

Monday 20 December 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".

To subscribe, please email Robyn Cummins rcummins@tscnsw.org.au with 'Subscribe to CP Research News' in the subject line, and your name and email address in the body of the email.

You may unsubscribe at any time by emailing Robyn with your 'unsubscribe' request.

Interventions

1. *Ann Phys Rehabil Med.* 2010 Aug-Sep;53(6-7):417-33. Epub 2010 Jun 30.

Direct neurectomy of the motor branches of the tibial nerve in hemiplegic adults: an assessment with a mean follow-up period of 11 years. [Article in English, French]

Palacio A, Milliez PY, Le Jean T, Demangeon S, Verfaillie S, Le Guern H, Biga N, Beuret-Blanquart F.

CRMPR Les Herbiers, 111, rue Herbeuse, 76230 Bois-Guillaume cedex, France. anthony.palacio@laposte.net

INTRODUCTION: Neurectomy of the tibial nerve plays a major role in the relief of disabling spasticity, which is refractory to drug treatment and physiotherapy. Although the immediate postoperative results are generally satisfactory, few evaluations of the procedure's long-term efficacy have been published. **OBJECTIVE:** To estimate the long-term efficacy of total or partial neurectomy of the motor branches of the tibial nerve (combined with additional orthopaedic surgery in some cases). **METHOD:** A descriptive, retrospective study of 25 brain-damaged patients having undergone neurectomy at least 4 years ago. **RESULTS:** The mean post-neurectomy follow-up period was 11 years. Twenty patients became less dependent on the use of walking aids. Of the 18 patients unable to walk barefoot before surgery, 11 could do so after surgery. Of the 12 patients unable to walk on uneven ground before surgery, seven could do so afterwards. The walking distance increased for 20 patients. In 22 cases, the spasticity disappeared immediately after the operation and did not reappear in the long-term. In three other cases, spasticity persisted postoperatively and, in the long-term, affected the soleus (the denervation of which had been incomplete or not performed). Eighty-three percent of the patients were satisfied with the operation's outcome. **CONCLUSIONS:** The observed maintenance of the benefits of total or partial neurectomy after an average follow-up period of 11 years confirms the value of this procedure. The few mediocre outcomes (observed in cases of partial neurectomy of the soleus) are in agreement with literature reports and emphasize the role of the soleus in this pathology.

Copyright 2010 Elsevier Masson SAS. All rights reserved.

PMID: 20634165 [PubMed - indexed for MEDLINE]

2. *Disabil Rehabil.* 2010 Dec 9. [Epub ahead of print]

Mothers of children with cerebral palsy with or without epilepsy: a quality of life perspective.

Terra VC, Cysneiros RM, Schwartzman JS, Teixeira MC, Arida RM, Cavalheiro EA, Scorza FA, de Albuquerque M.

Faculdade de Medicina de Ribeirão Preto, Departamento de Neurociências e Ciências do Comportamento, Universidade de São Paulo, Ribeirão Preto, Brazil.

Purpose. Disability in a child affects not only the child's life but also the family's life. The aim of our study is to ver-

ify the quality of life (QOL) of mothers of disabled children with cerebral palsy (CP) with epilepsy compared with non-epilepsy children evaluated in a Brazilian center. **Methods.** Thirty mothers of disabled children participated in the study. The control group comprised of 18 healthy mothers of children without disabilities. All mothers agreed to participate in the study. They completed the evaluation forms of the SF-36 health survey, a well-documented, self-administered QOL scoring system. **Results.** The results of our study support the premise that mothers of children with CP, as a group, have poorer QOL than mothers of not disabled children. **Conclusions.** We also observed that mothers of children with CP and epilepsy have poorer QOL than mothers of children with CP without epilepsy.

PMID: 21142651 [PubMed - as supplied by publisher]

3. Eur J Neurol. 2010 Aug;17 Suppl 2:122-34.

Botulinum toxin assessment, intervention and aftercare for paediatric and adult niche indications including pain: international consensus statement.

Rawicki B, Sheean G, Fung VS, Goldsmith S, Morgan C, Novak I; Cerebral Palsy Institute.

Victorian Paediatric Rehabilitation Service, Monash Medical Centre, Clayton, Victoria, Australia.
barry.rawicki@med.monash.edu.au

Evidence is emerging for the use of botulinum neurotoxin type-A (BoNT-A) for niche indications including pain independent of spasticity. Pain indications such as chronic nociceptive back pain, piriformis syndrome, chronic myofascial pain, pelvic pain, complex regional pain syndrome, facial pain and neuropathic pain are outlined in this paper. Of these, class I evidence is available for the treatment of chronic nociceptive low back pain, piriformis syndrome, myofascial pain, facial pain, neuropathic pain and plantar fasciitis. Peri-operative use of BoNT-A is emerging, with indications including planning for surgery and facilitating surgery, as well as healing and improving analgesia post-operatively. Evidence is limited, although there are some reports that clinicians are successfully using BoNT-A peri-operatively. There is class I evidence showing pre-operative use of BoNT-A has a beneficial effect on outcomes following adductor-release surgery. The use of BoNT for treatment of tremor, other than neck tremor in the setting of cervical dystonia, including evidence for upper limb tremor, cranial tremor and non-dystonic neck tremor is reviewed. The evidence is variable at this stage, and further study is required to develop definitive recommendations for the clinical utility of BoNT-A for these indications.

PMID: 20633183 [PubMed - in process]

4. Eur J Neurol. 2010 Aug;17 Suppl 2:74-93.

Botulinum toxin assessment, intervention and after-care for upper limb hypertonicity in adults: international consensus statement.

Sheean G, Lannin NA, Turner-Stokes L, Rawicki B, Snow BJ; Cerebral Palsy Institute.

Neurosciences, Neuromuscular Division, University of California, San Diego, CA 92103-8465, USA.
gsheean@ucsd.edu

Upper limb spasticity affecting elbow, wrist, and finger flexors can be safely and effectively reduced with injections of botulinum toxin type-A (BoNT-A). It has been best studied in adults in the context of post-stroke spasticity. The clinical benefits include reduction in pain and deformity, improvement in washing and dressing the upper limb, and a reduction in caregiver burden (Class I evidence, recommendation level A). Some patients show improvement in function performed by active movement of the affected upper limb (Class III evidence, recommendation C), but predicting and measuring this is difficult, and further research is needed. An individually based approach to treatment and outcome measurement is preferred (Class IV, recommendation U). More research is needed to resolve many unknown issues of assessment and treatment, using research methods appropriate to the question.

PMID: 20633180 [PubMed - in process]

5. Eur J Neurol. 2010 Aug;17 Suppl 2:57-73.**Botulinum toxin assessment, intervention and aftercare for lower limb disorders of movement and muscle tone in adults: international consensus statement.**

Olver J, Esquenazi A, Fung VS, Singer BJ, Ward AB; Cerebral Palsy Institute.

Epworth Healthcare, Richmond, Victoria, Australia. John.Olver@epworth.org.au

Lower limb disorders of movement and muscle tone in adults significantly impact quality of life. The management of the patient with hypertonia is complex and requires a multidisciplinary team working with the patient and family/ carers. Botulinum neurotoxin type A (BoNT-A) has been used as a component of this management to reduce lower limb hypertonia, increase passive range of motion and reduce associated pain and requirements for bracing. Adjunctive treatments to augment the effect of BoNT-A include electrical muscle stimulation of the injected muscles and stretching. When determining suitability for injection, the patient's main goals for intervention need to be established. Muscle overactivity must be distinguished from contracture, and the effect of underlying muscle weakness taken into account. Explanation of the injection process, potential adverse effects and post-injection interventions is essential. Assessment at baseline and post-treatment of impairments such as hypertonia, range of motion and muscle spasm are appropriate; however, the Goal Attainment Scale and other validated patient-centred scales can also be useful to assess therapy outcomes. In the future, initiatives should be directed towards examining the effectiveness of BoNT treatment to assist with achievement of functional and participation goals in adults with hypertonia and dystonia affecting the lower limb.

PMID: 20633179 [PubMed - in process]

6. Eur J Neurol. 2010 Aug;17 Suppl 2:38-56.**Botulinum toxin assessment, intervention and follow-up for paediatric upper limb hypertonicity: international consensus statement.**

Fehlings D, Novak I, Berweck S, Hoare B, Stott NS, Russo RN; Cerebral Palsy Institute.

Bloorview Research Institute, Bloorview Kids Rehab, Department of Paediatrics, University of Toronto, Toronto, ON, Canada. dfehlings@bloorview.ca

The primary objective of this paper was to evaluate the published evidence of efficacy and safety of botulinum neurotoxin (BoNT) injections in paediatric upper limb hypertonia (PULH). Secondary objectives included the provision of clinical context, based on evidence and expert opinion, in the areas of assessment, child and muscle selection, dosing, and adjunctive treatment. A multidisciplinary panel of authors systematically reviewed, ed, and classified relevant literature. Recommendations were based on the American Academy of Neurology (AAN) evidence classification. Following a literature search, 186 potential articles were screened for inclusion, and 15 of these met the criteria and were reviewed. Grade A evidence was found to support the use of BoNT to reach individualized therapeutic goals for PULH. There is grade B evidence (probably effective) for tone reduction following BoNT injections and grade U evidence (inconclusive) for improvement in upper limb (UL) activity and function. BoNT injections were generally found to be safe and well tolerated with the most common side effect identified as a transient decrease in grip strength.

PMID: 20633178 [PubMed - in process]

7. Gait Posture. 2010 Dec 8. [Epub ahead of print]**Is simultaneous hamstring lengthening necessary when performing distal femoral extension osteotomy and patellar tendon advancement?**

Healy MT, Schwartz MH, Stout JL, Gage JR, Novacheck TF.

Gillette Children's Specialty Healthcare, St. Paul, USA; University of Minnesota, Department of Orthopaedic Surgery, Minneapolis, USA.

Crouch gait is common in individuals with cerebral palsy. Recently published data has shown that distal femoral extension osteotomy with patellar tendon advancement (DFEO/PTA) is an effective procedure to correct crouch gait in the presence of a knee flexion contracture and quadriceps insufficiency. Short length and slow lengthening rate (velocity) of the hamstrings are indications for hamstrings surgery. We empirically believed that hamstrings surgery would not be necessary to improve hamstring function when DFEO/PTA are performed. This hypothesis was examined in a retrospective review of hamstrings length and velocity before and after DFEO/PTA. 51 limbs in 32 individuals with a diagnosis of CP who underwent DFEO/PTA without concomitant hamstring surgery were included in the study. Pre and post-operative peak medial hamstring length and velocity z-scores were calculated using a musculoskeletal model. A subset of limbs with pre-operative values above or below two SD from the control mean emerged and were called long or short respectively. Members of this subset would often be considered candidates for hamstrings surgery. Categorical length outcomes were derived, with analogous categories for velocity. The mean peak hamstring length z-score improved pre- to post-operatively from -2.2 to -0.76 ($p < 0.001$). The mean peak velocity z-score improved from -3.1 to -1.5 ($p < 0.001$) [Figure 1]. DFEO/PTA surgery without concomitant hamstrings surgery led to significantly longer or faster hamstrings. Specifically, we saw 94% good or neutral results for length correction and 80% good or neutral results for velocity correction. Because crouch improved without posterior pelvic tilting, and because both hamstring length and velocity increased substantially, we conclude that concomitant hamstring surgery is rarely needed when performing DFEO/PTA.

Copyright © 2010 Elsevier B.V. All rights reserved.

PMID: 21145748 [PubMed - as supplied by publisher]

8. J Child Neurol. 2010 Dec;25(12):1598.

Correspondence on "safety, tolerability, and efficacy of high-frequency chest wall oscillation in pediatric patients with cerebral palsy and neuromuscular diseases: an exploratory randomized controlled trial".

Plioplys AV.

Marklund Children's Home Bloomingdale, Illinois.

PMID: 21148456 [PubMed - in process]

9. J Child Neurol. 2010 Dec;25(12):1598.

Response to correspondence on "safety, tolerability, and efficacy of high-frequency chest wall oscillation in pediatric patients with cerebral palsy and neuromuscular diseases: an exploratory randomized controlled trial".

Yuan N.

Department of Pediatrics, Division of Pulmonology Stanford University Palo Alto, California.

PMID: 21148455 [PubMed - in process]

10. J Dent Educ. 2010 Nov;74(11):1179-89.

Dental education about patients with special needs: a survey of U.S. and Canadian dental schools.

Krause M, Vainio L, Zwetchkenbaum S, Inglehart MR.

Department of Periodontics and Oral Medicine, School of Dentistry, University of Michigan, 1011 North University Avenue, Ann Arbor, MI 48109-1078, USA.

The objectives of this study were to explore how U.S. and Canadian dental schools educate students about special needs patients and which challenges and intentions for curricular changes they perceive. Data were collected from twenty-two dental schools in the United States and Canada with a web-based survey. While 91 percent of the pro-

grams covered this topic in their clinical education, only 64 percent offered a separate course about special needs patients. The clinical education varied widely. Thirty-seven percent of the responding schools had a special clinical area in their school for treating these patients. These areas had between three and twenty-two chairs and were funded and staffed quite differently. Most programs covered the treatment of patients with more prevalent impairments such as Down syndrome (91 percent), autism spectrum disorders (91 percent), and motion impairments (86 percent). Written exams were the most common outcome assessments (91 percent), while objective structured clinical examinations (18 percent) and standardized patient experiences (9 percent) were used less frequently. The most commonly reported challenge was curriculum overload (55 percent). The majority (77 percent) planned educational changes over the next three years, with 36 percent of schools planning to increase clinical and 27 percent extramural experiences. The findings showed that the responding U.S. and Canadian dental schools had a wide range of approaches to educating predoctoral students about treating special needs patients. In order to eliminate oral health disparities and access to care issues for these patients, future research should focus on developing best practices for educational efforts in this context.

PMID: 21045222 [PubMed - indexed for MEDLINE]

11. *J Foot Ankle Res.* 2010 Dec 14;3(1):28. [Epub ahead of print]

Split tendon transfers for the correction of spastic varus foot deformity: a case series study.

Vlachou M, Dimitriadis D.

BACKGROUND: Overactivity of anterior and/or posterior tibial tendon may be a causative factor of spastic varus foot deformity. The prevalence of their dysfunction has been reported with not well defined results. Although gait analysis and dynamic electromyography provide useful information for the assessment of the patients, they are not available in every hospital. The purpose of the current study is to identify the causative muscle producing the deformity and apply the most suitable technique for its correction. **METHODS:** We retrospectively evaluated 48 consecutive ambulant patients (52 feet) with spastic paralysis due to cerebral palsy. The average age at the time of the operation was 12,4 yrs (9-18) and the mean follow-up 7,8 yrs (4-14). Eighteen feet presented equinus hind foot deformity due to gastrocnemius and soleus shortening. According to the deformity, the feet were divided in two groups (Group I with forefoot and midfoot inversion and Group II with hindfoot varus). The deformities were flexible in all cases in both groups. Split anterior tibial tendon transfer (SPLATT) was performed in Group I (11 feet), while split posterior tibial tendon transfer (SPOTT) was performed in Group II (38 feet). In 3 feet both procedures were performed. Achilles tendon sliding lengthening (Hoke procedure) was done in 18 feet either preoperatively or concomitantly with the index procedure. **Results:** The results in Group I, were rated according to Hoffer's clinical criteria as excellent in 8 feet and satisfactory in 3, while in Group II according to Kling's clinical criteria were rated as excellent in 20 feet, good in 14 and poor in 4. The feet with poor results presented residual varus deformity due to intraoperative technical errors. **CONCLUSION:** Overactivity of the anterior tibial tendon produces inversion most prominent in the forefoot and midfoot and similarly overactivity of the posterior tibial tendon produces hindfoot varus. The deformity can be clinically unidentifiable in some cases when Achilles shortening co-exists producing foot equinus. By identifying the muscle causing the deformity and performing the appropriate technique, very satisfying results were achieved in the majority of our cases. In three feet both muscles contributed to a combined deformity and simultaneous SPLATT and SPOTT were considered necessary. For complex foot deformities where the component of cavus co-exists, supplementary procedures are required along with the index operation to obtain the best result.

PMID: 21156075 [PubMed - as supplied by publisher]

12. *J Pediatr Orthop.* 2011 Jan-Feb;31(1):102-6.

Transcultural Adaptation and Validation of the Korean Version of the Pediatric Outcomes Data Collection Instrument (PODCI) in Children and Adolescents.

Kwon DG, Chung CY, Lee KM, Lee DJ, Lee SC, Choi IH, Cho TJ, Yoo WJ, Park MS.

*Department of Orthopaedic Surgery, Seoul National University Bundang Hospital §Department of Orthopaedic Surgery, Seoul National University Children's Hospital, Seoul, Korea †Department of Restorative Dentistry, University of Illinois at Chicago College of Dentistry ‡Department of Educational Psychology, University of Illinois at Chicago College of Education, IL.

BACKGROUND: Translation and transcultural adaptation of the Pediatric Outcomes Data Collection Instrument (PODCI) into Korean language was performed, and the validity was tested. **METHODS:** Korean version of PODCI was produced according to internationally accepted guideline, which included preparation, forward translation, reconciliation, back translation, review of back translation and harmonization, cognitive debriefing and review, and proof reading process. Eighty-two child controls (aged 5 to 10 y), 92 adolescent controls (aged 10 to 18 y), and 30 children with cerebral palsy (aged 5 to 10 y) undergoing single event multilevel surgery were included, and their parents also participated. Each subscale of Korean PODCI was tested in terms of internal consistency (Cronbach α), discriminant validity (difference of parental responses between child control and children with cerebral palsy), convergent validity (correlation between self-response and parental response in adolescent control), and responsiveness (postoperative changes of parental responses in children with cerebral palsy). **RESULTS:** All subscales except pain/comfort showed sufficient internal consistencies (Cronbach $\alpha > 0.7$). Upper extremity/physical function, transfer/basic mobility, sports/physical functioning, and global functioning subscales showed significant discriminant validity ($P < 0.001$, $P < 0.001$, $P < 0.001$, and $P < 0.001$, respectively). Correlation between self-response and parental response in adolescent controls were significant in all subscales, being highest in transfer/basic mobility subscale ($r = 0.952$, $P < 0.001$) and lowest in happiness subscale ($r = 0.548$, $P < 0.001$). Responsiveness was significant in transfer/basic mobility ($P < 0.001$), sports/physical functioning ($P = 0.001$), and global functioning ($P = 0.006$) subscales after single event multilevel surgery. **CONCLUSIONS:** Korean version of PODCI showed relevant internal consistency, discriminant validity, convergent validity, and responsiveness except for pain/comfort and happiness subscales. Care need to be taken when evaluating subjective measures, such as pain/comfort and happiness subscales.

LEVEL OF EVIDENCE: Diagnostic level I.

PMID: 21150739 [PubMed - in process]

13. J Chin Med Assoc. 2010 Dec;73(12):651-4.

Rhabdomyolysis as a Postoperative Complication of Multilevel Soft-tissue Surgery in a Child With Cerebral Palsy.

Yao ZK, Chang WN, Hsu CJ, Wong CY.

Department of Orthopedics, Kaohsiung Veterans General Hospital, Kaohsiung, Taiwan, R.O.C.

Rhabdomyolysis is a potentially life-threatening syndrome if unrecognized. The most common causes are trauma, excessive muscle activity, alcohol abuse, and toxic substances. Rhabdomyolysis as a postoperative complication in children with cerebral palsy who have received multilevel soft-tissue surgery has not been reported in the literature. The purposes of this study are to present the case of a 12-year-old boy with spastic quadriplegic cerebral palsy who developed rhabdomyolysis after soft-tissue release and to review the literature. The patient was treated with adequate sedation and hydration, and discharged in a stable condition 11 days after surgery. His serum creatine kinase level had returned to within the normal range by the 17th postoperative day. At the 6-month follow-up, there were no systemic sequelae. The prompt recognition of rhabdomyolysis depends on a high level of suspicion. Routine checks of urine color after surgery is mandatory. For patients with high muscle tone, monitoring of muscle enzymes is recommended. Adequate sedation, pain control and hydration may prevent the progression of this life-threatening condition.

Copyright © 2010 Elsevier. Published by Elsevier B.V. All rights reserved.

PMID: 21145515 [PubMed - in process]

14. Neurogastroenterol Motil. 2010 Dec 10. doi: 10.1111/j.1365-2982.2010.01634.x. [Epub ahead of print]

Pharyngeal flow interval: a novel impedance-based parameter correlating with aspiration.

Noll L, Rommel N, Davidson GP, Omari TI.

Gastroenterology Unit, Child, Youth & Women's Health Service, North Adelaide, SA, Australia Dept Neurosciences, ExpORL, University of Leuven, Leuven, Belgium School of Paediatrics and Reproductive Health, University of Adelaide, Adelaide, SA, Australia.

Background: The role of pharyngeal impedance recording for assessing pharyngeal function is yet to be established. The aim of this study was to evaluate impedance flow interval, a novel parameter, in relation to bolus residue and the occurrence of aspiration. The effect of catheter configuration was also assessed. **Methods:** We studied 12 children (1.8-13.5years) with cerebral palsy, who were all referred for a videofluoroscopy due to suspected aspiration risk. Pharyngeal impedance patterns during bolus swallowing were recorded simultaneously with fluoroscopy. Two different catheter configurations were used: Catheter 1, 1.9mm diameter with 1cm electrodes and Catheter 2, 3.2mm diameter with 2 cm electrodes. The flow interval was based on the objective assessment of impedance drop and recovery across multiple impedance segments and was correlated with fluoroscopic evidence of postswallow bolus residue and deglutitive aspiration. **Key Results:** One hundred and thirty two liquid swallows were evaluated. Patient swallows with aspiration compared to those without aspiration had a longer flow interval (Cath 1 $P=0.005$; Cath 2 $P<0.001$). Patient swallows with residue had a longer flow interval, however this was only significant for swallows recorded using Catheter 2 ($P=0.004$). Multiple logistic regressions showed that higher flow interval was a better marker of the presence of aspiration [odds ratio (OR) 13.4 (3.0, 59.2); $P<0.001$] than the presence of residue [OR 3.8 (1.4, 10.3); $P=0.01$]. **Conclusions & Inferences** We present novel findings suggesting that impedance measurement can detect alterations in flow characteristics of pharyngeal swallow that have the potential to predict to deglutitive aspiration risk.

© 2010 Blackwell Publishing Ltd.

PMID: 21143556 [PubMed - as supplied by publisher]

15. Phys Ther. 2010 Nov;90(11):1673-5; author reply 1675-6.

Invited commentary.

Horn SD.

Institute for Clinical Outcomes Research, Salt Lake City, UT 84102-1282, USA. shorn@isisicor.com

Comment on:

Phys Ther. 2010 Nov;90(11):1660-72.

PMID: 21041185 [PubMed - indexed for MEDLINE]

16. Psychoneuroendocrinology. 2010 Dec 9. [Epub ahead of print]

Salivary cortisol, stress, and health in primary caregivers (mothers) of children with cerebral palsy.

Bella GP, Garcia MC, Spadari-Bratfisch RC.

Departamento de Biociências, Universidade Federal de São Paulo, Santos, SP, Brazil; Clínica de Fisioterapia e Terapia Ocupacional, Hospital das Clínicas, Universidade Estadual de Campinas (UNICAMP), Campinas, SP, Brazil.

This study evaluated level of salivary cortisol and perceived burden, stress and health of mothers and primary caregivers of children (4-11 years of age) with cerebral palsy (purpose group, $n=37$) and those for mothers of children of the same age without developmental problems (control group, $n=38$). Anthropometric and socioeconomic data were collected from the participants, who also completed the perceived stress questionnaire, the Burden Interview and the 36-Item Short Form Health Survey (SF-36). Cortisol level was assayed in saliva samples collected at various times in a single day and the area under the cortisol curve was then determined. Both groups presented low socioeconomic level and high, although equivalent, perceived stress index. However, the purpose group showed lower cortisol levels, as well as lower scores for many of the SF-36 domains related to physical well-being (physical functioning, role-physical, vitality, and general health) and social functioning. Nevertheless, bodily pain was also reported to be lower. For the control group, the area under the cortisol curve correlated negatively with mental health and social functioning. For the purpose group, where the burden is greater, no such correlation was found. It was concluded that mothers of healthy children leaving in unfavorable socioeconomic conditions face high levels of stress with the hypothalamus-pituitary-adrenal cortex axis function preserved. However, to the mothers of children

with cerebral palsy, who live in even worse socioeconomic conditions and also have the burden of caring for a disabled child, the level of stress was overwhelming, to an extent that it impaired the hypothalamus-pituitary-adrenal cortex axis function, as well as reflecting negatively on certain aspects of their physical and psychological well-being. This must receive consideration during the treatment of the child, an approach which is in line with present day tendencies towards family-centered models of assistance to disabled children.

Copyright © 2010. Published by Elsevier Ltd.

PMID: 21146316 [PubMed - as supplied by publisher]

17. Res Dev Disabil. 2010 Dec 8. [Epub ahead of print]

Intra- and inter-observer reliability of the Trunk Impairment Scale for children with cerebral palsy.

Sæther R, Jørgensen L.

Department of Clinical Services, Physiotherapy section, St. Olavs Hospital, Trondheim University Hospital, Trondheim, Norway.

Standardized scales to evaluate qualities of trunk movements in children with dysfunction are sparse. An examination of the reliability of scales that may be useful in the clinic is important. The aim of this study was to examine the reliability of the Trunk Impairment Scale (TIS) for children with cerebral palsy (CP). Standardized scales are useful for treatment planning and evaluation. This was an intra- and inter-observer reliability study. Video recordings of 25 children, 20 with CP and 5 with no motor impairment, in the age group 5-12 years of age, were analyzed by three observers on two occasions. Intraclass correlation coefficients (ICC [1,1] and [3,1]) with 95% confidence intervals, standard error of measurement, kappa values and percent agreement, and Bland-Altman Plots were calculated. The relative reliability (intra- and inter-observer reliability) was very high for the total score and subscale score of the TIS: ICC [1,1] and [3,1] varied between .94 and 1.00. Kappa values for the items ranged from .45 to 1.00. The absolute reliability values for the parameters are reported. The Bland-Altman analysis showed consistency of scores. This study indicates that TIS is a reliable measure of trunk control for children, 5-12 years of age, with CP.

Copyright © 2010 Elsevier Ltd. All rights reserved.

PMID: 21145204 [PubMed - as supplied by publisher]

18. Span J Psychol. 2010 Nov;13(2):538-56.

An exploratory study of phonological awareness and working memory differences and literacy performance of people that use AAC.

Gómez Taibo ML, Vieiro Iglesias P, González Raposo Mdel S, Sotillo Méndez M.

Universidad de La Coruña, Departamento de Psicología Evolutiva y de la Educación, Campus de Elviña s/n, 15071 La Coruña, Spain.

Twelve cerebral palsied adolescents and young adults with complex communicative needs who used augmentative and alternative communication were studied. They were classified according to their working memory capacity (high vs. low) into two groups of 6 participants. They were also divided into two groups of 6 participants according to their high vs. low phonological skills. These groups were compared on their performance in reading tests -orthographic knowledge, a word test and a pseudoword reading test- and in the spelling of words, pseudowords and pictures' names. Statistical differences were found between high vs. low phonological skills groups, and between high and low working memory groups. High working memory capacity group scored significantly higher than low working memory group in the orthographic and word reading tests. The high phonological skills group outperformed the low phonological skills group in the word reading test and in the spelling of pseudowords and pictures' names. From a descriptive point of view, phonological skills and working memory, factors known to be highly predictive of literacy skills in people without disabilities, also hold as factors for the participants that used AAC in our study. Implications of the results are discussed.

PMID: 20977006 [PubMed - indexed for MEDLINE]

19. Ther Clin Risk Manag. 2010 Nov 30;6:585-92.

Effects of recombinant growth hormone replacement and physical rehabilitation in recovery of gross motor function in children with cerebral palsy.

Reimunde P, Rodicio C, López N, Alonso A, Devesa P, Devesa J.

Medical Center "Proyecto Foltra", Cacheiras (Teo), A Coruña;

Cerebral palsy is an important health issue that has a strong socioeconomic impact. There is no cure for cerebral palsy, and therapeutic approaches only report small benefits for affected people. In this study we assessed the effects of growth hormone treatment (0.3 µg/kg/day) combined with physical rehabilitation in the recovery of gross motor function in children with growth hormone deficiency and cerebral palsy (four males and six females, mean age 5.63 ± 2.32 years) as compared with that observed in a similar population of cerebral palsy children (five males, five females, mean age 5.9 ± 2.18 years) without growth hormone deficiency treated only with physical rehabilitation for two months. The Gross Motor Function Measure (GMFM-88) and Modified Ashworth Scale were performed before commencing the treatment and after completion thereof. In children with cerebral palsy and growth hormone deficiency, Dimension A (P < 0.02), dimension B (P < 0.02), and dimension C (P < 0.02) of the GMFM-88, and the total score of the test (P < 0.01) significantly improved after the treatment; dimension D and dimension E did not increase, and four of five spastic patients showed a reduction in spasticity. However, in children with cerebral palsy and without growth hormone deficiency, only the total score of the test improved significantly after the treatment period. This indicates that growth hormone replacement therapy was responsible for the large differences observed between both groups in response to physical rehabilitation. We propose that the combined therapy involving growth hormone administration and physical rehabilitation may be a useful therapeutic approach in the recovery of gross motor function in children with growth hormone deficiency and cerebral palsy.

PMID: 21151628 [PubMed - in process] PMCID: PMC2999511

Epidemiology / Aetiology / Diagnosis & Early Treatment

20. BJOG. 2011 Jan;118(1):1-5. doi: 10.1111/j.1471-0528.2010.02782.x.

Antenatal magnesium sulphate may prevent cerebral palsy in preterm infants-but are we convinced? Evaluation of an apparently conclusive meta-analysis with trial sequential analysis.

Huusom LD, Secher NJ, Pryds O, Whitfield K, Gluud C, Brok J.

Department of Gynecology and Obstetrics, Hvidovre Hospital, Copenhagen University Hospital, Hvidovre, Denmark
Department of Paediatrics, Hvidovre Hospital, Copenhagen University Hospital, Hvidovre, Denmark
The Copenhagen Trial Unit, Centre for Clinical Intervention Research, Rigshospitalet, Copenhagen University Hospital, Copenhagen, Denmark.

© 2010 The Authors Journal compilation © RCOG 2010 BJOG An International Journal of Obstetrics and Gynaecology.

PMID: 21159153 [PubMed - in process]

21. BMJ. 2010 Nov 22;341:c6004. doi: 10.1136/bmj.c6004.

Antenatal magnesium sulphate.

Peebles DM, Marlow N, Brocklehurst P.

PMID: 21097982 [PubMed - indexed for MEDLINE]

22. Cochrane Database Syst Rev. 2010 Dec 8;12:CD000139.**Prophylactic methylxanthines for endotracheal extubation in preterm infants.**

Henderson-Smart DJ, Davis PG.

NSW Centre for Perinatal Health Services Research, Queen Elizabeth II Research Institute, Building DO2, University of Sydney, Sydney, NSW, Australia, 2006.

BACKGROUND: Weaning and extubating preterm infants on intermittent positive pressure ventilation (IPPV) for respiratory failure may be difficult. A significant contributing factor is thought to be the relatively poor respiratory drive and tendency to develop hypercarbia and apnoea, particularly in very preterm infants. Methylxanthine treatment started before extubation might stimulate breathing and increase the chances of successful weaning from IPPV. **OBJECTIVES:** To determine the effects of prophylactic methylxanthine treatment on the use of intubation and IPPV and other clinically important side effects in preterm infants being weaned from IPPV and in whom endotracheal extubation is planned. **SEARCH STRATEGY:** The standard search strategy of the Cochrane Neonatal Review Group was used. This included searches of The Cochrane Central Register of Controlled Trials (CENTRAL, The Cochrane Library, Issue 2, 2010), the Oxford Database of Perinatal Trials, MEDLINE (1966 to July 2010), CINAHL (1982 to July 2010) and EMBASE (1988 to July 2010). **SELECTION CRITERIA:** All published trials utilising random or quasi-random patient allocation in which treatment with methylxanthines (theophylline or caffeine) was compared with placebo or no treatment to improve the chances of successful extubation of preterm or low birth weight infants were included. **DATA COLLECTION AND ANALYSIS:** The standard methods of the Cochrane Collaboration and its Neonatal Review Group were used. **MAIN RESULTS:** Seven studies were identified for inclusion. Methylxanthine treatment results in a reduction in failure of extubation within one week (summary RR 0.48, 95%CI 0.32 to 0.71; summary RD -0.27, 95%CI -0.39 to -0.15; NNT 4, 95%CI 3 to 7; six trials, 172 infants). There is significant heterogeneity in the RD meta-analysis perhaps related to the large variation in baseline rate in the control groups (range 20 to 100%). The CAP trial enrolled the largest number of infants, but did not report extubation rates. In the caffeine group, there were lower rates of bronchopulmonary dysplasia, PDA ligation, cerebral palsy and death or major disability at 18 to 21 months. Infants receiving caffeine had reduced postmenstrual ages at time of discontinuing oxygen therapy, positive pressure ventilation and endotracheal intubation. **AUTHORS' CONCLUSIONS:** Methylxanthines increase the chances of successful extubation of preterm infants within one week of age. Important neurodevelopmental outcomes are improved by methylxanthine therapy. In any future trials, there is a need to stratify infants by gestational age (a better indicator of immaturity than birth weight). Caffeine, with its wider therapeutic margin, would be the better treatment to evaluate against placebo.

PMID: 21154342 [PubMed - in process]

23. Eur J Paediatr Neurol. 2010 Dec 9. [Epub ahead of print]**Prognostic factors and development of a scoring system for outcome of neonatal seizures in term infants.**

Garfinkle J, Shevell MI.

Division of Pediatric Neurology, Montreal Children's Hospital-McGill University Health Center, Montreal, Quebec, Canada.

OBJECTIVE: To identify independent prognostic indicators and design a predictive scoring system for neurodevelopmental outcome for term infants who experienced clinical neonatal seizures. **Study Design:** Retrospective analysis of 120 term infants who experienced clinical neonatal seizures between July 1991 and June 2007 in a single academic pediatric neurology practice. Logistic regression analysis was applied to determine the independent prognostic indicators of an adverse outcome, which was defined as death, cerebral palsy, global developmental delay, and/or epilepsy. These indicators were then used to develop a scoring system. **Results:** A total of 53 infants had a normal outcome, 56 survived with one or more neurodevelopmental impairments (31 had cerebral palsy, 41 had global developmental delay, and 29 had epilepsy), and 11 died. Eleven variables were associated with adverse outcome on univariate analysis, but only method of delivery, time of seizure onset, seizure type, EEG background findings, and etiology were independent predictors on logistic regression analysis. A five-point scoring system was devised using these independent predictors with a sensitivity of 81.1% and a specificity of 84.0%. **Conclusions:** In term infants, delivery via cesarean section, experiencing a seizure during the first 24 h of life, presenting with a seizure other than focal clonic, showing a moderately or severely abnormal EEG background, and having certain spe-

cific etiologies were the apparent major determinants for an adverse outcome.

Copyright © 2010. Published by Elsevier Ltd.

PMID: 21146431 [PubMed - as supplied by publisher]

24. J Matern Fetal Neonatal Med. 2010 Dec 10. [Epub ahead of print]

The potential of 4D sonography in the assessment of fetal behavior in high-risk pregnancies.

Talic A, Kurjak A, Ahmed B, Stanojevic M, Predojevic M, Kadic AS, Di Renzo GC.

Department of Obstetrics and Gynecology, University of Medical Sciences and Technology, Academy Charity Hospital, Khartoum, Sudan.

Objective. To assess differences of fetal behavior in normal and high-risk pregnancies. **Methods.** In the 1-year period (1 January 2007-31 December 2007), four-dimensional ultrasound has been used to assess Kurjak antenatal neurodevelopmental test (KANET) in low- and high-risk pregnancies after randomization in prospective longitudinal cohort study. Based on the KANET scores, the fetuses were considered as normal (≥ 14 points), borderline (6-13), or abnormal (0-5). **Results.** Comparison of KANET scores in low- and high-risk pregnancies were expectedly statistically significant. The largest incidence of fetuses with abnormal KANET was in the group of fetuses who had siblings with cerebral palsy. The largest incidence of the borderline KANET has been found in the group of fetuses whose mothers had fever during pregnancy. The following parameters of KANET test significantly differed between the fetuses from low- and high-risk pregnancies: overlapping cranial sutures, head circumference, isolated eye blinking, facial expressions, mouth movements, isolated hand movements, isolated leg movements, hand to face movement, finger movements, and general movements. **Conclusion.** KANET test has the potential to detect and discriminate normal from borderline and abnormal fetal behavior in normal and in high-risk pregnancies.

PMID: 21142753 [PubMed - as supplied by publisher]

25. Mol Syst Biol. 2010 Jul;6:391.

Kinase/phosphatase overexpression reveals pathways regulating hippocampal neuron morphology.

Buchser WJ, Slepak TI, Gutierrez-Arenas O, Bixby JL, Lemmon VP.

The Miami Project to Cure Paralysis, Department of Pharmacology, University of Miami, Miller School of Medicine, Miami, FL 33136-1060, USA.

Development and regeneration of the nervous system requires the precise formation of axons and dendrites. Kinases and phosphatases are pervasive regulators of cellular function and have been implicated in controlling axo-dendritic development and regeneration. We undertook a gain-of-function analysis to determine the functions of kinases and phosphatases in the regulation of neuron morphology. Over 300 kinases and 124 esterases and phosphatases were studied by high-content analysis of rat hippocampal neurons. Proteins previously implicated in neurite growth, such as ERK1, GSK3, EphA8, FGFR, PI3K, PKC, p38, and PP1a, were confirmed to have effects in our functional assays. We also identified novel positive and negative neurite growth regulators. These include neuronal-developmentally regulated kinases such as the activin receptor, interferon regulatory factor 6 (IRF6) and neural leucine-rich repeat 1 (LRRN1). The protein kinase N2 (PKN2) and choline kinase alpha (CHKA) kinases, and the phosphatases PPEF2 and SMPD1, have little or no established functions in neuronal function, but were sufficient to promote neurite growth. In addition, pathway analysis revealed that members of signaling pathways involved in cancer progression and axis formation enhanced neurite outgrowth, whereas cytokine-related pathways significantly inhibited neurite formation.

PMID: 20664637 [PubMed - indexed for MEDLINE]PMCID: PMC2925531

26. Opt Express. 2010 Dec 6;18(25):25973-86. doi: 10.1364/OE.18.025973.**Quantification of functional near infrared spectroscopy to assess cortical reorganization in children with cerebral palsy.**

Tian F, Delgado MR, Dhamne SC, Khan B, Alexandrakis G, Romero MI, Smith L, Reid D, Clegg NJ, Liu H.

Cerebral palsy (CP) is the most common motor disorder in children. Currently available neuroimaging techniques require complete body confinement and steadiness and thus are extremely difficult for pediatric patients. Here, we report the use and quantification of functional near infrared spectroscopy (fNIRS) to investigate the functional reorganization of the sensorimotor cortex in children with hemiparetic CP. Ten of sixteen children with congenital hemiparesis were measured during finger tapping tasks and compared with eight of sixteen age-matched healthy children, with an overall measurement success rate of 60%. Spatiotemporal analysis was introduced to quantify the motor activation and brain laterality. Such a quantitative approach reveals a consistent, contralateral motor activation in healthy children at 7 years of age or older. In sharp contrast, children with congenital hemiparesis exhibit all three of contralateral, bilateral and ipsilateral motor activations, depending on specific ages of the pediatric subjects. This study clearly demonstrates the feasibility of fNIRS to be utilized for investigating cortical reorganization in children with CP or other cortical disorders.

PMID: 21164944 [PubMed - in process]

27. PLoS One. 2010 Nov 30;5(11):e15112.**Which neurodevelopmental disorders get researched and why?**

Bishop DV.

Developmental Neuropsychology, University of Oxford, Oxford, United Kingdom.

AIM: There are substantial differences in the amount of research concerned with different disorders. This paper considers why. METHODS: Bibliographic searches were conducted to identify publications (1985-2009) concerned with 35 neurodevelopmental disorders: Developmental dyslexia, Developmental dyscalculia, Developmental coordination disorder, Speech sound disorder, Specific language impairment, Attention deficit hyperactivity disorder, Autistic spectrum disorder, Tourette syndrome, Intellectual disability, Angelman syndrome, Cerebral palsy, Cornelia de Lange syndrome, Cri du chat syndrome, Down syndrome, Duchenne muscular dystrophy, Fetal alcohol syndrome, Fragile X syndrome, Galactosaemia, Klinefelter syndrome, Lesch-Nyhan syndrome, Lowe syndrome, Marfan syndrome, Neurofibromatosis type 1, Noonan syndrome, Phenylketonuria, Prader-Willi syndrome, Rett syndrome, Rubinstein-Taybi syndrome, Trisomy 18, Tuberous sclerosis, Turner syndrome, Velocardiofacial syndrome, Williams syndrome, XXX and YYY. A publication index reflecting N publications relative to prevalence was derived. RESULTS: The publication index was higher for rare than common conditions. However, this was partly explained by the tendency for rare disorders to be more severe. INTERPRETATION: Although research activity is predictable from severity and prevalence, there are exceptions. Low rates of research, and relatively low levels of NIH funding, characterise conditions that are the domain of a single discipline with limited research resources. Growth in research is not explained by severity, and was exceptionally steep for autism and ADHD.

PMID: 21152085 [PubMed - in process]PMCID: PMC2994844

28. Zhonghua Liu Xing Bing Xue Za Zhi. 2010 May;31(5):538-543.**Epidemiological study on disabilities among ethnic minorities in China. [Article in Chinese]**

Chen R, Chen G, Song XM, Zhang L, Zheng XY.

Institute of Population Research, Peking University, Beijing 100871, China.

OBJECTIVE: To explore the prevalence rates of disabilities among the ethnic minority people in China. METHODS: Utilizing stratified, multiphase, and cluster probability sampling design, 2 526 145 persons were investigated and screened by trained interviewers, including 297 761 persons with ethnic minority backgrounds. Respondents scor-

ing positive for potential problems were referred to physician for further diagnosis on disability and on scale measurement. RESULTS: The overall prevalence rate of disability for both ethnic minority and Han population were 6.24% (95%CI: 6.16% - 6.51%) and 6.41% (95%CI: 6.38% - 6.51%) respectively. The total aggregate age-adjusted prevalence rate of disability was 7.31% for persons with ethnic minority. The prevalence rate of disabilities in male was significantly higher than that in females (7.31% vs. 6.75%). The ranking of prevalence rates on different type of disabilities were: physical disability 1.90% (95%CI: 1.89% - 1.91%), hearing disability 1.34% (95%CI: 1.33% - 1.35%), multiple disability 1.14% (95%CI: 1.13% - 1.15%), vision disability 0.99% (95%CI: 0.97% - 1.01%), psychiatric disability 0.38% (95%CI: 0.37% - 0.40%), intellectual disability 0.38% (0.37% - 0.39%) and speech disability 0.12% (0.11% - 0.13%). Cerebral Palsy, genetic diseases, tympanitis, cerebral disease and mental retardation (not including unknown items) were the major causes for disabled children with ethnicity background. Degenerated diseases, including osteoarthritis, cerebrovascular disease, elderly-related deafness or cataract were most important causes for ethnic minority persons aged 60 or over. Injury, including traffic accident was important disabled-related factor for persons with minority ethnicity aged 15 - 59. The main causes and ranking of causes for ethnic minority were similar with that for Han population. CONCLUSION: The prevalence rate of disability for ethnic minority persons was significantly higher than that for Han population in China. Prevention for different types of disability should be provided accordingly to persons with ethnic minority, in different age groups.

PMID: 21163033 [PubMed - as supplied by publisher]