Cerebral Palsy ALLIANCE

NEWS
Cerebral Palsy Research

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Interventions and Management

1. Dev Med Child Neurol. 2012 Aug 13. doi: 10.1111/j.1469-8749.2012.04385.x. [Epub ahead of print]

The natural history of hip development in cerebral palsy.

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Aim: The purpose of this study was to evaluate a population-based radiographic hip surveillance programme for children with cerebral palsy (CP) and to assess the natural history of hip displacement. Method: The study comprised 335 children (188 males, 147 females), born during 2002 to 2006 in the 10 south-eastern counties in Norway. Their mean age at the first radiograph was 3 years (range 6mo-7y 11mo) and the mean age at the most recent follow-up was 5 years 5 months. Distribution according to CP type was spastic hemiplegia in 38%, diplegia in 27%, quadriplegia in 21%, dyskinesia in 10%, and ataxia in 3%; Gross Motor Function Classification System (GMFCS) levels I to V were, 44%, 14%, 8%, 11%, and 23% respectively. Migration percentage (MP), acetabular index, and pelvic obliquity were measured on the radiographs. Results: Hip displacement (MP>33%) occurred in 26% of all children (subluxation in 22% and dislocation in 4%) and in 63% of those in GMFCS levels IV or V. Dislocation occurred in 14 children at a mean age of 4 years 5 months (range 1y 10mo-9y 7mo). The mean migration percentage was 20.4% at the initial radiographs and 34.0% at the last follow-up. Mean progression in migration percentage increased markedly with decreasing functional level, from 0.2% per year at GMFCS level I to 9.5% at level V. Interpretation: There is a pronounced trend towards hip displacement in nonambulant children. Close surveillance from age 1 to 2 years is needed to find the appropriate time for preventive surgery. Since 12% of the nonambulant children developed dislocation, our routines for hip surveillance need improvement.

PMID: 22881288 [PubMed - as supplied by publisher]

2. Dev Med Child Neurol. 2012 Aug 13. doi: 10.1111/j.1469-8749.2012.04380.x. [Epub ahead of print]

Are hips stable in children with cerebral palsy?

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Department of Orthopaedics, University Children's Hospital, Basle, Switzerland.

PMID: 22881187 [PubMed - as supplied by publisher]

3. J Pediatr Orthop. 2012 Sep;32(6):600-4.

Hip flexion contracture and diminished functional outcomes in cerebral palsy.

Pinero JR, Goldstein RY, Culver S, Kuhns CA, Feldman DS, Otsuka NY.

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BACKGROUND: Hip flexion contracture (HFC) in the ambulatory child with cerebral palsy (CP) may impair function and lead to deteriorations in health-related quality of life. Furthermore, increasing HFC may lead to increasing disability. However, the association between passive range of motion and the measures of function and well-being is unclear. This study was designed to determine whether increasing HFC is associated with functional outcome. METHODS: A total of 181 children, with an average age of 14.0±10.2 years, were evaluated as part of a multicenter prospective data collection of patients with ambulatory CP. Measurements of HFC were recorded, and patients were evaluated using walking score from Gillette Functional Assessment Questionnaire (FAQ), Gross Motor Function Measure (GMFM), and the Pediatric Outcome Data Collection Instrument (PODCI). Patients were grouped on the basis of severity of HFC: group A, 0 to 14 degrees; group B, 15 to 29 degrees; and group C =30 degrees. Associations were examined using the Spearman correlation. RESULTS: There was an inverse association between degree of HFC and FAQ walking score (P<0.01, ?=-0.25). Similarly, there was an inverse association between the degree of HFC and GMFM parts D (P<0.001, ?=-0.31) and E (P<0.001, ?=-0.32). Lastly, the PODCI domains of global function, mobility, and physical function also showed an inverse association with degree of HFC (P<0.001, ?=-0.24). CONCLUSIONS: As surgeons treating children with CP, we often rely on joint measurements as an indirect measure of function. This study of children with ambulatory CP suggests that increased HFC from the physician's perspective is associated with deterioration in function from a patient and a therapist's perspective.

LEVEL OF EVIDENCE: Level II, prospective study.

PMID: 22892622 [PubMed - in process]

4. Arch Phys Med Rehabil. 2012 Aug 11. [Epub ahead of print]

Reliably Measuring Ambulatory Activity Levels of Children and Adolescents with Cerebral Palsy.

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OBJECTIVE: To identify sources of variance in step counts and to examine the minimum number of days required to obtain a stable measure of habitual ambulatory activity in the cerebral palsy (CP) population. DESIGN: Cross-sectional. SETTING: Free-living environments. PARTICIPANTS: A total of 209 children and adolescents with CP [mean age (SD) = 8 years 4 months (3 years 4 months); n = 118 boys; Gross Motor Functional Classification System (GMFCS) levels I-III] were recruited through three regional pediatric specialty care hospitals. INTERVENTIONS: Daily walking activity was measured with the two-dimensional StepWatch accelerometer over 7 consecutive days. Individual information-centered approach was applied to days with <100 steps, and participants with =3 days of missing values were excluded from the study. Participants were categorized into 6 groups according to age and functional level. Generalizability theory was used to analyze the data. MAIN OUTCOME MEASURES: Mean step counts, relative magnitude of variance components in total step activity, and G-coefficients of various combinations of days of the week. RESULTS: Variance in step counts attributable to participants ranged from 33.6% to 65.4%. For youth ages 2-5 years, a minimum of 8, 6, and 2 days were required to reach acceptable reliability (G) coefficient of=.80 for GMFCS Levels I, II, and III, respectively. For those ages 6-14 years, a minimum of 6, 5, 4 days were required to reach stable measures of step activity for GMFCS Levels I, II, and III, respectively. CONCLUSION: The findings of the study suggest that activity monitoring period should be determined based on the GMFCS levels to reliably measure ambulatory activity levels in youth with CP.

PMID: 22892322 [PubMed - as supplied by publisher]

5. Eur Neurol. 2012;67(4):211-6. Epub 2012 Mar 8.

Medial lemniscus lesion in pediatric hemiplegic patients without corticospinal tract and posterior thalamic radiation lesion.

Jung YJ, Jang SH, Yeo SS, Lee E, Kim S, Lee DG, Kim HS, Son SM.

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OBJECTIVES: Using diffusion tensor imaging (DTI), we investigated the state of medial lemniscus (ML), corticospinal tract (CST), and posterior thalamic radiation (PTR), which were expected as probable reasons for clinical hemiplegia in pediatric patients, especially those who showed impaired fine motor control and proprioception, but no definite motor weakness or spasticity. METHODS: We recruited 13 hemiplegic patients and 8 age-matched healthy control subjects. Fractional anisotropy (FA) and apparent diffusion coefficient (ADC) for the bilateral ML, CST, and PTR were calculated and compared between the affected hemisphere of the patient (AP), the unaffected hemisphere of the patient (UP), and the mean value of the bilateral hemispheres in control subjects (MC). RESULTS: FA and ADC values for the CST and PTR did not differ significantly between the AP, UP, and MC subgroups ($p > 0.05$). However, the FA value for the ML in AP showed a significant decrease, compared with that in UP ($p = 0.012$) and MC ($p = 0.047$). DTT for the CST and PTR showed preserved integrity and ML in the UP also had continuity to the cortex; however, ML in AP showed disruption. CONCLUSIONS: Using DTI, we demonstrated that the ML lesion might be related to clinical hemiplegia in pediatric patients.

PMID: 22414658 [PubMed - indexed for MEDLINE]

6. J Physiother. 2012;58(3):197.

Functional progressive resistance training improves muscle strength but not walking ability in children with cerebral palsy.

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SUMMARY OF: Scholtes VA et al (2012) Effectiveness of functional progressive resistance exercise training on walking ability in children with cerebral palsy: a randomized controlled trial. Res Dev Disabil 33: 181-188. [Prepared by Nora Shields, CAP Editor.]

QUESTION: Does functional progressive resistance exercise (PRE) improve walking ability and participation in school-aged children with cerebral palsy (CP)? DESIGN: Randomised, controlled trial with concealed allocation and blinded outcome assessment. SETTING: Three special schools for children with physical disability in the Netherlands. PARTICIPANTS: Ambulatory children (Gross Motor Function Classification System 1-3) with spastic unilateral or bilateral cerebral palsy aged 6-13 years. Botulinum toxin injections in the previous three months or orthopaedic surgery in the previous six months were exclusion criteria. Randomisation of 51 participants allocated 26 to the functional PRE group and 25 to a usual care group. INTERVENTIONS: The intervention group participated in a 12-week functional PRE program, three times a week for 60 minutes in groups of 4 or 5. The program comprised four exercises: one using a leg press machine and three functional exercises (sit-to-stand, lateral step-up, half knee-rise) using body weight and a weighted vest to provide resistance. Participants completed 3 sets of 8 repetitions for each exercise. Intensity was increased progressively based on repeated estimation of 8 RM (repetition maximum). The control group received conventional physiotherapy 1-3 sessions a week. OUTCOME MEASURES: The primary outcomes were walking ability (timed 10m walk, 1-minute fast walk test, timed stair test) and participation (intensity scores of 17 items of Children's Assessment of Participation and Enjoyment

questionnaire recalculated on a 0-100 scale) measured at baseline, after 6 and 12 weeks training, and 6 weeks after the intervention. Secondary outcome measures were anaerobic muscle power, muscle strength, spasticity and range of movement (ROM). RESULTS: 49 participants completed the study. At the end of the intervention period, there was no difference between the groups for comfortable (-0.04, 95% CI -0.18 to 0.1m/s) or fast walking speed (0.04, 95% CI -0.04 to 0.12m/s), timed stair test (0.8, 95% CI -2.6 to 4.3s) or participation (-1, 95% CI -11 to 9). Muscle strength improved significantly more in the intervention group than the control group immediately after the intervention by 1.3N/kg (95% CI 0.6 to 2.5) for total isometric muscle strength and by 14% BW (95% CI 2 to 26) for 6 RM leg press. Knee flexion range had decreased in the intervention group by 15° (95% CI -29 to -1) compared to the control group 6 weeks after training stopped. The groups did not significantly differ on anaerobic muscle power, spasticity or other ROM outcomes. CONCLUSION: A 12-week functional PRE program improved muscle strength, but did not improve functional walking activity in school-aged ambulatory children with CP.

PMID: 22884187 [PubMed - in process]

7. Pediatr Phys Ther. 2012 Summer;24(2):215; author reply 215.

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

Coker-Bolt P, Karakostas T.

Comment on

Effects of constraint-induced movement therapy on gait, balance, and functional locomotor mobility. [Pediatr Phys Ther. 2012]

PMID: 22466395 [PubMed - indexed for MEDLINE]

8. Int J Endocrinol. 2012;2012:469235. Epub 2012 Jul 22.

Aging and Bone Health in Individuals with Developmental Disabilities.

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Low bone mass density (BMD), a classical age-related health issue and a known health concern for fair skinned, thin, postmenopausal Caucasian women, is found to be common among individuals with developmental/intellectual disabilities (D/IDs). It is the consensus that BMD is decreased in both men and women with D/ID. Maintaining good bone health is important for this population as fractures could potentially go undetected in nonverbal individuals, leading to increased morbidity and a further loss of independence. This paper provides a comprehensive overview of bone health of adults with D/ID, their risk of fractures, and how this compares to the general aging population. We will specifically focus on the bone health of two common developmental disabilities, Down syndrome (DS) and cerebral palsy (CP), and will discuss BMD and fracture rates in these complex populations. Gaining a greater understanding of how bone health is affected in individuals with D/ID could lead to better customized treatments for these specific populations.

PMID: 22888344 [PubMed - as supplied by publisher] PMCID: PMC3408668

9. Musculoskelet Surg. 2012 Aug 15. [Epub ahead of print]

Wrist fusion in patients with severe quadriplegic cerebral palsy.

Thabet AM, Kowtharapu DN, Miller F, Dabney KW, Shah SA, Rogers K, Holmes L Jr.

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We report clinical and radiographic outcomes of wrist fusion achieved with pin or plate fixation in 14 patients with severe quadriplegic cerebral palsy (CP) (19 wrists). Average patient age at the time of surgery was 16.8 ± 1.7 years (14-20 years). Mean follow-up time for the 14 patients was 5.9 ± 3.1 years (range, 1-11 years). Indication for surgery was severe wrist deformity that interfered with hygienic care. Few complications occurred, and outcomes were satisfactory. Statistically significant mean difference was shown between the pre- and postoperative radiographic angles (37°, P = 0.001, and 24°, P = 0.04, for lateral and anteroposterior views, respectively). Caregivers reported that appearance was the most perceived rationale for surgery (63 %). Improved hygienic care was the primary perceived benefit. The majority (88 %) were satisfied with the results. We recommend wrist fusion to improve hygienic care, positioning, and appearance of the wrist, hand, and fingers in patients with severe quadriplegic CP.

PMID: 22893448 [PubMed - as supplied by publisher]

10. Child Care Health Dev. 2012 Aug 15. doi: 10.1111/j.1365-2214.2012.01419.x. [Epub ahead of print]

A pilot study to measure marks in children with cerebral palsy using a novel measurement template.

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AIM: The primary aim of this pilot study was to trial a method of assessing bruises in a population of disabled children. If the method was found to be sufficiently robust it would be our intention to undertaking a more extensive observational study. BACKGROUND: Less is known about normal bruising patterns in children with disability than in those without. It is important that the method used to assess bruising is objective and repeatable. In an effort to define and improve repeatability, we employed a novel bruise measurement template which was printed onto transparent acetate sheets. METHOD: Twenty primary school age children, the majority of whom were non-ambulant and severely disabled with cerebral palsy, underwent full skin examination. The template was used to assess any bruises seen. A comparison was then made between measurements made by experienced paediatricians using the template and using a standard tape measure on a series of bruise images in 25 photographs. RESULTS: The majority of children in our pilot were found to have bruises, with one child having 6 and one 7 bruises. This comparative study showed that the two techniques had a very similar precision and that the template was easy to use. Greater precision would require a tighter measurement protocol, whether with a template or a tape measure. CONCLUSIONS: Further evaluation of the application of such a template would be worthwhile. We would suggest that our finding of some bruising in this population of disabled children is borne in mind whenever bruising is found in a non-ambulant child.

PMID: 22891762 [PubMed - as supplied by publisher]

11. Pediatr Phys Ther. 2012 Summer;24(2):131-40; discussion 140.

Effects of power wheelchairs on the development and function of young children with severe motor impairments.

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PURPOSE: The purpose of this pilot randomized controlled study was to identify any effects of power wheelchairs on the development and function of young children with severe motor impairments. METHODS: Participants were 28 children with various diagnoses, aged 14 to 30 months when they entered the study. The Battelle

Developmental Inventory (BDI), Pediatric Evaluation of Disability Inventory, and Early Coping Inventory were administered at entry and after 12 months. RESULTS: The on-protocol analysis comparing median change scores showed the experimental groups' BDI receptive communication scores, and their Pediatric Evaluation of Disability Inventory mobility functional skills, mobility caregiver assistance, and self-care caregiver scores improved significantly more than the control group's scores. An intention-to-treat analysis upheld the findings and revealed an additional difference between the groups' BDI total score. CONCLUSION: The results support use of power wheelchairs with children as young as age 14 months to enhance development and function, although additional research is needed.

PMID: 22466379 [PubMed - indexed for MEDLINE]

12. Physiotherapy. 2012 Sep;98(3):238-42. Epub 2012 Jul 23.

Potential of the Nintendo Wii™ as a rehabilitation tool for children with cerebral palsy in a developing country: a pilot study.

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OBJECTIVES: To explore the possibility of using the Nintendo Wii™ as a rehabilitation tool for children with cerebral palsy (CP) in a developing country, and determine whether there is potential for an impact on their gross motor function. DESIGN: Pilot study with a pre-post-test design. SETTING: Sir John Golding Rehabilitation Center, Jamaica, West Indies. PARTICIPANTS: Seven children, aged 6 to 12 years, with dyskinetic CP were recruited for the study. One child dropped out at week 4. INTERVENTION: Training with the Nintendo Wii was conducted twice weekly for 6 weeks. The games used were Wii Sports Boxing, Baseball and Tennis. MAIN OUTCOME MEASURES: Percentage attendance over the 6-week period, percentage of sessions for which the full duration of training was completed, and changes in gross motor function using the Gross Motor Function Measure (GMFM). RESULTS: All six participants who completed the study had 100% attendance, and all were able to complete the full 45 minutes of training at every session. Those who were wheelchair bound participated in two games, whilst those who were ambulant played three games. The mean GMFM score increased from 62.83 [standard deviation (SD) 24.86] to 70.17 (SD 23.67). CONCLUSION: The Nintendo Wii has the potential for use as a rehabilitation tool in the management of children with CP. Clinical trials should be conducted in this area to determine whether this could be an effective tool for improving gross motor function.

PMID: 22898581 [PubMed - in process]

13. Disabil Rehabil. 2012 Aug 16. [Epub ahead of print]

The course of health-related quality of life of preschool children with cerebral palsy.

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Purpose: The purpose of this paper is to describe the course of the health-related quality of life (HR-QoL) of children with cerebral palsy (CP) between the ages of 2.5 and 4.5 years, at both group and individual level. We also examined whether CP characteristics are helpful in understanding which children show a decrease in HR-QoL. Methods: HR-QoL of 72 children with CP was measured using the TNO-AZL Preschool children Quality of Life (TAPQOL) questionnaire at the ages of 2.5, 3.5 and 4.5 years. The course of HR-QoL was compared between groups with different CP characteristics. Results: Median scores for 10 of the 12 domains of the TAPQOL were found to be stable between ages 2.5 and 4.5 years. However, individual children showed great changes in HR-QoL at these ages, for all domains. A larger proportion of children with less severe CP showed a decrease in HR-QoL for the behaviour problems domain ($p = 0.02$), and a larger proportion of unilaterally affected children showed a decrease in HR-QoL regarding the anxiety ($p < 0.001$) and social functioning ($p = 0.01$) domains. Conclusions:

Although the median HR-QoL of children with CP is generally stable at these ages, much variation in the course of HR-QoL exists between individual children. There is no clear association between motor functioning or limb distribution and a decrease in HR-QoL. [Box: see text].

PMID: 22897114 [PubMed - as supplied by publisher]

14. BMJ Open. 2012 Aug 13;2(4). pii: e001460. doi: 10.1136/bmjopen-2012-001460. Print 2012.

Longitudinal cohort protocol study of oropharyngeal dysphagia: relationships to gross motor attainment, growth and nutritional status in preschool children with cerebral palsy.

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INTRODUCTION: The prevalence of oropharyngeal dysphagia (OPD) in children with cerebral palsy (CP) is estimated to be between 19% and 99%. OPD can impact on children's growth, nutrition and overall health. Despite the growing recognition of the extent and significance of health issues relating to OPD in children with CP, lack of knowledge of its profile in this subpopulation remains. This study aims to investigate the relationship between OPD, attainment of gross motor skills, growth and nutritional status in young children with CP at and between two crucial age points, 18-24 and 36 months, corrected age. METHODS AND ANALYSIS: This prospective longitudinal population-based study aims to recruit a total of 200 children with CP born in Queensland, Australia between 1 September 2006 and 31 December 2009 (60 per birth-year). Outcomes include clinically assessed OPD (Schedule for Oral Motor Assessment, Dysphagia Disorders Survey, Pre-Speech Assessment Scale, signs suggestive of pharyngeal phase impairment, Thomas-Stonell and Greenberg Saliva Severity Scale), parent-reported OPD on a feeding questionnaire, gross motor skills (Gross Motor Function Measure, Gross Motor Function Classification System and motor type), growth and nutritional status (linear growth and body composition) and dietary intake (3 day food record). The strength of relationship between outcome and exposure variables will be analysed using regression modelling with ORs and relative risk ratios. ETHICS AND DISSEMINATION: This protocol describes a study that provides the first large population-based study of OPD in a representative sample of preschool children with CP, using direct clinical assessment. Ethics has been obtained through the University of Queensland Medical Research Ethics Committee, the Children's Health Services District Ethics Committee, and at other regional and organisational ethics committees. Results are planned to be disseminated in six papers submitted to peer reviewed journals, and presentations at relevant international conferences.

PMID: 22893668 [PubMed - as supplied by publisher]

15. Dev Med Child Neurol. 2012 Aug 9. doi: 10.1111/j.1469-8749.2012.04382.x. [Epub ahead of print]

Prevalence and predictors of drooling in 7- to 14-year-old children with cerebral palsy: a population study.

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Aim: To establish a prevalence estimate for drooling and explore factors associated with drooling in a population sample of children with cerebral palsy (CP) aged 7 to 14 years living in Victoria, Australia. Method: A self-report questionnaire was used to collect data on drooling from parents of children born between 1996 and 2001, and registered with the Victorian Cerebral Palsy Register. Results: A total of 385 children (231 males, 154 females; mean age 10y 9mo [SD 1y 7mo], range 8-14y) were studied. The clinical type and distribution of CP were spastic (341), ataxic (16), dyskinetic (17), hypotonic (10), and unknown (1). Distribution in Gross Motor Function Classification System (GMFCS) levels was I (103), II (98), III (52), IV (63), V (61), and unknown (8). After adjustment for topographical pattern of motor impairment and GMFCS level, 40% were reported to have experienced drooling between 4 years of age and the time of completing the questionnaire. A significantly higher prevalence of drooling was found in children with poor gross motor function and in those with more severe

presentations of CP, including poor head control, difficulty with eating, and inability to sustain lip closure (p<0.001 for each). Drooling was shown to be significantly associated with both intellectual disability and epilepsy in this group of children (p<0.001 for both). Interpretation: With a prevalence of 40%, drooling is an important comorbidity in CP. It was considered severe in 15% of children. Poor oromotor function was associated with drooling and could be the target of interventions for this under-researched problem.

PMID: 22881219 [PubMed - as supplied by publisher]

16. Braz Oral Res. 2012 Aug 14. pii: S1806-83242012005000018. [Epub ahead of print]

Factors associated with dental caries in the primary dentition of children with cerebral palsy.

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The aim of this study was to investigate factors associated with caries experience in the primary dentition of one- to five-year-old children with cerebral palsy. A total of 266 dental records were examined, and caries experience was measured by dmft. The following variables were also analyzed: gender, oral hygiene, history of gastroesophageal reflux, use of medications for gastroesophageal reflux, gingival status, sugar intake and reports of polyuria, excessive thirst and xerostomia. For analysis purposes, the individuals were categorized as those with and without caries experience and subcategorized into the following age groups: one year; two to three years; and four to five years. After bivariate analysis, variables with a p-value < 0.25 were selected for incorporation into the Poisson regression models. Considering the limitations of the protocol, the level of oral hygiene perceived on the first appointment was the only factor associated with caries experience among two-to-fiveyear-old children with cerebral palsy.

PMID: 22892879 [PubMed - as supplied by publisher]

17. Disabil Rehabil. 2012 Aug 16. [Epub ahead of print]

Sequence memory skills in Spastic Bilateral Cerebral Palsy are age independent as in normally developing children.

Gagliardi C, Tavano A, Turconi AC, Borgatti R.

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Purpose: To study the development of sequence memory skills in a group of participants with Spastic Bilateral Cerebral Palsy (CP) and their matched controls (TD). Sequence memory skills are defined as a blend of implicit and explicit competences that are crucial for the acquisition and consolidation of most adaptive skills along the lifespan. Method: A computerized sequence learning task was administered to 51 participants with CP (age range: 4.1-14.7) and their controls. General performance, accuracy and learning strategy were analyzed, as well as cognitive competencies (IQ and explicit visual spatial memory). Results: Explicit learning developed along with age in all participants. Sequence learning skills were age independent and unevenly distributed among CP participants: most TD (96.1%) and only about half (58.8%) of CP participants succeeded in sequence learning, in dynamic relation with cognitive and manipulation abilities. Conclusion: Sequence memory skills should be verified to plan therapeutic strategies. Therapeutic plans based on implicit learning (more resistant to disruption and stress) could be effective and highly advantageous for most but not for all CP children. Independently from age, many CP children could fix sequences more efficiently by explicit strategies, a more effortful but probably more effective way.

PMID: 22897566 [PubMed - as supplied by publisher]

18. J Child Neurol. 2012 Aug 16. [Epub ahead of print]

Error Detection and Response Adjustment in Youth With Mild Spastic Cerebral Palsy: An Event-Related Brain Potential Study.

Hakkarainen E, Pirilä S, Kaartinen J, van der Meere JJ.

This study evaluated the brain activation state during error making in youth with mild spastic cerebral palsy and a peer control group while carrying out a stimulus recognition task. The key question was whether patients were detecting their own errors and subsequently improving their performance in a future trial. Findings indicated that error responses of the group with cerebral palsy were associated with weak motor preparation, as indexed by the amplitude of the late contingent negative variation. However, patients were detecting their errors as indexed by the amplitude of the response-locked negativity and thus improved their performance in a future trial. Findings suggest that the consequence of error making on future performance is intact in a sample of youth with mild spastic cerebral palsy. Because the study group is small, the present findings need replication using a larger sample.

PMID: 22899795 [PubMed - as supplied by publisher]

Prevention and Cure

19. Arq Neuropsiquiatr. 2012 Aug;70(8):593-8.

Differences in walking attainment ages between low-risk preterm and healthy full-term infants.

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OBJECTIVE: To compare gross motor development of preterm infants (PT) without cerebral palsy with healthy full-term (FT) infants, according to Alberta Infant Motor Scale (AIMS); to compare the age of walking between PT and FT; and whether the age of walking in PT is affected by neonatal variables. METHODS: Prospective study compared monthly 101 PT and 52 FT, from the first visit, until all AIMS items had been observed. Results: Mean scores were similarity in their progression, except from the eighth to tenth months. FT infants were faster in walking attainment than PT. Birth weight and length and duration of neonatal nursery stay were related to walking delay. CONCLUSION: Gross motor development between PT and FT were similar, except from the eighth to tenth months of age. PT walked later than FT infants and predictive variables were birth weight and length, and duration of neonatal intensive unit stay.

PMID: 22899030 [PubMed - in process]

20. Pediatr Neurol. 2012 Sep;47(3):186-92.

Evaluation of etiologic and prognostic factors in neonatal convulsions.

Yildiz EP, Tatli B, Ekici B, Eraslan E, Aydinli N, Caliskan M, Ozmen M.

Department of Pediatrics, Istanbul Medical Faculty, Istanbul University, Istanbul, Turkey.

This study evaluated etiologic and risk factors affecting long-term prognoses of neurologic outcomes in newborns with neonatal seizures. We enrolled patients at chronologic ages of 23-44 months, referred to the Department of Pediatric Neurology, Istanbul Medical Faculty, from January 1, 2007-December 31, 2009, after manifesting seizures in their first postnatal 28 days. Of 112 newborns, 41 were female, 71 were male, 33 were preterm, and 79 were full-term. Perinatal asphyxia (28.6%) and intracranial hemorrhage (17%) were the most common causes of neonatal seizures. Cerebral palsy developed in 27.6% of patients during follow-up. The incidence of epilepsy was 35.7%. Almost 50% of patients manifested developmental delay in one or more areas. Global developmental delay was the most common (50.8%) neurologic disorder. The correlation between gestational age or birth weight and adverse

outcomes was nonsignificant. Etiology, Apgar score, need for resuscitation at birth, background electroencephalogram, neonatal status epilepticus, cranial imaging findings, type/duration of antiepileptic treatment, and response to acute treatment were all strong prognostic factors in neurologic outcomes. Neonatal seizures pose a threat of neurologic sequelae for preterm and full-term infants. Although the number of recognized etiologic factors in neonatal seizures has increased because of improvements in neonatology and diagnostic methods, perinatal asphyxia remains the most common factor.

PMID: 22883283 [PubMed - in process]

21. Arch Pediatr. 2012 Aug 9. [Epub ahead of print]

Long-term cerebral effects of perinatal inflammation [Article in French]

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Perinatal inflammation can lead to fetal/neonatal inflammatory syndrome, a risk factor for brain lesions, especially in the white matter. Perinatal inflammation is associated with increased incidence of cerebral palsy in humans and animal models and there is a strong relationship with increased incidence of autism and schizophrenia in humans. Perinatal inflammation causes acute microglial and astroglial activation, blood-brain barrier dysfunction, and disrupts oligodendrocyte maturation leading to hypomyelination. Inflammation also sensitizes the brain to additional perinatal insults, including hypoxia-ischemia. Furthermore, long after the primary cause of inflammation has resolved, gliosis may also persist and predispose to neurodegenerative diseases including Alzheimer's and Parkinson's disease, but this relation is still hypothetical. Finding of acute and chronic changes in brain structure and function due to perinatal inflammation highlights the need for treatments. As gliosis appears to be involved in the acute and chronic effects of perinatal inflammation, modulating the glial phenotype may be an effective strategy to prevent damage to the brain.

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22. Zhonghua Yi Xue Za Zhi. 2012 May 29;92(20):1400-4.

Meta-analysis of mild hypothermia for gestational age over 35-week newborns with hypoxic-ischemic encephalopathy [Article in Chinese]

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OBJECTIVE: To determine the effects of therapeutic hypothermia (TH) in encephalopathic asphyxiated newborn infants on mortality, long-term neurodevelopmental disability and side effects by summarizing the data of hypoxic-ischemic encephalopathy(HIE) newborns undergoing mild hypothermia using meta-analysis. METHODS: The standard searching strategy of the Neonatal Review Group as outlined in the Cochrane Library was used to retrieve all clinical literatures about TH on HIE. RevMan 5.1 software was used to perform the meta-analysis of target papers. The primary outcome measure was a combination of death and severe major neurodevelopmental disabilities at 18 - 24 months of age. Secondary outcomes included mortality, cerebral palsy (CP), neurodevelopmental delay, blindness, deafness and main side effects of cooling therapy. RESULTS: A total of 276 papers fulfilled the search strategy and 11 trials were included. Overall TH resulted in a statistically significant and clinically important reduction in the combined outcome of death or major neurodevelopmental disabilities to 18-24 months of age (RR = 0.76, 95%CI: 0.68 - 0.84, P < 0.01). Moreover, as compared with the control group, TH significantly decreased the incidence of mortality (RR = 0.76, 95%CI: 0.65 - 0.90, P < 0.01), psychomotor development index(RR = 0.69, 95%CI: 0.55 - 0.87, P < 0.01), mental development index (RR = 0.66, 95%CI: 0.53 -

0.83, P < 0.01), CP (RR = 0.70, 95%CI: 0.54 - 0.91, P < 0.01) and blindness (RR = 0.54, 95%CI: 0.33 - 0.90, P < 0.05)except for severe hearing loss (deafness) (RR = 0.69, 95%CI: 0.35 - 1.34, P = 0.3000) in survivors. Adverse effects included significant thrombocytopenia in the TH group (P = 0.0400) but without deleterious consequences. There were no significant differences in arrhythmia, coagulopathy, hypotension requiring inotropic supports, sepsis and pulmonary hypertension between the TH and control groups (all P > 0.05). CONCLUSIONS: Mild hypothermia is effective in reducing death and major disabilities in infants with moderate-to-severe HIE without significant side effects. Infants presenting within the first hours after birth with the signs and symptoms of moderate-to-severe encephalopathy should be cooled in accordance with the established protocols of previous randomized controlled trials.

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