

Monday 2 May 2011

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

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Interventions

1. Dev Med Child Neurol. 2011 Apr 19. doi: 10.1111/j.1469-8749.2011.03912.x. [Epub ahead of print]

Long-term outcome and adverse effects of selective dorsal rhizotomy in children with cerebral palsy: a systematic review.

Grunt S, Becher JG, Vermeulen RJ.

Source: Department of Paediatric Neurology, University Children's Hospital, Inselspital, Berne, Switzerland. Department of Rehabilitation Medicine, VU University Medical Centre, Amsterdam, the Netherlands. Department of Paediatric Neurology, VU University Medical Centre, Neuroscience Campus Amsterdam, Amsterdam, the Netherlands.

Aim: To assess the long-term outcome and adverse events of selective dorsal rhizotomy (SDR) in children with spastic cerebral palsy (CP). Method: Studies were selected based on the following inclusion criteria: children with CP that underwent SDR with a follow-up period of at least 5 years. The following databases were searched: MEDLINE, Web of Science, Embase, PEDro, and the Cochrane library. Studies meeting the inclusion criteria were scored by two reviewers, who graded the level of evidence and the quality/conduct of the studies. Outcomes were classified according to the International Classification of Functioning, Disability and Health (ICF). Results: Only three of the 21 studies who met the inclusion criteria allowed a tentative conclusion on outcome. There is moderate evidence that SDR has a positive long-term influence on the ICF body structure and body function domains but there is no evidence that SDR has an influence on the ICF activity and participation domains. Spinal abnormalities seem to be common, but no conclusion can be drawn about their relation to SDR. Interpretation: There is lack of evidence concerning the long-term outcomes after SDR. Future studies need to clarify the long-term influence of SDR - especially in the ICF domains of activity and participation.

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PMID: 21518341 [PubMed - as supplied by publisher]

2. J Bone Joint Surg Am. 2011 Mar 2;93(5):e19.

Commentary on an article by Pamela Thomason, BPhy, MPT, et al. "Single-event multilevel surgery in children with spastic diplegia. A pilot randomized controlled trial"

Abel MF, Damiano DL.

Source: University of Virginia Health System, Charlottesville, Virginia, USA.

Comment on
J Bone Joint Surg Am. 2011 Mar 2;93(5):451-60.

PMID: 21368072 [PubMed - indexed for MEDLINE] PMCID: PMC3043781 [Available on 2012/3/2]

3. Dev Med Child Neurol. 2011 Apr 19. doi: 10.1111/j.1469-8749.2011.03950.x. [Epub ahead of print]

What are the long-term consequences of botulinum toxin injections in spastic cerebral palsy?

Barrett RS.

Source: Musculoskeletal Research Program, Griffith University, Queensland, Australia.

PMID: 21518344 [PubMed - as supplied by publisher]

4. Phys Occup Ther Pediatr. 2011 Apr 26. [Epub ahead of print]

Parents' Experiences with Services and Treatment for Their Children Diagnosed with Cerebral Palsy

Knis-Matthews L, Falzarano M, Baum D, Manganiello J, Patel S, Winters L.

Source: Department of Occupational Therapy, Kean University, Union, New Jersey, USA.

While there is a considerable body of knowledge investigating the efficacy of constraint-induced movement therapy (CIMT), there is a need for information focusing on parents' experiences when their children receive these services. This qualitative research study initially explored the experiences of four parents with children who are diagnosed with cerebral palsy (CP) and who participated in CIMT using a group format. Additionally, the richness of the information shared by parents provided insights on other important issues related to family supports when raising a child and the availability of resources for children diagnosed with CP. Response analysis from in-depth interviews with parents resulted in three themes: (a) Everything in my family changed when my child was diagnosed with CP and the support I feel from my family makes all the difference in how I cope. (b) It was so hard to get the information and support that I needed for my child. (c) The group format enhanced CIMT for my child and provided social benefits as well. Findings from this study suggest there are benefits of using CIMT in group formats.

PMID: 21521003 [PubMed - as supplied by publisher]

5. Phys Ther. 2011 Apr 28. [Epub ahead of print]

Cycling With Functional Electrical Stimulation in an Adult With Spastic Diplegic Cerebral Palsy

Johnston TE, Wainwright SF.

Source: Department of Physical Therapy, University of the Sciences in Philadelphia, 600 S 43rd St, Box 39, Philadelphia, PA 19104 (USA).

BACKGROUND AND PURPOSE: Adults with cerebral palsy (CP) are at risk for decreased mobility and health complications, and exercise may combat some of these negative changes. Because people with CP have difficulty generating sufficient muscle force, exercise augmented with functional electrical stimulation (FES) is an option for increasing exercise intensity. This mixed-method (quantitative-qualitative) case report describes the effects-across the International Classification of Functioning, Disability and Health (ICF) model-of cycling with FES (FES cycling) in an adult with CP. **CASE DESCRIPTION:** An ambulatory 49-year-old man with spastic diplegic CP cycled with FES at home for 30 minutes, 3 times per week, for 12 weeks. Volitional efforts were augmented by FES of the bilateral quadriceps, gastrocnemius, and gluteal muscles. Testing was performed before and after the intervention and 4 weeks after intervention withdrawal. **OUTCOMES:** After training, quadriceps muscle strength (force-generating capacity) improved by 22.2%, hamstring muscle strength improved by 18.5%, and the Timed "Up & Go" Test time decreased from 11.9 to 9.0 seconds. The patient reported increased performance and satisfaction for self-identified goals at the ICF level of participation, and his score on the Medical Outcomes Study 36-Item Health Survey questionnaire increased from 62.1 to 77.6. However, he reported increased back pain, which he attributed to positioning while cycling. Qualitative interviews provided context (the patient's perspective) for some of the quantitative results.

DISCUSSION: The patient made gains in body structure and function, activity, and participation (ICF levels) after FES cycling. The mixed-method approach provided insight into his experiences and perceptions about the measures assessed quantitatively. Further investigation on FES cycling in this population as well as positioning during cycling is warranted.

PMID: 21527385 [PubMed - as supplied by publisher]

6. *J Physiol.* 2011 Apr 26. [Epub ahead of print]

The fusimotor and reafferent origin of the sense of force and weight.

Luu BL, Day BL, Cole JD, Fitzpatrick RC.

Source: Neuroscience Research Australia

Signals associated with the command the brain sends to muscles are thought to create the sensation of heaviness when we lift an object. Thus, as a muscle is weakened by fatigue or partial paralysis, the increase in the motor command needed to lift a weight is thought to explain the increasing subjective heaviness of the lifted object. With different fatiguing contractions we approximately halved the force output of the thumb flexor muscles, which were then used to lift an object. For two deafferented subjects the perceived heaviness of the lifted object approximately doubled, in keeping with the central-signal theory. However, for normal subjects this resulted in objects feeling the same or lighter, inconsistent with the central-signal theory but consistent with the expected effects of the conditioning contractions on the sensitivity of peripheral receptors. In separate experiments we completely paralysed the forearm muscles with curare and then allowed them to recover to approximately half-force output. This also resulted in objects feeling lighter when lifted by the semi-paralysed thumb, even though the motor command to the motoneurons must have been greater. This is readily explained by reduced lift-related reafference caused by the prolonged paralysis of muscle spindle intrafusal fibres. We conclude that peripheral signals, including a major contribution from muscle spindles, normally give rise to the sense of exerted force. In concept, however, reafference from peripheral receptors may also be considered a centrally generated signal that traverses efferent and then afferent pathways to feed perceptual centres rather than one confined entirely to the central nervous system. These results therefore challenge the distinction between central- and peripheral-based perception, and the concept that muscle spindles provide only information about limb position and movement.

PMID: 21521756 [PubMed - as supplied by publisher]

7. *Cir Pediatr.* 2010 Oct;23(4):211-4.

Surgical approach to sialorrhea: a casuistic review and evaluation of grade of satisfaction [Article in Spanish]

Oliveira RS, Resende C, Campos J, Salgado C.

Source: Departamento de Cirurgia Peditrica, Servicio de Pediatria, Hospital São Teotónio EPE, Viseu, Portugal. ritas-oliveira@hotmail.com

INTRODUCTION: Drooling or sialorrhea is the involuntary, passive spillage of saliva from the mouth due to inability to handle oral secretions. The medical, psychosocial and economic impact of drooling is underestimated. Treatment should always involve a multidisciplinary team and can include a medical or surgical approach. Various surgical techniques are used to manage drooling; re-routing of the salivary ducts is one of the preferred methods in more significant situations. **OBJECTIVES:** To analyze retrospectively the group of children submitted to surgical correction of drooling in São Teotónio's Hospital and evaluate the clinical and caregiver satisfaction outcomes. **MATERIAL AND METHODS:** We analyse the clinical process of children submitted to surgical correction of drooling. Satisfaction scores were obtained by phone interview. **RESULTS:** Between January of 2003 and June of 2009, 16 children were submitted to surgical intervention for drooling, with a total of 17 surgeries. Most of them were males and have ages between 3 and 23 years, with the majority with ages between 10 and 15 years. All of them suffered from neurologic disease, mainly cerebral palsy. The majority were hospitalised for 1 to 2 days and no surgical complications were observed. In a significant percentage, good results were obtained and in 3 cases total resolution of drooling were reported. In about 44% of caregivers stayed very happy with the results of surgery. **CONCLUSIONS:** Drooling

is an important comorbidity in child with neuro-muscular disease and its treatment can never be underestimated. By the analyses of the results of our surgical center, the re-routing of salivary ducts method reveals to be effective.

PMID: 21520552 [PubMed - in process]

Epidemiology / Aetiology / Diagnosis & Early Treatment

8. *Curr Pharm Des.* 2011 Mar 18. [Epub ahead of print]

VIP-Induced Neuroprotection of the Developing Brain

Passemard S, Sokolowska P, Schwendimann L, Gress P.

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Excitotoxicity is a key molecular mechanism of perinatal brain damage and is associated with cerebral palsy and long term cognitive deficits. VIP induces a potent neuroprotection against perinatal excitotoxic white matter damage. VIP does not prevent the initial appearance of white matter lesion but promotes a secondary repair with axonal regrowth. This plasticity mechanism involves an atypical VPAC2 receptor and BDNF production. Stable VIP agonists mimic VIP effects when given systemically and exhibit a large therapeutic window. Unraveling cellular and molecular targets of VIP effects against perinatal white matter lesions could provide a more general rationale to understand the neuroprotection of the developing white matter against excitotoxic insults.

PMID: 21524251 [PubMed - as supplied by publisher]

9. *Bull Acad Natl Med.* 2010 Jun;194(6):891-901; discussion 901.

Perinatal asphyxia and cerebral palsy: medicolegal implications [Article in French]

Racinet C, Hoffmann P.

Source: Handicap de l'Enfant, 23 Boulevard Albert 1er de Belgique, 38000 Grenoble. claude.racinet@orange.fr

Over the last 30 years, improvements in obstetric practice (systematic fetal perpartum monitoring, Caesarean section, etc.) have markedly reduced the incidence of perinatal asphyxia, especially in the perpartum period. Yet the incidence of cerebral palsy has remained stable, at around 2 per 1000 live births, owing to the fact that this disorder is generally due to antenatal factors. Population-based studies have further demonstrated that acute perpartum asphyxia is a rare cause of cerebral palsy. Obstetrics is a discipline particularly subject to insurance claims, often because of late use or non use of Cesarean section. Perinatal judicial expertise is too often based on obsolete notions. Reform is necessary, focusing on upstream structural problems. The American model initiated by neurologists and adopted by many other disciplines should be widely adopted, including by lawyers and magistrates. It involves verifying the ethical character of the expertise challenged by the injured party, and drawing conclusions for professional practice?

PMID: 21513126 [PubMed - in process]