Cerebral Palsy INSTITUTE

CP Research News

Monday 8 November 2010

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

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Interventions

1. BMC Pediatr. 2010 Nov 2;10(1):77. [Epub ahead of print]

LEARN 2 MOVE 7-12 years: a randomized controlled trial on the effects of a physical activity stimulation program in children with cerebral palsy.

Van Wely L Msc, Becher JG Md Phd, Reinders-Messelink HA Phd, Lindeman E Md Phd, Verschuren O Phd, Verheijden J, Dallmeijer AJ Phd.

BACKGROUND: Regular participation in physical activities is important for all children to stay fit and healthy. Children with cerebral palsy have reduced levels of physical activity, compared to typically developing children. The aim of the LEARN 2 MOVE 7-12 study is to improve physical activity by means of a physical activity stimulation program, consisting of a lifestyle intervention and a fitness training program. METHODS: This study will be a 6-month single-blinded randomized controlled trial with a 6-month follow up. Fifty children with spastic cerebral palsy, aged 7 to 12 years, with Gross Motor Function Classification System levels I-III, will be recruited in pediatric physiotherapy practices and special schools for children with disabilities. The children will be randomly assigned to either the intervention group or control group. The children in the control group will continue with their regular pediatric physiotherapy, and the children in the intervention group will participate in a 6-month physical activity stimulation program. The physical activity stimulation program consists of a 6-month lifestyle intervention, in combination with a 4-month fitness training program. The lifestyle intervention includes counseling the child and the parents to adopt an active lifestyle through Motivational Interviewing, and home-based physiotherapy to practise mobility-related activities in the daily situation. Data will be collected just before the start of the intervention (T0), after the 4-month fitness training program (T4), after the 6-month lifestyle intervention (T6), and after six months of follow-up (T12). Primary outcomes are physical activity, measured with the StepWatch Activity Monitor and with self-reports. Secondary outcomes are fitness, capacity of mobility, social participation and health-related quality of life. A random coefficient analysis will be performed to determine differences in treatment effect between the control group and the intervention group, with primary outcomes and secondary outcomes as the dependent variables. DISCUSSION: This is the first study that investigates the effect of a combined lifestyle intervention and fitness training on physical activity. Temporary effects of the fitness training are expected to be maintained by changes to an active lifestyle in daily life and in the home situation. Trial registration This study is registered in the Dutch Trial Register as NTR2099.

PMID: 21044314 [PubMed - as supplied by publisher]

2. BMC Pediatr. 2010 Nov 2;10(1):76. [Epub ahead of print]

LEARN 2 MOVE 0-2 years: effects of a new intervention program in infants at very high risk for cerebral palsy; a randomized controlled trial.

Hielkema T, Hamer EG, Reinders-Messelink HA, Maathuis CG, Bos AF, Dirks T, van Doormaal L, Verheijden JM, Vlaskamp C, Lindeman E, Hadders-Algra M.

BACKGROUND: It is widely accepted that infants at risk for cerebral palsy need paediatric physiotherapy. However, there is little evidence for the efficacy of physiotherapeutic intervention. Recently, a new intervention program, COPCA (Coping with and Caring for infants with special needs - a family centered program), was developed. COPCA has educational and motor goals. A previous study indicated that the COPCA-approach is associated with better developmental outcomes for infants at high risk for developmental disorders. LEARN 2 MOVE 0-2 years evaluates the efficacy and the working mechanisms of the COPCA program in infants at very high risk for cerebral palsy in comparison to the efficacy of traditional infant physiotherapy in a randomized controlled trial. The objective is to evaluate the effects of both intervention programs on motor, cognitive and daily functioning of the child and the family and to get insight in the working elements of early intervention methods. Methods/design: Infants are included at the corrected age of 1 to 9 months and randomized into a group receiving COPCA and a group receiving traditional infant physiotherapy. Both interventions are given once a week during one year. Measurements are performed at baseline, during and after the intervention period and at the corrected age of 21 months. Primary outcome of the study is the Infant Motor Profile, a qualitative evaluation instrument of motor behaviour in infancy. Secondary measurements focus on activities and participation, body functions and structures, family functioning, quality of life and working mechanisms. To cope with the heterogeneity in physiotherapy, physiotherapeutic sessions are video-recorded three times (baseline, after 6 months and at the end of the intervention period). Physiotherapeutic actions will be quantified and related to outcome. DISCUSSION: LEARN 2 MOVE 0-2 years evaluates and explores the effects of COPCA and TIP. Whatever the outcome of the project, it will improve our understanding of early intervention in children with cerebral palsy. Such knowledge is a prerequisite for tailor-made guidance of children with CP and their families. Trial registration: The trial is registered under NTR1428.

PMID: 21044299 [PubMed - as supplied by publisher]

3. Res Dev Disabil. 2010 Nov 2. [Epub ahead of print]

Modified Constraint-Induced Movement Therapy combined with Bimanual Training (mCIMT-BiT) in children with unilateral spastic cerebral palsy: How are improvements in arm-hand use established?

Aarts PB, Jongerius PH, Geerdink YA, van Limbeek J, Geurts AC.

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A recent randomized controlled trial indicated that modified Constraint-Induced Movement Therapy followed by Bimanual Training (mCIMT-BiT) is an effective intervention to improve spontaneous use of the affected upper limb in children with unilateral spastic cerebral palsy (CP). The present study aimed to investigate how the above-mentioned improvements as a result of 8 weeks mCIMT-BiT were established. 52 children with unilateral spastic CP with Manual Ability Classification System (MACS) scores I, II or III and aged 2.5-8 years were randomly allocated to either mCIMT-BiT (n=28) or Usual Care (UC) (n=24). Developmental disregard ('learned non-use') and upper limb capacity and performance scores were derived from the Video Observations Aarts and Aarts, module Determine Developmental Disregard. Active and passive range of motion at the affected wrist and elbow were assessed using goniometry during isolated movements. Upper limb capacity and performance demonstrated significantly greater improvements after mCIMT-BiT compared to UC, which lasted up to 8 weeks follow-up, whereas developmental disregard and passive and active range of motion did not show differential effects. The results support the notion that improvement of capacity and performance of the upper limb through mCIMT-BiT in children with unilateral spastic CP is based on a better utilization of existing motor functions of the affected arm and hand. However, enhancement of the overall amount of use (or the reduction of learned non-use) may still be suboptimal leaving room for improvement of this treatment.

PMID: 21051191 [PubMed - as supplied by publisher]

4. J Womens Health (Larchmt). 2010 Oct 30. [Epub ahead of print]

Implications of Mobility Impairment on the Diagnosis and Treatment of Breast Cancer.

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Background: Among women with chronic, preexisting mobility impairments, we sought to explore how their mobility difficulties affected the diagnosis and treatment of early-stage breast cancer Methods: This is a qualitative analysis of transcripts from in-depth in-person or telephone interviews with 20 English-speaking women who had early-stage breast cancer, were <60 years of age, and had chronic difficulty walking or used wheeled mobility aids at the time of their breast cancer diagnoses Results: Nine women were disabled by polio as children or had postpolio syndrome, 3 had cerebral palsy, 3 had spinal cord injury, and 5 had other conditions. Most women reported difficulty obtaining mammograms, primarily because of inaccessible equipment, positioning problems, and difficulties with uncontrollable movements. Many women made decisions about surgical approach and chemotherapy by explicitly considering how various therapies would affect their arms, which are essential to their mobility (they use ambulation aids, self-propel manual wheelchairs, or otherwise rely on their arms for mobility or safety). Managing at home after surgery posed major mobility challenges, especially for women who lived alone. Several women reported feeling they suffered more chemotherapy side effects than do women without mobility problems. Weight gains with endocrine therapy compromised the mobility of several women. Conclusions: Increasing numbers of American women are living with mobility disabilities and entering age ranges with increased risks of breast cancer. Mobility impairments can affect women at every point during early-stage breast cancer diagnosis, therapy, and recovery. Clinicians must consider women's mobility functioning in making therapeutic recommendations to women with impaired mobility who develop breast cancer.

PMID: 21034276 [PubMed - as supplied by publisher]

5. Res Dev Disabil. 2010 Oct 30. [Epub ahead of print]

Narrative ability in children with cerebral palsy.

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In a previous study a group of children with cerebral palsy (CP) were found to have considerable difficulties with narratives, performing several standard deviations below the criteria for the Information score of the Bus Story Test (BST). To examine in depth the performance of children with CP and a control group with typically developing (TD) children on a narrative task, in order to search for possible underlying causes to the problems in the CP group. The results of the BST for 10 children with CP, mean age 7;11 years, were investigated. The analysis of the BST was supplemented with the use of the Narrative Assessment Profile (NAP) and quantitative analyses of number of words, mazes, propositions, types of conjunctions and story elements. A significant relationship between the explicitness dimension on the Narrative Assessment Profile and the BST Information score in the CP group suggested that the problems could be derived to a limited use of cohesion and a scarcity of essential information. Compared to the CP group, the TD group used significantly more causal conjunctions. The results indicate a general problem with cohesion at the textual level in the CP group. A further finding was the occurrence of a positive correlation between the use of mazes and the BST Information score in the CP group. These results have implications for the design of a more specific intervention for children, where the NAP was found to be a valuable tool in combination with the BST or other assessment materials. Further, it is shown that mazes, mostly regarded as a behaviour that not enhances speech production, for some children can be used as a means to find necessary words and pieces of information.

PMID: 21041064 [PubMed - as supplied by publisher]

6. Res Dev Disabil. 2010 Oct 30. [Epub ahead of print]

Development of daily activities in school-age children with cerebral palsy.

Smits DW, Ketelaar M, Gorter JW, van Schie P, Dallmeijer A, Jongmans M, Lindeman E.

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The purpose of this study was to describe the course of capabilities in self-care, mobility, and social function in school-age children with cerebral palsy (CP) and to investigate associations with CP-, child-, and family-characteristics. A clinic-based sample of children with CP (n=116; 76 males, 40 females; mean age 6y 3mo, SD 12mo) was followed longitudinally in three yearly measurements. Children's capabilities were assessed with the Pediatric Evaluation of Disability Inventory Functional Skills Scale (PEDI-FSS). Averaged for the total group, significant increases over time were shown in PEDI-FSS scores in all three domains. For self-care, the course was best predicted by a model including level of gross motor function (measured by the Gross Motor Function Classification System) and intellectual capacity (measured by Raven's Coloured Progressive Matrices). For mobility, the course was best predicted by a model containing only level of gross motor function. For social function, the course was best predicted by a model comprising level of bimanual function (measured by the Manual Ability Classification System) and paternal educational level. Generally, the increase in capabilities was greater if level of functioning was higher, except for level of paternal education. The findings indicate that there are different sets of determinants for the course of different domains of daily activities. Such different sets of determinants may help to set realistic expectations and to create appropriate treatment plans for different domains of daily activities in school-age children with CP.

PMID: 21041062 [PubMed - as supplied by publisher]

7. Gait Posture. 2010 Oct 28. [Epub ahead of print]

Joint moment contributions to swing knee extension acceleration during gait in individuals with spastic diplegic cerebral palsy.

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The mechanisms contributing to swing phase knee acceleration in individuals with spastic diplegic cerebral palsy (CP) are not well understood, but evidence suggests that selective voluntary motor control (SVMC) may play a role. The purpose of this study was to examine the relationship between lower limb SVMC, measured using Selective Control Assessment of the Lower Extremity (SCALE), and joint moment contributions to swing knee extension acceleration in participants with spastic diplegic CP. Eighteen participants were recruited (mean age=13.8 years, range=6-30 years, Gross Motor Function Classification System Levels I-III). Induced acceleration analysis was performed during the swing phase of gait. Average joint moment contributions to swing knee extension acceleration were calculated. Contributions from stance limb and swing limb joint moments were correlated with SCALE scores using Pearson's correlations. A strong correlation was found ($p<0.0001$, $r=0.85$) between SCALE score and the total swing joint moment contributions to swing knee extension acceleration. As SCALE score increased, swing joint moments provided less resistance to knee extension acceleration. No relationship ($p=0.18$) was found between stance moment contributions to swing knee acceleration and stance limb SCALE scores. Excessive contributions from swing limb joint moments appear to be the factor limiting swing knee extension in spastic diplegic CP gait. Interventions that address negative contributions due to spasticity may not be effective in patients who cannot generate adequate knee extension due to poor SVMC.

PMID: 21036047 [PubMed - as supplied by publisher]

8. Dev Med Child Neurol. 2010 Oct 11. doi: 10.1111/j.1469-8749.2010.03809.x. [Epub ahead of print]

Factors associated with bone density in different skeletal regions in children with cerebral palsy of various motor severities.

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Aim: To analyse factors associated with bone density in different skeletal regions in children with cerebral palsy (CP) of various motor severities. Method: We examined 56 children with spastic CP (10 diplegia, 12 hemiplegia and 34 quadriplegia) aged 4 to 12 years (35 males, 21 females) and 29 typically developing children. Children with CP were stratified into three groups based on Gross Motor Function Classification System (GMFCS) levels I to II (n=22), III (n=8), and IV to V (n=26). Growth and clinical variables, bone markers, distal femur and lumbar areal bone mineral density (BMDa), and calcaneal broadband ultrasound attenuation (BUA) were assessed. Results: The femur BMDa and calcaneal BUA values were lower in children in low GMFCS levels than in children in high GMFCS levels ($p<0.05$; femur BMDa: levels I-III, 0.6-0.7g/cm(2); levels IV-V, 0.5g/cm(2); calcaneal BUA: levels I-II, 39db/MHz; levels III-V, 20-21db/MHz). Lumbar BMDa and most bone markers did not differ significantly among CP and healthy groups. Regression analysis revealed that growth variables and GMFCS level were mainly associated with lower limb BMDa and BUA, and growth variables were mainly associated with lumbar BMDa (adjusted r(2) =0.48-0.56). None of the bone markers were associated with bone density. Interpretation: Bone densities vary and are associated with a number of factors in different skeletal regions in children with CP with a range of motor severities.

PMID: 21039441 [PubMed - as supplied by publisher]

9. Dev Med Child Neurol. 2010 Oct 11. doi: 10.1111/j.1469-8749.2010.03807.x. [Epub ahead of print]

Utility of language comprehension tests for unintelligible or non-speaking children with cerebral palsy: a systematic review.

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Aim: To identify the use and utility of language comprehension tests for unintelligible or non-speaking children with severe cerebral palsy (CP). Method: Severe CP was defined as severe dysarthria (unintelligible speech) or anarthria (absence of speech) combined with severe limited mobility, corresponding to Gross Motor Function Classification System levels IV to V. An electronic search in the databases of PubMed, PsychInfo, Embase, and CINAHL was made of studies published between January 1965 and December 2008. Indexing terms and free-text terms for 'cerebral palsy', 'language', and 'instrumentation' were used. Studies were included when (1) the focus was to investigate comprehension of spoken language of children (0-18y) with severe CP, and (2) language tests were described. Results: Twelve standardized tests and five experimental instruments were identified. All standardized tests were developed for children without limited mobility. Only the Peabody Picture Vocabulary Test - Revised

was frequently used and feasible for older children with severe CP (>9y). The other tests were used occasionally. To establish utility, adaptations of standardized test procedures were necessary. Interpretation: Language comprehension tests for children with severe CP are scarce. A language comprehension test specifically designed for these children is warranted.

PMID: 21039440 [PubMed - as supplied by publisher]

10. Dev Med Child Neurol. 2010 Oct 11. doi: 10.1111/j.1469-8749.2010.03790.x. [Epub ahead of print]

Speech, expressive language, and verbal cognition of preschool children with cerebral palsy in Iceland.

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Aim: The aim of this study was to describe speech, expressive language, and verbal cognition of children with cerebral palsy (CP). Method: A population study included 152 Icelandic children with congenital CP (74 males, 78 females; mean age 5y 5mo, range 4y-6y 6mo). Children who spoke in sentences, phrases, or one-word utterances were categorized as verbal. Speech was classified as normal, mild dysarthria, or severe dysarthria. Cognition was reported as IQ (Wechsler Preschool and Primary Scale of Intelligence - Revised) or developmental quotient (DQ). Results: Most children (81%) had spastic CP and bilateral symptoms (76%); 74 (49%) were at Gross Motor Function Classification System (GMFCS) level I, 27% at levels II and III, and 24% at levels IV and V ($p<0.001$). One hundred and twenty-eight children (84%) communicated verbally whereas 24 were nonverbal. Nonverbal status and severe dysarthria were associated with greater motor impairment (GMFCS; $p<0.001$). Twenty-five children (16%) had severe dysarthria. Most (88%) of the nonverbal children had multiple disabilities compared with 18% of the verbal group ($p<0.001$). Median (interquartile range) verbal IQ was 93 (73-104) and performance IQ 77 (61-94; $p<0.001$). Sixty-eight children (45%) had normal verbal cognition and almost a quarter of the children with severe dysarthria had a full-scale IQ/DQ of 70. Interpretation: Most children with CP express sentences and almost half of them have normal verbal IQ. Nonverbal status frequently indicates multiple impairments whereas severe dysarthria may be associated with normal cognition.

PMID: 21039439 [PubMed - as supplied by publisher]

11. Epilepsy Res. 2010 Aug;90(3):248-58. Epub 2010 Jun 26.

Evolution of hemiplegic attacks and epileptic seizures in alternating hemiplegia of childhood.

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To delineate the evolution of non-epileptic and epileptic paroxysmal events in alternating hemiplegia of childhood (AHC), we reviewed clinical information of nine patients (4-40 years) with AHC. Paroxysmal abnormal ocular movements, head turning, and tonic, clonic, or myoclonic limb movements were the initial symptoms (birth-8m) in each patient. Ictal electroencephalography (EEG) of these episodes, as well as hemiplegic periods that accompanied these symptoms later in infancy showed unremarkable findings or generalized slow background activity. Presumptive epileptic seizures appeared at 2-16y in seven patients: generalized tonic, clonic, myoclonic, tonic-clonic, or complex partial seizures often accompanied by cyanosis or prolonged respiratory arrest. Ictal EEGs recorded in four patients revealed focal slow or fast activities during facial or limb twitching, and widespread sharp waves or polyspike-wave activities during clonic/myoclonic seizures. Four patients with neonatal disease onset showed lower psychomotor developmental achievements compared with other patients, and experienced repeated status epilepti-

cus followed by progressive deterioration. Cerebellar atrophy and hippocampal high signal changes on magnetic resonance imaging were common to this group with severe phenotypes. Apart from the paroxysmal motor symptoms accompanying the hemiplegic episodes, many AHC patients suffer from true epilepsies during childhood. Status epilepticus in AHC is linked to severe outcome with psychomotor deterioration. The variations in clinical phenotypes may imply multiple causative genes for AHC. This variation should be considered while managing patients with this disorder.

PMID: 20580529 [PubMed - indexed for MEDLINE]

Epidemiology / Aetiology / Diagnosis & Early Treatment

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

12. Hum Reprod. 2010 Nov 2. [Epub ahead of print]

Parental infertility and cerebral palsy in children.

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BACKGROUND: Children born after in vitro fertilization (IVF) or intracytoplasmic sperm injection (ICSI) have been reported to have a higher risk of cerebral palsy (CP), perhaps due to the higher frequency of preterm birth, multiple births or vanishing embryo in the pregnancies. However, it has been suggested that the underlying infertility may be part of the pathway. In this study, we examined whether untreated subfecundity (measured by time to pregnancy) or infertility treatment was associated with an increased risk of CP in the offspring. METHODS Using the Danish National Birth Cohort (1997-2003), we compared children born after 0-2 months of waiting time to pregnancy (n = 35 848) with those born after a time to pregnancy of 3-5 months (n = 15 361), 6-12 months (n = 11 528) and >12 months (n = 7387), as well as those born after IVF/ICSI (n = 3617), ovulation induction with or without intrauterine insemination (n = 3000), and unplanned pregnancies (n = 13 462). CP cases were identified through the Danish CP Register. RESULTS: In total, 165 (0.18%) children were diagnosed with CP in the entire cohort. We found no significant association between time to pregnancy and the risk of CP in children conceived spontaneously. Children born after IVF/ICSI had an increased risk of CP, even after adjustment for preterm birth and multiplicity (hazard ratio 2.30, 95% confidence interval 1.12-4.73). CONCLUSIONS: Subfecundity per se did not appear to be associated with the risk of CP in children, whereas being born after IVF/ICSI conferred an increased risk.

PMID: 21045245 [PubMed - as supplied by publisher]

13. Am J Obstet Gynecol. 2010 Nov 1. [Epub ahead of print]

Neurodevelopmental outcome and risk factors for disability for twin-twin transfusion syndrome treated with laser surgery.

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OBJECTIVE: This study was performed to report the neurodevelopmental outcome of survivors of twin-twin transfusion syndrome (TTTS) treated with laser surgery and to determine the risk factors for neurodevelopmental disability. STUDY DESIGN: A prospective study of TTTS cases treated with laser was performed. Survivors were assessed at 2 years corrected for prematurity. Neurodevelopmental disability was defined as the presence of cerebral palsy, deafness, blindness, or cognitive impairment with a developmental score >2 SDs below the mean. RESULTS: A total of 75 TTTS pregnancies were treated with a perinatal survival rate of 79.3%. A total of 113 survivors

were assessed. The rate of cerebral palsy was 4.4% and cognitive impairment was 8%, with a neurodevelopmental disability rate of 12.4%. Quintero stage was the only independent risk factor for neurodevelopmental disability. CONCLUSION: The incidence of neurodevelopmental disability in TTTS survivors treated with laser is considerable, with Quintero stage being an independent risk factor.

PMID: 21047615 [PubMed - as supplied by publisher]

14. Eur J Neurosci. 2010 Oct 29. doi: 10.1111/j.1460-9568.2010.07467.x. [Epub ahead of print]

Post-traumatic seizure susceptibility is attenuated by hypothermia therapy.

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Traumatic brain injury (TBI) is a major risk factor for the subsequent development of epilepsy. Currently, chronic seizures after brain injury are often poorly controlled by available antiepileptic drugs. Hypothermia treatment, a modest reduction in brain temperature, reduces inflammation, activates pro-survival signaling pathways, and improves cognitive outcome after TBI. Given the well-known effect of therapeutic hypothermia to ameliorate pathological changes in the brain after TBI, we hypothesized that hypothermia therapy may attenuate the development of post-traumatic epilepsy and some of the pathomechanisms that underlie seizure formation. To test this hypothesis, adult male Sprague Dawley rats received moderate parasagittal fluid-percussion brain injury, and were then maintained at normothermic or moderate hypothermic temperatures for 4 h. At 12 weeks after recovery, seizure susceptibility was assessed by challenging the animals with pentylenetetrazole, a GABA(A) receptor antagonist. Pentylenetetrazole elicited a significant increase in seizure frequency in TBI normothermic animals as compared with sham surgery animals and this was significantly reduced in TBI hypothermic animals. Early hypothermia treatment did not rescue chronic dentate hilar neuronal loss nor did it improve loss of doublecortin-labeled cells in the dentate gyrus post-seizures. However, mossy fiber sprouting was significantly attenuated by hypothermia therapy. These findings demonstrate that reductions in seizure susceptibility after TBI are improved with post-traumatic hypothermia and provide a new therapeutic avenue for the treatment of post-traumatic epilepsy.

PMID: 21044182 [PubMed - as supplied by publisher]

15. Dev Med Child Neurol. 2010 Oct 13. doi: 10.1111/j.1469-8749.2010.03785.x. [Epub ahead of print]

Ventricular dilatation in relation to outcome at 2 years of age in very preterm infants: a prospective Finnish cohort study.

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Aim: The aim of this study was to analyse the relation between ventricular dilatation at term and neurodevelopmental outcome at 2 years corrected age in infants of very low birthweight (VLBW) or very low gestational age (VLGA). Method A total of 225 VLBW or VLGA infants (121 males, 104 female; mean birthweight 1133g, SD 333g; mean gestational age 29wks, SD 2wks 5d) born in Turku University Hospital were included. Ventricular-brain ratio and the widths of each lateral ventricular horn were determined using ultrasonography, and the volume of the ventricles was measured by magnetic resonance imaging at term. The 2-year outcome measures included scores for the Ham-

mersmith Infant Neurological Examination, the presence of cerebral palsy (CP), the Mental Developmental Index (MDI) of the Bayley Scales of Infant Development (2nd edition), and the presence of severe hearing or vision impairments or any neurodevelopmental impairment (NDI). Results CP was diagnosed in 15 participants (6.7%) and severe hearing deficit in 12 participants (5.3%). No severe vision impairment was found. Mild and severe cognitive delay was found in 24 (10.7%) and 8 (3.6%) of the VLBW or VLGA infants respectively. Isolated ventricular dilatation did not increase the risk for developmental impairments. However, ventricular dilatation with additional brain pathology was significantly associated with CP, MDI score below 70, and NDI. A ventricular-brain ratio above 0.35 was a sensitive measure of developmental impairment. Interpretation Ventricular dilatation at term increases the risk of poor developmental outcome only when associated with other brain pathology. The ventricular-brain ratio is a useful clinical tool for determining the prognosis in VLBW and VLGA infants.

PMID: 21039438 [PubMed - as supplied by publisher]

16. Dev Med Child Neurol. 2010 Oct 11. doi: 10.1111/j.1469-8749.2010.03779.x. [Epub ahead of print]

Developmental coordination disorder in geographic cohorts of 8-year-old children born extremely preterm or extremely low birthweight in the 1990s.

Roberts G, Anderson PJ, Davis N, DE Luca C, Cheong J, Doyle LW; The Victorian Infant Collaborative Study Group.

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Aim: The aim of the study was to examine the prevalence of developmental coordination disorder (DCD) at the age of 8 years in a geographic cohort of extremely preterm or extremely-low-birthweight (EP/ELBW) children and a term-born comparison group, as well as associated academic outcomes, parents' perceptions of motor performance, and changes in prevalence during the 1990s. Method: Moderate DCD was defined as a score below the 5th centile on the Movement Assessment Battery for Children in children without cerebral palsy or intellectual impairment. DCD rates were compared in a group of 132 8-year-old children born in 1997 at 22 to 27 weeks' gestation or birthweight of less than 1000g (49% male, 51% female) and a comparison group of 154 term-born children (55% male, 45% female). The Wechsler Intelligence Scale for Children - 4th edition and the Wide Range Achievement Test - 3rd edition were used to measure academic and cognitive outcomes. Parental perceptions of motor performance were measured using the physical function scale of the Child Health Questionnaire, parent-report form (CHQ PF50). The results for children with and without DCD were then compared. To assess changes in prevalence throughout the 1990s, DCD rates were compared with those found in children from the same region born in 1991 to 92. Results: The mean number of completed weeks of gestation in the EP/ELBW children and in the comparison group of term-born children for whom data were available for analysis was 26.5 (SD 1.9) and 39.2 (SD 1.1) respectively, and the mean birthweight was 830g (SD 163) and 3511g (SD 462) respectively. The prevalence of DCD was 16% in the EP/ELBW group and 5% in the comparison group (odds ratio 3.45; 95% confidence interval [CI] 1.47-8.09%). Academic outcomes for reading, spelling, and arithmetic were poorer among children with DCD than among those without DCD (mean difference [95% CI] 10.2 [0.9-19.7; p=0.03], 8.9 [2.2-15.5; p=0.01], and 7.9 [1.4-14.5; p=0.02] respectively). Parental perceptions were poorly predictive of DCD. Interpretation: EP/ELBW children have higher rates of DCD and experience more academic difficulties than term-born children. As parental perceptions are not a reliable screen, clinical assessments of motor skills in this vulnerable population are important.

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Neurophysiologic findings in children with spastic cerebral palsy.

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CONTEXT: Cerebral palsy (CP) is a heterogeneous group of permanent, non-progressive motor disorders of movement and posture caused by chronic brain injuries. It is the most common cause of physical disability in childhood; spastic cerebral palsy being the most prevalent of its various forms. There is scanty information about the neurophysiologic investigations in children diagnosed as having spastic CP. AIMS: The aim of the study was to investigate the relationship between abnormal VEP and BAEP findings with different clinical parameters in children with spastic cerebral palsy. MATERIALS AND METHODS: Fifteen children with spastic CP in the age range 4 months to 10 years participated in this study. Evaluation of VEPs, brainstem evoked potentials (BAEPs) were performed in all study patients as well as 35 healthy children as controls. The study was conducted after obtaining ethics committee approval and informed consent of parents. STATISTICAL ANALYSIS USED: Significance of difference in the mean values of different parameters in different groups was assessed by Student's "t" test and the P value <0.05 was considered to be significant. All the values were expressed as mean ± 1 Std. Deviation. RESULTS: A significant difference was found in the VEP latencies and amplitude between the subjects with CP and controls. Striking BAEP abnormalities in CP patients include prolongation of absolute latency of wave V, interpeak latencies of III-V and lowered I-V ratio. Abnormal VEPs and BAEPs in children with bilateral spastic cerebral palsy demonstrated a correlation with the presence of moderate to severe developmental delay. CONCLUSIONS: The differences in VEPs and BAEPs were determined between CP children and healthy children. The abnormalities found are probably linked to the neurological deficits present in cases of cerebral palsy.

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