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CP Research News

Monday 26 May 2008

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1: J Pediatr Psychol. 2008 May 22. [Epub ahead of print]

Reliability and Validity of the Child Health Questionnaire PF-50 for European Children with Cerebral Palsy.

McCullough N, Parkes J, White-Koning M, Beckung E, Colver A.

School of Nursing & Midwifery, Queen's University Belfast, Institut National de la Santé et de la Recherche Médicale, Université Paul Sabatier, Faculté de Médecine, Göteborg University, The Queen Silvia Children's Hospital, and Sir James Spence Institute, Newcastle University, Royal Victoria Infirmary.

OBJECTIVE: To evaluate the psychometric performance of the Child Health Questionnaire (CHQ) in children with cerebral palsy (CP). **METHOD:** 818 parents of children with CP, aged 8-12 from nine regions of Europe completed the CHQ (parent form 50 items). Functional abilities were classified using the five-level Gross Motor Function Classification Scheme (Levels I-III as ambulant; Level IV-V as nonambulant CP). **RESULTS:** Ceiling effects were observed for a number of subscales and summary scores across all Gross Motor Function Classification System levels, whilst floor effects occurred only in the physical functioning scale (Level V CP). Reliability was satisfactory overall. Confirmatory factor analysis (CFA) revealed a seven-factor structure for the total sample of children with CP but with different factor structures for ambulant and nonambulant children. **CONCLUSION:** The CHQ has limited applicability in children with CP, although with judicious use of certain domains for ambulant and nonambulant children can provide useful and comparable data about child health status for descriptive purposes.

PMID: 18499739 [PubMed - as supplied by publisher]

2: Anesth Analg. 2008 Jun;106(6):1670-80.

Neuroprotective strategies for the neonatal brain.

Degos V, Loron G, Mantz J, Gressens P.

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Inserm, U676, Paris, France.

Injury to the perinatal brain is a leading cause of childhood mortality and lifelong disability. Cerebral palsy and cognitive impairment are usually related to periventricular white matter damage, which is seen chiefly in babies born before 32 wk gestational age, and to corticosubcortical lesions, which occur mainly in full-term infants. Despite recent improvements in neonatal care, no effective treatment for perinatal brain lesions is available. Several interventions, such as magnesium sulfate in preterm newborns and hypothermia in term newborns, are the focus of completed or continuing clinical trials. Improved understanding of the pathophysiological mechanisms involved in perinatal brain lesions helps to identify potential targets for neuroprotective interventions, as discussed in this review.

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

PMID: 18499596 [PubMed - in process]

3: Neuropathology. 2008 May 21. [Epub ahead of print]

Eosinophilic intracytoplasmic inclusions in Purkinje neurons of children.

Zherebitskiy V, Del Bigio MR.

Department of Pathology, Health Sciences Centre and University of Manitoba, Winnipeg, Canada.

Eosinophilic intracytoplasmic inclusions have been rarely described in Purkinje neurons of children with a variety of neurological conditions. Here we document these inclusions in five children from 3 to 14 years of age. One child had 7q deletion syndrome and a second had profound motor and cognitive delay ("cerebral palsy") of unknown origin, while three others were neurologically normal prior to death. These inclusions stain with the PAS method, are not strongly ubiquitinated, and are located in the lumen of endoplasmic reticulum. Their appearance in a wide range of disorders and in neurologically normal children suggests that they are a nonspecific protein trafficking anomaly, possibly aggravated under degenerative conditions.

PMID: 18498283 [PubMed - as supplied by publisher]

4: Novartis Found Symp. 2008;289:222-33; discussion 233-40.

Neurotrophins and cytokines in neuronal plasticity.

Spedding M, Gressens P.

Experimental Sciences, Institute of Research Servier, 11 Rue des Moulineaux, 92150 Suresnes, France.

Nerve growth factor (NGF) binds to TrkA receptors (neurotrophic) and P75(NTR) (apoptosis or other pathways depending on the coupled adaptor proteins). Brain derived growth factor (BDNF) can bind to TrkB (neurotrophic) and P75(NTR) receptors. BDNF is the main, activity-dependent, neurotrophin and sculpts neuronal organisation dependent on activity, thereby coupling and balancing effects on excitatory (glutamate) and inhibitory (GABA) transmission--in a synapse-specific manner. Some drugs can interact in a specific way. Positive modulators of AMPA receptors induce BDNF and favour long term potentiation (LTP) and memory processes. Some antidepressants such as tianeptine reverse stress-induced inhibition of LTP and restore neuronal plasticity in brain areas at risk. Inflammatory cytokines are produced in sickness behaviour mimicking depression. Interleukin (IL)1beta can exacerbate the immediate effects of stressors, and enhance and prolong the overall effects, which may be protective in preventing overuse or by increasing conservation-withdrawal: in some synapses IL1beta induces long term depression (LTD) or blocks LTP. The interactions with neurotrophins are complex and frequently reciprocal.

However, NGF also contributes to inflammatory situations and mediates pain responses. This interplay is poorly understood but may be critical in cerebral palsy, neurodegenerative disorders such as amyotrophic lateral sclerosis and multiple sclerosis, and even Alzheimer's disease.

PMID: 18497106 [PubMed - in process]

5: Am J Phys Med Rehabil. 2008 Jun;87(6):478-501.

Effectiveness of physiotherapy and conductive education interventions in children with cerebral palsy: a focused review.

Anttila H, Suoranta J, Malmivaara A, Mäkelä M, Autti-Rämö I.

Finnish Office for Health Technology Assessment, National Research and Development Centre for Welfare and Health, Helsinki, Finland.

We conducted a criteria-based appraisal of systematic reviews on the effectiveness of physiotherapy and conductive education interventions in children with cerebral palsy (CP). Computerized bibliographic databases were searched without language restriction up to August 2007. Reviews on trials and descriptive studies were included. Two reviewers independently identified, selected, and assessed the quality of the reviews using the criteria from the Overview Quality Assessment Questionnaire complemented with decision rules. Twenty-one reviews were included, six of which were of high methodological quality. Altogether, the reviews included 23 randomized controlled trials and 104 observational studies on children with CP. The high-quality reviews found some evidence supporting strength training, constraint-induced movement therapy, or hippotherapy, and insufficient evidence on comprehensive physiotherapy and occupational therapy interventions. Conclusions in the other reviews should be interpreted cautiously, although, because of the poor quality of the primary studies, most reviews drew no conclusions on the effectiveness of the reviewed interventions. Reviews on complex interventions in heterogeneous populations should use rigorous methods and report them adequately, closely following the Quality of Reporting of Meta-Analyses recommendations.

PMID: 18496250 [PubMed - in process]

6: Aust Dent J. 2008 Jun;53(2):176-9.

Oral impact of gastro-oesophageal reflux disease: a case report.

Liberali S.

Adelaide Dental Hospital, South Australian Dental Service, and School of Dentistry, Faculty of Health Sciences, The University of Adelaide, South Australia.

Background: This case report describes the dental management of a 30-year-old male with cerebral palsy and dyspraxia. Recall examination identified multiple erosive carious lesions despite previous oral hygiene and dietary related instruction. A comprehensive approach to patient management was required to identify the aetiological factors associated with the continued loss of tooth structure. Methods: The identification of the aetiological factors required a detailed medical history and clinical examination, as well as liaison with the patient's general medical practitioner. Preventive measures were adopted prior to restorative intervention in order to stabilize and remineralize the dentition. Results: Medical intervention for gastro-oesophageal reflux disease (GORD) and a targeted prevention programme resulted in remineralization of all carious exposed dentine with stabilization of the dentition. Conclusions: Patients with cerebral palsy are known to have a higher incidence of GORD as well as problems with swallowing, vomiting and recurrent chest infections. Long-term gastric acid attacks can contribute to dental erosion, and dental professionals may be the first to diagnose silent GORD. The successful treatment of erosion caused by GORD requires a multidisciplinary and minimal intervention approach.

PMID: 18494975 [PubMed - in process]

7: Coll Antropol. 2008 Mar;32(1):137-42.

Family as a factor in cerebral palsy prevention.

Polovina-Proloscić T, Vidović V, Polovina A.

Department of Physical Medicine and Rehabilitation, University Hospital Osijek , Bizovac, Croatia. ta-jana.proloscic@gmail.com

The aim of the study was to assess maternal perception of family impact on the course and outcome of rehabilitation in children with cerebral motor impairment. The study included 135 children with cerebral motor impairment. Their motor development was followed-up over a one-year period by use of structured interview with the children's mothers after 12-month rehabilitation. The course of rehabilitation was assessed by the method of locomotor system functional evaluation. The improvement achieved in motor development was significantly better in the group of children whose mothers found their relationships with extended family excellent than in those whose mothers considered it good or poor. The study showed that mothers to children with cerebral motor impairment frequently feel the lack of extended family support, being it real or perceived as such by the mothers due to their emotional sensitivity, suggesting the need of additional studies of the reasons for this. These findings indicate that greater attention should be paid by health professionals to the psychological support offered to these mothers.

PMID: 18494199 [PubMed - in process]

8: J Pediatr. 2008 Jun;152(6):771-6, 776.e1-2. Epub 2008 Jan 22.

Neurodevelopmental follow-up of very preterm infants after proactive treatment at a gestational age of > or = 23 weeks.

Steinmacher J, Pohlandt F, Bode H, Sander S, Kron M, Franz AR.

Department of Pediatrics, Division of Neonatology and Pediatric Critical Care, and Institute of Biometrics, University of Ulm, Ulm, Germany.

OBJECTIVE: To determine the long-term neurodevelopmental outcome in extremely preterm infants after offering life support to all infants > or = 23 weeks gestation ("pro-active management"). **STUDY DESIGN:** With parental consent, all infants born at 23 to 25 completed weeks gestation were treated proactively. Surviving infants born from July 1996 to June 1999 were assessed for standardized cognitive and neurological outcomes at 5 years corrected age. **RESULTS:** 70 of 91 infants admitted to the neonatal intensive care unit survived until follow-up. 67 of the 70 surviving infants were examined at a median corrected age of 5.6 years; 12% had cerebral palsy and a Gross Motor Function Classification Scale score > 2; 4% were blind; 1% required a hearing aid; and 12% had a Kaufmann Assessment Battery for Children mental processing composite < 51, resulting in 18% sustaining a severe disability. 43% had normal results on a neurological examination, Gross Motor Function Classification Scale score = 0, mental processing composite > 85, and had neither severe visual nor hearing impairment. 57% qualified for regular schooling. **CONCLUSION:** Improved survival was not associated with an increased risk of severe disability when compared with results of earlier publications. These findings may result from proactive management and are important for counseling patients at risk of imminent extremely preterm delivery.

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

PMID: 18492513 [PubMed - in process]

9: Cir Cir. 2008 Mar-Apr;76(2):119-25.**Neurological effects by occlusion of the carotid artery and induced hypoxia in newborn rats. [Article in Spanish]**

Quinzaños-Fresnedo J, Coronado-Zarco R, Arch-Tirado E, Verduzco-Mendoza A, Del Valle-Cabrera G, Alfaro-Rodríguez A, Villegas-Castrejón H.

Médico Especialista en Medicina de Rehabilitación, Instituto Nacional e Rehabilitación, Mexico, D.F., Mexico. E-mail: jimenaqf@hotmail.com.

Background: Hypoxic-ischemic encephalopathy is a cause of disability in the infant population. One of the most used animal models in the hypoxic-ischemic encephalopathy in immature brain is the preparation of Levine applied by Rice in newborn rats and consists of the bond of the left common carotid artery followed by induced hypoxia. The objective of this investigation was to study the neurological effects of the bond of the left common carotid and induced hypoxia in newborn rats. **Methods:** Five control rats, five sham rats and five rats with hypoxic-ischemic lesion by means of the application of Levine's preparation at 7 days of age were used. On day 42, all rats were evaluated by time of grasping, posterior reflex test and analysis of the spontaneous locomotor activity (number of bipedal movements, number of stepped stalls, grooming time). **Results:** The lesioned group presented less grasping time, lower number of positive responses to the posterior reflex and lower number of stepped stalls ($p = 0.024$, 0.002 and 0.0001 , respectively). There were no statistically significant differences in grooming time or number of bipedal movements. **Conclusions:** Newborn rats in whom Levine preparation was applied presented clinical alterations that may resemble some of the signs that accompany infantile cerebral palsy (grasp problems, wrong response to postural reflexes and alteration in locomotion).

Publication Types:
English Abstract

PMID: 18492432 [PubMed - in process]

10: Brain Dev. 2008 May 17. [Epub ahead of print]**Development of epilepsy in newborns with moderate hypoxic-ischemic encephalopathy and neonatal seizures.**

Pisani F, Orsini M, Braibanti S, Copioli C, Sisti L, Turco EC.

Child Neuropsychiatric Unit, Department of Neonatology, University of Parma, Via Gramsci, 14, 43100 Parma, Italy.

Background: Hypoxic-ischemic encephalopathy (HIE) is one of the most frequent causes of neonatal death or neurological handicaps such as cerebral palsy, mental delay, and epilepsy. Moreover, an acute consequence of HIE are neonatal seizures which can cause an additional brain damage. The neurodevelopmental outcome is known in the mild or severe cases of HIE, but in the moderate conditions the predictivity results, to date, unsatisfying. **Objective:** The purpose of this prospective study was to appraise the development of post-neonatal epilepsy in a cohort of term infants with moderate HIE and neonatal seizures. **Methods:** This study considered all newborns admitted to Neonatal Intensive Care Unit of the University of Parma between January 2000 and December 2002 for perinatal asphyxia, then followed by Neonatal Neurology Service. In all patients, neonatal variables such as type of delivery, birth weight, gestational age, Apgar scores, the need for resuscitation and assisted ventilation soon after birth, and arterial-blood pH were analyzed. **Results:** Ninety-two newborns were enrolled in the study because of perinatal asphyxia. Of these, 27 subjects developed mild HIE, 25 moderate, and five severe HIE. Neonatal seizures were present in 13 subjects with moderate HIE and in all newborns with severe HIE. At the last follow-up, only three infants belonging to patients with severe HIE developed epilepsy. **Conclusion:** Moderate HIE seems not to be related to post-neonatal epilepsy either if associated or not with neonatal seizures.

PMID: 18490125 [PubMed - as supplied by publisher]

11: Dev Med Child Neurol. 2008 Jun;50(6):404.

Position as a cause of deformity in children with cerebral palsy (1976).

Scrutton D.

Deformities in the child with cerebral palsy have been ascribed to muscle imbalance (Sharrard 1961) and increased tone (Pollock 1959) or to the type of cerebral palsy (Bobath and Bobath 1975). As far as we know, the position in which the child is nursed, especially during the first year of life, has not been considered as a cause of deformity. It is generally agreed that position in the postnatal period can be a cause of deformity in the normal baby. Paine (1961) suggested that plagiocephaly was caused by post-natal head posture, and Hay (1971) found that plagiocephaly was present in 10 percent of normal babies. Scott (1956) reported that infants commonly had lateral curvatures of the spine which could be seen on x-rays but not on clinical examination, all of which had resolved by the age of two years. Other asymmetries associated with plagiocephaly are unilateral fisting, asymmetrical groin creases, apparent shortening of one lower limb and asymmetry of gait (Robson 1968). We accept the asymmetrical deformities of plagiocephaly, unilateral bat ear, facial and thoracic asymmetry, pelvic obliquity and apparent shortening of one leg - some or all of which may be present in normal babies - as forming the 'squint' baby syndrome. Because asymmetrical deformities also occur in children with cerebral palsy, we thought it worthwhile to compare the pattern of deformity in a group of 'quint' but otherwise normal babies with a group of cerebralpalsied children with asymmetrical deformities to see if there is any relationship.

PMID: 18489454 [PubMed - in process]

12: Georgian Med News. 2008 Apr;(157):7-10.Related Articles

Soft tissue surgical procedures in the prevention of hip dislocation in patients with spastic cerebral palsy.

Bozinovski Z, Zafirovski G, Arevski Lj, Oposka A, Gavrilovski A.

Clinic for Orthopedic Surgery - Skopje, Republic of Macedonia.

Hip dislocation in the spastic form of cerebral palsy is mainly unilateral, leading to pelvic deformities, appearance of scoliosis, difficult positioning when seated, as well as pain experienced during walking and standing. Tenotomies of adductor muscles were performed in 22 patients (44 hips), 14 male and 8 female. In 12 patients decrease in migration percentage was noted, the average patient age being 5,4 years. In 10 patients no changes in migration percentage were detected, compared to preoperative values. Mean age of the latter group was 7,2 years. The results of the operative procedures were considered good, since the regular follow-up radiographies (done every 6 months) showed decrease in migration percentage. Adductor muscle tenotomies should be performed in incipient hip dislocations with migration index not overcoming 30%, preferably at younger age.

PMID: 18487681 [PubMed - in process]

13: Pediatr Neurol. 2008 Jun;38(6):398-405.

Neuropsychologic outcomes in children with neonatal herpes encephalitis.

Engman ML, Adolfsson I, Lewensohn-Fuchs I, Forsgren M, Mosskin M, Malm G.

Division of Pediatrics, Department of Clinical Science, Intervention, and Technology, Karolinska Univer-

sity Hospital, Huddinge, Sweden.

Neonatal herpes simplex virus infection with involvement of the central nervous system is a serious disease with high morbidity, even with acyclovir therapy. The disability includes cerebral palsy and different aspects of cognitive dysfunction which are of utmost importance for the child's future habilitation. We conducted a descriptive cohort study to define neuropsychologic outcomes and determine the relationship between neonatal neuroimaging and neuropsychologic outcomes. Among 267,690 children born in the Stockholm area over 12 years (1989-2000), 14 were diagnosed with neonatal herpes including central nervous system involvement. Nine children were neuropsychologically evaluated. Neonatal herpes virus infection had an even greater impact on cognitive function, speech ability, and attention deficit than anticipated. Relapse leading to deterioration was demonstrated in one child. Social skills were influenced to a lesser degree. Neurodevelopmental outcomes of the children were not well-correlated with extent of cerebral damage as visualized by computed tomography at 7-28 days after onset of signs. Neuropsychologic assessment is essential in the habilitation of the child, and a prerequisite for the evaluation of new treatments and for the assessment of deterioration of cerebral function related to relapses.

PMID: 18486821 [PubMed - in process]

14: Dev Med Child Neurol. 2008 Apr;50(4):320.

**Comment on:
Dev Med Child Neurol. 2007 Oct;49(10):723.**

Pass the torch, please! -- an Australian perspective.

Foley S.

Publication Types:
Comment
Letter

PMID: 18461706 [PubMed - indexed for MEDLINE]

15: Dev Med Child Neurol. 2008 Apr;50(4):320.

**Comment on:
Dev Med Child Neurol. 2007 Oct;49(10):723.**

Pass the torch, please! -- an African perspective.

Education Committee of the South African Neurodevelopmental Therapy Association.

Publication Types:
Comment
Letter

PMID: 18461705 [PubMed - indexed for MEDLINE]

16: Dev Med Child Neurol Suppl. 2008 Apr;113:2-59.

Abstracts of the Fourth Australasian Academy of Cerebral Palsy & Developmental Medicine Conference. April 11-13, 2008.

[No authors listed]

Publication Types:
Congresses
Overall

PMID: 18352999 [PubMed - indexed for MEDLINE]

17: Dev Med Child Neurol. 2008 Apr;50(4):275-82. Epub 2008 Feb 13.

**Comment in:
Dev Med Child Neurol. 2008 Apr;50(4):245.**

The Infant Motor Profile: a standardized and qualitative method to assess motor behaviour in infancy.

Heineman KR, Bos AF, Hadders-Algra M.

Department of Neurology, Institute of Developmental Neurology, University Medical Center Groningen, University of Groningen, Groningen, The Netherlands.

A reliable and valid instrument to assess neuromotor condition in infancy is a prerequisite for early detection of developmental motor disorders. We developed a video-based assessment of motor behaviour, the Infant Motor Profile (IMP), to evaluate motor abilities, movement variability, ability to select motor strategies, movement symmetry, and fluency. The IMP consists of 80 items and is applicable in children from 3 to 18 months. The present study aimed to test intra- and interobserver reliability and concurrent validity of the IMP with the Alberta Infant Motor Scale (AIMS) and Touwen neurological examination. The study group consisted of 40 low-risk term (median gestational age [GA] 40 wks, range 38-42 wks) and 40 high-risk preterm infants (median GA 29.6 wks, range 26-33 wks) with corrected ages 4 to 18 months (31 females, 49 males). Intra- and interobserver agreement of the IMP were satisfactory (Spearman's rho=0.9). Concurrent validity of IMP and AIMS was good (Spearman's rho=0.8, $p<0.005$). The IMP was able to differentiate between infants with normal neurological condition, simple minor neurological dysfunction (MND), complex MND, and abnormal neurological condition ($p<0.005$). This means that the IMP may be a promising tool to evaluate neurological integrity during infancy, a suggestion that needs confirmation by means of assessment of larger groups of infants with heterogeneous neurological conditions.

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

PMID: 18279412 [PubMed - indexed for MEDLINE]

18: Headache. 2008 Mar;48(3):481. Epub 2008 Jan 18.

**Comment on:
Headache. 2007 Jun;47(6):917-9.**

Cessation of hemiplegic migraine auras with greater occipital nerve blockade: a comment.

Young WB.

Publication Types:
Comment
Letter

PMID: 18205798 [PubMed - indexed for MEDLINE]

19: Dev Med Child Neurol. 2008 Apr;50(4):254-66. Epub 2008 Jan 7.

A systematic review of the clinimetric properties of neuromotor assessments for preterm infants during the first year of life.

Spittle AJ, Doyle LW, Boyd RN.

Victorian Infant Brain Studies, Murdoch Childrens Research Institute, Parkville, Melbourne, Australia.
alicia.spittle@rch.org.au

This systematic review evaluates assessments used to discriminate, predict, or evaluate the motor development of preterm infants during the first year of life. Eighteen assessments were identified; nine met the inclusion criteria. The Alberta Infant Motor Scale (AIMS), Bayley Scale of Infant and Toddler Development -- Version III, Peabody Developmental Motor Scales -- Version 2, Test of Infant Motor Performance (TIMP), and Toddler and Infant Motor Examination have good discriminative validity when examined in large populations. The AIMS, Prechtl's Assessment of General Movements (GMs), Neuro Sensory Motor Development Assessment (NSMDA), and TIMP were designed for preterm infants and are able to detect more subtle changes in movement quality. The best predictive assessment tools are age dependent: GMs, the Movement Assessment of Infants, and TIMP are strongest in early infancy (age 4 mo or less) and the AIMS and NSMDA are better at older ages (8-12 mo). The TIMP is the only tool that has demonstrated a difference between groups in response to intervention in two randomized controlled trials. The AIMS, TIMP, and GMs demonstrated the highest levels of overall reliability (interrater and intrarater intraclass correlation coefficient or kappa>0.85). Selection of motor assessment tools during the first year of life for infants born preterm will depend on the intended purpose of their use for discrimination, prediction, and/or evaluation.

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

PMID: 18190538 [PubMed - indexed for MEDLINE]



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