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CP Research News

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1: BJOG. 2008 Sep;115(10):1250-5.

Cerebral palsy and restricted growth status at birth: population-based case-control study.

Jacobsson B, Ahlin K, Francis A, Hagberg G, Hagberg H, Gardosi J.

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OBJECTIVE: To evaluate the association between growth status at birth and subsequent development of cerebral palsy in preterm and term infants. **DESIGN:** Population-based case-controlled study. **SETTING:** Cerebral palsy register in Western Sweden. **Subjects Cohort** of 334 singletons born between 1983 and 1990, with cerebral palsy diagnosed from age 4, and 668 singletons matched for gestation, gender and delivery unit. **METHOD:** Growth status at birth was determined using small for gestational age (SGA) categories, with customised birthweight percentiles (SGAcust) based on the Swedish population. **MAIN OUTCOME MEASURES:** Proportion of babies that were SGAcust, comparing cases and controls in three gestational age categories: early preterm (24-33 weeks), late preterm (34-36 weeks) and term (37+ weeks). **RESULTS:** Of the 334 children with cerebral palsy, 87 (26.6%) were born early preterm, 27 (8.1%) late preterm and 218 (66%) at term. Children who had been born at term were more likely to have been SGA <1st customised percentile (SGAcust1) than their matched controls (OR 6.6, 95% CI 2.3-18.6). In contrast, children with cerebral palsy born preterm were not more likely to have been SGAcust1 (OR 0.9, 95% CI 0.4-1.9), and this applied to early preterm as well as late preterm births. For less severely small babies (SGA between 1st and 5th customised percentiles), the association with cerebral palsy remained significant for term births (OR 5.2, 95% CI 2.7-10.1) but was again not significant for preterm births. **CONCLUSIONS:** Term singletons with severely SGA birthweights had a five- to seven-fold risk of developing cerebral palsy compared with gestational age-matched infants with birthweights within normal limits. For children born preterm, SGA was not more likely to be present in cases than in controls. These findings support the concept of cerebral palsy as a multifactorial condition and highlight the importance of antenatal surveillance of fetal growth.

PMID: 18715410 [PubMed - in process]

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2: Int J Rehabil Res. 2008 Sep;31(3):199-206.

Eliminating toe-fixing pattern can improve standing and gait pattern of children with cerebral palsy in a qualitative way.

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Toe-fixing pattern has been observed to be a compensatory strategy for children with cerebral palsy (CP) to gain body stability. It has been shown that application of toe sponges could eliminate the toe fixing, and thus would force the children with CP to use the potential resources of their impaired postural system. The aim of this study was to investigate the immediate regression and treatment effects of toe-sponges application on standing and walking patterns in children with CP. A controlled experimental study was conducted, involving 24 school-aged children with CP who were ambulatory with or without walking aids. Twelve children in the experimental group wore toe sponges for 3 weeks whereas the other 12 children in the control group did not. The results did not show a significant difference indicating immediate regression after application of toe sponges in all children or a treatment effect in the experimental group after wearing the toe sponges for 3 weeks. Qualitative improvement of walking pattern in the experimental group was, however, observed. It was believed that the effect of toe-sponge application on improving the standing and walking patterns in children with CP was masked by the children shifting the compensation from toe flexion to the other body parts. Issues that need to be considered in the further studies were suggested.

PMID: 18708842 [PubMed - in process]

3: Semin Pediatr Neurol. 2008 Sep;15(3):127-31.

Inherited metabolic diseases in neurodevelopmental and neurobehavioral disorders.

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In the past few years, there has been a veritable explosion in the discovery of "new" inborn errors of metabolism. These new conditions are involved in complex pathways of intermediary metabolism affecting processes heretofore unknown. The phenotypes of these new conditions are in many ways milder than the classically described metabolic disorders. Several of these conditions present as nonsyndromic neurodevelopmental and/or neurobehavioral disorders. As such, these conditions should be considered in the differential diagnosis of conditions such as mental retardation, autism spectrum disorders, movement disorders, and cerebral palsy. This article reviews several of these recently described conditions including the clinical presentation, the biochemical profile, the diagnostic approach, and therapeutic options.

PMID: 18708003 [PubMed - in process]

4: Brain Dev. 2008 Aug 18. [Epub ahead of print]

The signal transduction mediated by erythropoietin and proinflammatory cytokines in the JAK/STAT pathway in the children with cerebral palsy.

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It is well established that erythropoietin (EPO) is a pleiotropic cytokine, which has a brain-derived neuro-

protective effect in the central nervous system (CNS). Immune abnormality has a close relationship with cerebral palsy (CP), and may be even involved in the development of CP. There is evidence that the amount of EPO in CP children is lower than in normal children, but the levels of proinflammatory cytokines, such as interleukin (IL)-6 and tumor necrosis factor (TNF)-alpha, are higher in the CP children. The signal transduction mediated by EPO that has a neuroprotective effect and mediated by proinflammatory cytokines that lead to brain damage shares the common JAK/STAT pathway. Under acute stress, the JAK/STAT pathway is occupied by massive proinflammatory cytokines, and the negative feedback inhibition factors like suppressor of cytokine signaling (SOCS) proteins are simultaneously activated, which exist in reciprocal inhibition to EPO in the JAK/STAT pathway. As a result, the signal transduction mediated by EPO is prevented or reduced, and the neuroprotective effect of EPO is eventually weakened. In this review, a novel approach to CP treatment through neurodevelopmental treatment (NDT) is put forward by analysis of the interrelationship of signal transduction mediated by EPO and proinflammatory cytokines in the JAK/STAT pathway and their roles in the development of CP, and some reasonable ideas for CP treatment are provided.

PMID: 18715729 [PubMed - as supplied by publisher]

5: Spine. 2008 Aug 15;33(18):1995-2000.

Baclofen pump implantation and spinal fusion in children: techniques and complications.

Borowski A, Shah SA, Littleton AG, Dabney KW, Miller F.

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STUDY DESIGN: Retrospective clinical and radiographic review of complications related to intrathecal baclofen therapy (ITB) and posterior spine fusion (PSF) in patients with cerebral palsy. **OBJECTIVE:** To report the technical considerations and complications associated with ITB in patients undergoing PSF. **SUMMARY OF BACKGROUND DATA:** A common treatment for spasticity in children with cerebral palsy is ITB. This population also has a high incidence of severe spinal deformities requiring PSF. **METHODS:** There were 4 groups: A, 26 patients with PSF before ITB; B, 11 patients who underwent PSF and ITB concurrently; C, 25 patients with PSF after ITB; and D, the control group: 103 patients with ITB only. Complications and infections were tabulated from a retrospective chart review and ongoing surveillance data. Multiple chi analyses were used to compare the number of patients who experienced complications and infections among the groups. The operative sequence and catheter management techniques for the various scenarios are described in detail in the text. **RESULTS:** The outcome by group was as follows: group A had 5 catheter malfunctions and 2 infections at the pump site, group B had 2 catheter malfunctions, 1 hypermobile pump and 1 infection at the spinal site, group C had 3 catheter malfunctions, 1 infection at the pump site and 1 infection at the spinal site. The control group had 23 catheter malfunctions, 5 pump failures, 8 infections at the pump site, and 1 infection at the spinal site. Multiple chi analyses showed no difference in the number of infection or device/catheter complications among any of the groups. **CONCLUSION:** The rate of ITB therapy complications is not increased despite PSF in any order of the procedures. There are technical details in each situation that require attention. With understanding of the appropriate techniques of catheter management, ITB pumps can be implanted and managed without an increased complication rate before, during or after spinal fusion surgery.

PMID: 18708932 [PubMed - in process]

6: Int J Stroke. 2008 Aug;3(3):169-72.

Ischemic perinatal stroke: challenge and opportunities.

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The second highest risk group for developing a cerebral stroke is the perinatal period, generally defined as 20 weeks of gestation through 28th postnatal day of age. In this commentary, a brief overview of ischemic perinatal strokes is presented. Ischemic perinatal stroke (IPS) occurs at a rate of 1 : 2300 to 1 : 5000 births, accounting for 30% of children with hemiplegic cerebral palsy (CP). Thus, IPS is the most common known cause for CP [1-3]. Although they occur frequently, much remains to be studied about perinatal strokes in general and the ischemic variety in particular.

PMID: 18705894 [PubMed - in process]

7: Zhongguo Dang Dai Er Ke Za Zhi. 2008 Aug;10(4):475-7.

Levels of amino acids in cerebral spinal fluid in children with cerebral palsy. [Article in Chinese]

Yuan HB, Cheng LY, Yin F, Zhang GX, Peng J, Kang MX, Xu YM, Chen RL, Wang L.

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OBJECTIVE: To study the changes of amino acids in cerebral spinal fluid (CSF) in children with spastic or athetotic cerebral palsy (CP) by examining CSF levels of glutamic acid (Glu), gamma-aminobutyric acid (GABA) and aspartate (ASP). **METHODS:** CSF samples were obtained from 13 children with spastic CP, from 14 children with athetotic CP, and from 10 children without central nervous system and infectious diseases (control group). CSF levels of Glu, GABA and ASP were determined by high-performance liquid chromatography. **RESULTS:** CSF levels of GABA, ASP and Glu in the control group were 13.04+/-2.19, 10.21+/-0.45 and 8.41+/-2.26 mumol/L, respectively. Compared with the control group, CSF GABA levels in the spastic and the athetotic CP groups (8.02+/-2.03 and 10.01+/-2.68 mumol/L respectively) significantly decreased ($P<0.01$), whereas CSF levels of Glu (20.99+/-8.15 and 28.77+/-17.62 mumol/L respectively) and Asp (13.53+/-3.93 and 14.02+/-2.88 mumol/L respectively) in the spastic and the athetotic CP groups significantly increased ($P<0.01$). There were statistical differences in the GABA level between the spastic and the athetotic CP groups ($P<0.05$). In children with spastic CP CSF Glu level was positively correlated to muscle tension. **CONCLUSIONS:** CSF excitatory amino acid levels increased, while CSF inhibitory amino acid levels decreased in children with CP. There were differences for CSF amino acid levels in different types of CP. The changes of amino acid levels may contribute to the pathogenesis of CP.

Publication Types:
English Abstract

PMID: 18706165 [PubMed - in process]

8: Disabil Rehabil. 2008 Jul 7:1-9. [Epub ahead of print]

'We need to be the centrepiece': Adults with cerebral palsy and complex communication needs discuss the roles and needs of family carers in hospital.

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Purpose. The aim of this study was to explore the perceptions of adults with cerebral palsy and complex communication needs (CCN) on the roles and needs of their family carers in hospital. **Method.** As part of a larger study we conducted one focus group with six adults with cerebral palsy and CCN who participated in the group using a variety of augmentative and alternative communication methods. **Results.** Participants explored why and how family carers become involved in care in hospital, what this care in-

volves, and how this impacts upon themselves as patients and on their family carers. Reasons underlying their dependence upon family carers during a hospital stay were outlined, particularly the carer's role in communication, information exchange and access to essential daily care. Strategies to improve the experience for family carers in hospital were discussed. Conclusion. Involvement of family carers of people with cerebral palsy and CCN during an inpatient hospital stay is complex. Although they depend upon others for communication support, these individuals with CCN wish to be treated as adults in hospital and included in decisions about their healthcare. They want to be involved in the education of hospital staff, and to communicate directly with hospital staff.

PMID: 18720108 [PubMed - as supplied by publisher]

9: Am J Occup Ther. 2008 Jul-Aug;62(4):373-83.

Establishing validity of a modified Melbourne Assessment for children ages 2 to 4 years.

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BACKGROUND: The Melbourne Assessment of Unilateral Upper Limb Function is a valid tool for measuring quality of upper-limb movement in children ages 5 to 15 with cerebral palsy. This study presents the first phase in establishing the validity of a modified version of the assessment for children ages 2 to 4. **OBJECTIVE:** We sought to determine whether children without neurological impairment scored within the top 5% on the modified assessment, to investigate compliance with test demands, and to investigate the relationship between the modified tool and the Quality of Upper Extremity Skills Test. **METHOD:** The test was modified and administered to 32 children without neurological impairment ages 2 to 4. **RESULTS:** All children ages 2.5 to 4 scored as expected and were compliant with test demands. **CONCLUSION:** The Modified Melbourne Assessment may be used with children ages 2.5 to 4 without neurological impairment. Investigation with children with neurological impairment is now indicated.

Publication Types:
Research Support, Non-U.S. Gov't

PMID: 18712000 [PubMed - in process]

10: Can J Neurol Sci. 2008 Jul;35(3):342-7.

The prevalence of cerebral palsy in British Columbia, 1991-1995.

Smith L, Kelly KD, Prkachin G, Voaklander DC.

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OBJECTIVE: To quantify the prevalence of cerebral palsy (CP) in British Columbia within a four-year birth cohort. **METHODS:** The study was a population-based record linkage study of a birth cohort of British Columbian children born between April 1, 1991 and March 31, 1995. Cases were identified by the presence of International Classification of Diseases, Version 9 (ICD-9) diagnostic code "343" recorded at three years of age or older or by having the ICD-9 diagnostic code "343" recorded prior to the third birthday with two confirmatory diagnoses within the first three years of life through a record search of the BC Medical Services Plan billing files for the fiscal years 1991 to 1995. **RESULTS/CONCLUSION:** This research has provided an estimate of the prevalence of CP in the four-year birth cohort 1991 to 1995 in British Columbia. An aggregate prevalence rate of CP was measured as 2.68 per 1000 live births, and a congenital rate was measured at 2.57 for the same population. Birth weight and gestational age demonstrated a significant relationship with the development of CP. This study should lend credence to the establishment of a CP register in British Columbia.

Publication Types:
Research Support, Non-U.S. Gov't

PMID: 18714803 [PubMed - in process]

11: Prilozi. 2008 Jul;29(1):211-9.

Hip reduction in cerebral palsy with soft tissue operative procedures.

Bozinovski Z, Poposka A, Serafimoski V.

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(Full text is available at <http://www.manu.edu.mk/prilozi>). Hip reduction in cerebral palsy patients with a soft tissue procedure was analysed during operative procedure. Eleven patients with unilateral dislocation of the hip and a quadriplegic form of cerebral palsy underwent soft tissue operation on the hips. Tenotomy of the adductor and flexor muscles of the hip was performed. The contralateral hip sustained only tenotomy of the adductor muscles. The average age of the patient study group was 8.5 and the follow-up period was 4 years. In all patients, repositionings of the hip were achieved and stabilization was maintained postoperatively at the regular outpatient follow-up. The range of extension and abduction motion were increased postoperatively compared to the preoperative range of motion. Retention of the hip was maintained within 20 degrees of abduction. Tenotomy of the adductor and flexor muscles enables hip reduction without opening the joint capsule in quadriplegic cerebral palsy patients. The hip became painless and the improvement in the hygiene was evident. Key words: cerebral palsy, hip dislocation, hip reduction, tenotomy.

PMID: 18709011 [PubMed - in process]

12: Med J Malaysia. 2007 Dec;62(5):398-401.

Pathways to services for children with cerebral palsy in Selangor and the Federal Territory, Kuala Lumpur.

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Cerebral Palsy (CP) describes a group of chronic conditions affecting body movement and muscle coordination caused by damage to one or more areas of the brain, occurring at any time during foetal development to infancy. This research was carried out to learn how parents of children with cerebral palsy (CP) had found and accessed services provided for them in Selangor and Kuala Lumpur. It was based in the Spastic Children's Association of Selangor and Federal Territory (SCAS&FT) among 96 of 201 parents of children who use the facilities and services provided by the SCAS&FT through questionnaires and face-to-face interviews. There was a satisfactory level of availability and accessibility of contacting and using the services provided by SCAS&FT in terms of respondent satisfaction. However, parents had varying levels of awareness of the different classes and activities carried out by the school. Efforts to improve knowledge regarding the services available for children with CP in the general population and among parents of these children should be promoted.

PMID: 18705475 [PubMed - in process]

13: J Clin Psychol Med Settings. 2006;13(4):425-434.

Family Caregivers of Women with Physical Disabilities.

Rivera PA, Elliott TR, Berry JW, Shewchuk RM, Oswald KD, Grant J.

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Cross-sectional, correlational analyses of data from two separate studies were conducted to examine the correlates of adjustment among family caregivers of women with disabilities. Participants included 40 caregivers of women with spinal cord injuries in the first study and 53 caregivers of women with cerebral palsy, traumatic brain injury, and other neuromuscular disabilities in the second study. It was hypothesized that a negative problem-solving style would be associated with greater caregiver distress in both studies, and that caregiver adjustment would be associated with care recipient depression in the second study. As expected, results indicated that a higher negative orientation toward solving problems was associated with caregiver depression and lower well-being. However, in the second study, caregiver characteristics were not associated with care recipient depression. These data indicate that considerable variability exists in caregiver adjustment. Methodological limitations and the implications for research, service, and policy formation are discussed.

PMID: 18716670 [PubMed]



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