial spontaneous functional analysis scores ($p = 0.37$), dynamic positional analysis scores ($p = 0.73$), and grasp-release analysis scores ($p = 0.16$). For the single-event multilevel surgery group, significant improvements were noted for the mean spontaneous functional analysis score ($p < 0.0001$) and the mean dynamic positional analysis score ($p < 0.0001$), but not the mean grasp-release analysis score ($p = 0.75$). For the nonoperative control group, no significant changes were noted for the mean spontaneous functional analysis score ($p = 0.89$), the mean dynamic positional analysis score ($p = 0.98$), or the mean grasp-release analysis score ($p = 0.36$). Significant differences were noted between the single-event multilevel surgery and nonoperative control groups for the mean changes in the spontaneous functional analysis score ($p = 0.01$) and the mean change in the dynamic positional analysis score ($p < 0.0001$), but not the mean changes in the grasp-release analysis score ($p = 0.56$). **CONCLUSIONS:** Children with hemiplegic cerebral palsy showed significantly improved dynamic segmental alignment and, to a lesser degree, spontaneous use of the upper extremity following single-event multilevel surgery compared with a comparable nonoperative control group. However, the grasp-release ability did not significantly improve in either the operative or nonoperative group.

LEVEL OF EVIDENCE: Therapeutic Level III. See Instructions to Authors for a complete description of levels of evidence.

PMID: 21471419 [PubMed - in process]

2. Assessment. 2011 Apr 5. [Epub ahead of print]**Modified Test Administration Using Assistive Technology : Preliminary Psychometric Findings.**

Warschausky S, Van Tubbergen M, Asbell S, Kaufman J, Ayyangar R, Donders J.

University of Michigan.

This study examined the psychometric properties of test presentation and response formats that were modified to be accessible with the use of assistive technology (AT). First, the stability of psychometric properties was examined in 60 children, ages 6 to 12, with no significant physical or communicative impairments. Population-specific differences were then examined with samples that included 24 children with cerebral palsy and matched control peers. Children were administered standard and modified versions of tests. The type of AT access did not have a statistically significant effect on modified test scores. Measurement stability between the standard and modified versions of quadrant forced-choice format tests was sufficient. The findings support the potential use of AT and accessible procedures for some test instruments in the assessment of children with cerebral palsy.

PMID: 21467093 [PubMed - as supplied by publisher]

3. Clin Biomech (Bristol, Avon). 2011 Apr 4. [Epub ahead of print]**Flexor carpi ulnaris tenotomy alone does not eliminate its contribution to wrist torque.**

de Bruin M, Smeulders MJ, Kreulen M.

Department of Plastic, Reconstructive and Hand Surgery, Academic Medical Center, Postbox 22660, 1100 DD Amsterdam, The Netherlands.

BACKGROUND: Flexor carpi ulnaris muscle tenotomy and transfer to the extensor side of the wrist are common procedures used to improve wrist position and dexterity in patients with cerebral palsy. Our aim was to determine whether this muscle still influences wrist torque even after tenotomy of its distal tendon. **METHODS:** Intra-operatively, we determined in vivo maximal wrist torque in hemiplegic cerebral palsy patients (n=15, mean age 17years) in three conditions: 1) with the arm and the muscle intact; 2) after tenotomy of the flexor carpi ulnaris just proximal to the pisiform bone, with complete release from its insertion; and 3) after careful dissection of the belly of the muscle from its fascial surroundings up until approximately halfway its length. **FINDINGS:** After tenotomy of the flexor carpi ulnaris muscle, the maximal wrist torque decreased 18% whereas dissection of the muscle resulted in an additional decrease of 18%.

INTERPRETATION: We conclude that despite the tenotomy of its distal tendon, the flexor carpi ulnaris still contributes to the flexion torque at the wrist through myofascial force transmission. Quantification of this phenomenon will help in the study of the effects of fascial dissection on the functional results of tendon transfer surgery.

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PMID: 21470727 [PubMed - as supplied by publisher]

4. J Hand Surg Am. 2011 Apr;36(4):750.**Wrist tendon transfers in cerebral palsy.**

Bunata R.

Department of Orthopedics, University North Texas Health Science Center/JPS Hospital, Fort Worth, TX.

PMID: 21463738 [PubMed - in process]

5. J Child Neurol. 2011 Apr 4. [Epub ahead of print]**Seizures Triggered by July 4th Fireworks in an 8-Year-Old Girl With Perinatal Stroke.**

Brosch JR, Golomb MR.

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Warnings regarding fireworks displays as a possible seizure-producing stimulus have been around for several years, but there is a lack of well-documented cases. This case describes photic- and/or pattern-induced seizures that appeared to be triggered by July 4 fireworks. This 8-year-old girl with hemiplegic cerebral palsy and known seizure disorder because of perinatal right middle cerebral artery stroke had a cluster of seizures within minutes of the onset of a professional fireworks display. The seizures stopped when the child's eyes were covered and she was taken away from the scene. The importance of photic- and pattern-induced seizures in children is discussed.

PMID: 21464238 [PubMed - as supplied by publisher]

6. Surv Ophthalmol. 2011 Mar 31. [Epub ahead of print]**Something to Sink Your Teeth Into.**

Couch SM, Brodie SE, Leavitt JA, Brodsky MC.

Department of Ophthalmology, Mayo Clinic, Rochester, Minnesota.

A 21-year-old Kuwaiti man had cerebral palsy, retinitis pigmentosa, hypertension, and renal failure. His younger brother and sister displayed similar findings. Ocular motility examination disclosed aperiodic alternating skew deviation in the patient and his younger brother. Magnetic resonance imaging showed hypoplasia of the superior cerebellar vermis with a "molar tooth" sign. Genetic testing confirmed an AHPI gene mutation on chromosome 6p23.3 in the patient and his siblings, confirming the diagnosis of Joubert syndrome. This case demonstrates the need to consider the diagnosis of Joubert syndrome in adults with retinitis pigmentosa or familial alternating skew deviation.

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PMID: 21458016 [PubMed - as supplied by publisher]

7. Vopr Kurortol Fizioter Lech Fiz Kult. 2011 Jan-Feb;(1):3-6.**The application of microcurrent reflexotherapy to the rehabilitative treatment of the compromised speech functions in children with cerebral palsy [Article in Russian]**

[No authors listed]

The objective of the present paper was to study the influence of microcurrent reflexotherapy on the compromised speech functions in children ($n = 84$) presenting with cerebral palsy in comparison with the control group comprised of children ($n = 56$) with the same problems treated by medicamentous therapy. The microcurrent reflexotherapy was shown to be instrumental in the restoration of the compromised speech function. Moreover, it promoted positive dynamics of locomotor and cognitive disorders.

PMID: 21469249 [PubMed - in process]

Epidemiology / Aetiology / Diagnosis & Early Treatment

8. J Matern Fetal Neonatal Med. 2011 Apr 4. [Epub ahead of print]

Risk factors associated with cerebral palsy in preterm infants.

Sukhov A, Wu Y, Xing G, Smith LH, Gilbert WM.

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Objective. To examine pregnancy outcomes in preterm delivered children with cerebral palsy (CP). **Methods.** A retrospective population-based cohort study of children born in California (January 1, 1991 and December 31, 2001) with CP were identified (State databases) and compared to children without CP. We examined demographic data and pregnancy outcomes by gestational age groups controlling for multiple co-founders. **Results.** Of 2733 preterm infants (total of 8397, 33% <37 weeks of gestation) with CP, delivery <28 weeks had the largest impact upon the development of CP (Odds ratio (OR) 18.2 95%CI (16.7, 19.9)) with delivery 28-31 6/7 weeks having less impact (OR 8.8 (8.0, 9.7) when compared to term deliveries. Birth asphyxia (OR 5.9 (5.3, 6.6) was associated with the future development of CP as were birth defects (OR 4.3 (4.1, 4.5), cord prolapse (OR 2.0 (1.6, 2.4)) and fetal distress (OR 2.1 (1.9, 2.2)) the latter 2 being less so. **Conclusion.** Prematurity had the greatest impact upon the future development of CP; however, birth asphyxia, birth defects and adverse labor events contributed significantly to the future development of CP as well, suggesting that the cause of CP in the preterm infant is most likely multifactorial.

PMID: 21463212 [PubMed - as supplied by publisher]

9. Pain Med. 2011 Apr 4. doi: 10.1111/j.1526-4637.2011.01094.x. [Epub ahead of print]

Age-Related Changes of Pain Experience in Cerebral Palsy and Healthy Individuals.

Riquelme I, Cifre I, Montoya P.

Department of Nursing and Physiotherapy Research Institute for Health Sciences (IUNICS), University of the Balearic Islands, Palma de Mallorca, Spain.

Objective. Pain is a serious problem for many individuals with cerebral palsy (CP). Pain and injury in early life may cause long-term changes in somatosensory and pain processing. Nevertheless, no information exists regarding the influence of age on pain reports and touch sensitivity among persons with CP or the influence of age on the quality of life in individuals with CP. **Design.** The present cross-sectional study investigated pain characteristics, touch sensitivity, and quality of life in 86 individuals with CP and 115 healthy volunteers. Participants were grouped by age in children (6-10 years), adolescents (11-17 years), and young adults (18-30 years). Touch sensitivity at different body locations were tested by using von Frey monofilaments. Data about pain and quality of life were obtained from a semi-structured interview and questionnaires. **Results.** Participants with CP reported more pain as well as more reduced touch sensitivity and quality of life than healthy controls. Neither pain reports nor touch sensitivity or quality of life were influenced by age in CP, whereas significant age-related changes were observed in healthy participants. Multiple regression analyses also showed that age was the best predictor of current pain intensity in healthy controls but not in individuals with CP. **Conclusion.** These findings emphasize the importance of considering the presence of pain at very early ages in CP. Furthermore, these results provide clinicians and researchers with a new age-related psychosocial and psychophysiological perspective to investigate the mechanisms that could be involved in the presence and maintenance of pain in this population.

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PMID: 21463475 [PubMed - as supplied by publisher]

10. Community Dent Health. 2010 Dec;27(4):222-6.**Oral health status of Chinese teenagers with cerebral palsy.**

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OBJECTIVES: To examine caries experience, periodontal status, and oral hygiene practices of Chinese teenagers with cerebral palsy in Hong Kong. **PARTICIPANTS:** Chinese students aged 12 years or older studying in the three special schools of the Spastics Association of Hong Kong were invited to participate. **CLINICAL SETTING MEASURES:** Caries experience and periodontal status were assessed by a clinical oral examination using World Health Organization criteria. Information on oral hygiene and snacking habits were obtained by a questionnaire. Information on medical history and mental status was obtained from school records. **RESULTS:** Of 65 students with a mean (+/- SD) age of 15.0 +/- 2.0 years, the majority (74%) had spastic cerebral palsy. About half of the participants (49%) had mild mental retardation and 31% had moderate mental retardation. Caries experience as the mean DMFT score (+/- SD) was 1.2 +/- 1.9 and 43% of caries remained untreated; however, 62% of participants had no caries experience. None of the participants had healthy gums, 57% had calculus, and 66% snacked between meals. They all practised daily tooth brushing, with or without caregiver assistance. About one third (33%) also used mouthrinse. There were no significant differences in caries experience between the participants who brushed their teeth with and those who brushed without caregiver assistance. **CONCLUSIONS:** The mean DMFT score of this sample of Chinese teenagers with cerebral palsy was 1.2. Despite daily tooth brushing, the periodontal status of all participants was poor. Providing oral hygiene instructions and scaling are essential to improve their oral health.

PMID: 21473357 [PubMed - in process]