



CEREBRAL PALSY | INSTITUTE

# CP Research News

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## 1: J Speech Lang Hear Res. 2008 Jun;51(3):562-73.

### **The relationship between listener comprehension and intelligibility scores for speakers with dysarthria.**

Hustad KC.

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**PURPOSE:** This study examined the relationship between listener comprehension and intelligibility scores for speakers with mild, moderate, severe, and profound dysarthria. Relationships were examined across all speakers and their listeners when severity effects were statistically controlled, within severity groups, and within individual speakers with dysarthria. **METHOD:** Speech samples were collected from 12 speakers with dysarthria secondary to cerebral palsy. For each speaker, 12 different listeners completed 2 tasks (for a total of 144 listeners): One task involved making orthographic transcriptions, and 1 task involved answering comprehension questions. Transcriptions were scored for the number of words transcribed correctly. Responses to comprehension questions were scored on a 3-point scale according to their accuracy. **RESULTS:** Across all speakers, the Pearson product-moment correlation between comprehension and intelligibility scores was nonsignificant when the effects of severity were factored out and residual scores were examined. Within severity groups, the same relationship was significant only for the mild group. Within individual speaker groups, the relationship was nonsignificant for all but 2 speakers with dysarthria. Percentage of correct scores for listener comprehension was descriptively higher than percentage of correct intelligibility scores for all groups. **CONCLUSION:** Findings suggest that transcription intelligibility scores do not accurately reflect listener comprehension scores. Measures of both intelligibility and listener comprehension may provide a more complete description of the information-bearing capability of dysarthric speech than either measure alone.

PMID: 18506035 [PubMed - in process]



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**2: Cytokine. 2008 May 27. [Epub ahead of print]****Pro-inflammatory disequilibrium of the IL-1beta/IL-1ra ratio in an experimental model of perinatal brain damages induced by lipopolysaccharide and hypoxia-ischemia.**

Girard S, Kadhim H, Larouche A, Roy M, Gobeil F, Sébire G.

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Bacterial infections and hypoxia/ischemia (H/I) are implicated in human neonatal brain damage leading to cerebral palsy (CP). We developed an animal model presenting similar perinatal brain damage by combining bacterial endotoxin and H/I insults. Interleukin (IL)-1beta is a mediator of brain damage and its action(s) is counteracted by its cognate anti-inflammatory IL-1 receptor antagonist (IL-1ra). We tested the hypothesis that the balance between agonist and antagonist in the IL-1 system is shifted towards inflammation in perinatal brains exposed to endotoxin and/or H/I. Lipopolysaccharide (LPS) and/or H/I enhanced both intracerebral IL-1beta mRNA and protein levels, with a maximum increase observed with combined LPS and H/I insults. Conversely, IL-1ra expression was significantly downregulated by LPS, H/I, or both combined, with a maximum magnitude of imbalance between IL-1beta and sIL-1ra noticed with the double hit. The nuclear factor (NF)kappaB component of the signaling pathway activated by IL-1beta-binding to its receptor was activated following exposure to LPS and/or H/I. We show for the first time that, perinatally, bacterial products, H/I, or both combined, induce downregulation in sIL-1ra expression concomitant with upregulation in IL-1beta. The resulting pro-inflammatory orientation in the IL-1/IL-1ra balance might play a role in the initiation of perinatal brain damages.

PMID: 18511291 [PubMed - as supplied by publisher]

**3: Biochem Biophys Res Commun. 2008 May 23;370(1):16-21. Epub 2008 Mar 11.****A new EAE model of brain demyelination induced by intracerebroventricular pertussis toxin.**

Zhao CB, Coons SW, Cui M, Shi FD, Vollmer TL, Ma CY, Kuniyoshi SM, Shi J.

Department of Neurology, Barrow Neurological Institute, 500 W Thomas Road, Suite 720, Phoenix, AZ 85013, USA.

Experimental autoimmune encephalomyelitis (EAE) is a primary animal model of multiple sclerosis (MS). MS predominantly presents with evidence of lesions in the subcortical periventricular white matter regions of the brain. Research into the pathogenesis of the demyelinating lesions in the brain has been hampered by the fact that conventional models of EAE present with progressive ascending paralysis which recapitulates mainly the spinal cord lesions of multiple sclerosis. There is little evidence of brain involvement. Systemic administration of pertussis toxin (PTx) has been shown to induce the proinflammatory cascade of TGF-beta, IL-6, and Th17 in the central nervous system, which recently has been identified as essential in the development of EAE. To determine whether intracerebroventricular (icv) administration of PTx would result in subcortical periventricular demyelinating lesions in the brain, we examined the effect in a MOG induced EAE model. We found that icv PTx induced subcortical periventricular brain lesions that resemble the pathologic demyelinating lesions of MS. Moreover, icv PTx induced Th17 infiltration and increased expression of cytokines IL-6 and TGF-beta. We thus generated a highly reproducible model with remarkable histological similarities to the predominant demyelinating brain lesions seen in MS.

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

PMID: 18339308 [PubMed - indexed for MEDLINE]

**4: J Obstet Gynaecol Can. 2008 May;30(5):396-403., Links**

**How often do perinatal events at full term cause cerebral palsy?**

Menticoglou SM.

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**Objective:** To determine the contribution of perinatal events to cerebral palsy in children born at full term. **Methods:** The delivery records of a cohort of babies born at full term in one tertiary care hospital over an 11-year period were reviewed. The obstetric history and neonatal chart of each baby admitted to the Neonatal Intensive Care Unit was then examined. For those babies whose stay in the NICU was because of encephalopathy, brain injury, asphyxia with organ dysfunction, serious infection, or prolonged respiratory support, a review of their medical records was undertaken to determine how many subsequently developed cerebral palsy. **Results:** Of 36 368 babies born at term, 20 were later diagnosed as having cerebral palsy in which the causative insult likely occurred just before, during, or shortly after labour and delivery. This is an incidence of cerebral palsy arising from perinatal events of 0.55 per 1000 deliveries. Only six cases, however, were deemed to have been possibly preventable by better obstetric care. **Conclusion:** In our hospital, perinatal events are an important cause of cerebral palsy in children born at full term, but few cases are potentially preventable.

PMID: 18505663 [PubMed - in process]

**5: Exp Brain Res. 2008 Apr;186(4):611-8. Epub 2008 Jan 23.**

**Altered cortical inhibitory function in children with spastic diplegia: a TMS study.**

Vry J, Linder-Lucht M, Berweck S, Bonati U, Hodapp M, Uhl M, Faist M, Mall V.

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Periventricular leukomalacia (PVL) is the most frequent cause of spastic diplegia. The movement disorder is attributed to damage to the corticospinal tract, but there is increasing evidence of additional cortical dysfunction associated with PVL. Aim of the present study was to evaluate the integrity of the corticospinal tract and cortical inhibitory function using transcranial magnetic stimulation. Fifteen children with bilateral PVL and spastic diplegia and twenty-two healthy children underwent single-pulse stimulations to the right tibial anterior muscle. We compared central motor conduction time and amplitudes of motor evoked potentials as markers for corticospinal integrity and the postexcitatory silent period (SP), representing cortical inhibitory interneurons. The patients' parameters of corticospinal tract function did not differ significantly from those in the control children. In contrast, the SP was significantly shortened in children with PVL (mean 25.6 +/- 6.9 ms; controls: mean 47.6 +/- 23.2 ms, P = 0.018). This suggests cortical involvement with reduced cortical inhibitory function in PVL. This could be due to impaired functioning of the cortical interneurons themselves, or to decreased input from activating fibres, e.g. thalamo-cortical or cortico-cortical connections.

PMID: 18214452 [PubMed - indexed for MEDLINE]

**6: Ann Readapt Med Phys. 2008 Mar;51(2):119-37. Epub 2008 Jan 7.**

**Measuring quality of life in cerebral palsy children..**

[Article in English, French]

Viehweger E, Robitail S, Rohon MA, Jacquemier M, Jouve JL, Bollini G, Simeoni MC.

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Publication Types:  
Comparative Study  
Evaluation Studies  
Review

PMID: 18241951 [PubMed - indexed for MEDLINE]

**7: J Pediatr Orthop B. 2008 Mar;17(2):81-4.**

**Video-assisted gastrocnemius-soleus and hamstring lengthening in cerebral palsy patients.**

Poul J, Tůma J, Bajarová J.

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The aim of the study was to present the results of video-assisted fractional lengthening of the triceps surae muscle and the hamstrings in children with spastic cerebral palsy. In the period from September 2003 to December 2004, triceps surae muscle contractures were treated in 35 lower extremities (22 patients) and hamstring lengthening was performed in 12 knees (eight patients). The patients were between 4 and 10 years of age. Lengthening of the gastrocnemius-soleus was sufficient for achieving 10 degrees dorsiflexion of the foot in 31 of the 35 extremities. The short-term follow-up, at least 1 year after operation, did not reveal any complications. The hamstring lengthening resulted in full correction in nine knees; one endoscopic procedure required conversion to open surgery owing to bleeding. In one case, incomplete sciatic nerve palsy developed. Video-assisted gastrocnemius-soleus recession as well as video-assisted lengthening of the hamstrings proved to be fully efficient in the group reported here.

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

PMID: 18510164 [PubMed - in process]

**8: Pediatr Neurol. 2008 Mar;38(3):186-90.**

**Arterial ischemic stroke: experience in Chinese children.**

Shi KL, Wang JJ, Li JW, Jiang LQ, Mix E, Fang F, Wu HS, Jin X, Jing H, Zou LP.

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The aim of this study was to review cases of pediatric arterial ischemic stroke among Chinese subjects and thereby evaluate risk factors, clinical and neuroimaging features, and treatment, to establish a reasonable guideline for assessment and management of the disease. Between 1996 and 2006, 157 children (male:female ratio, 1.4:1) with arterial ischemic stroke were identified at Beijing Children's Hospital. The median age at stroke was 32 months (range, 4-192). Among patients with determined etiology, infections (12.1%), moyamoya disease (12.1%), and trauma (10.8%) were the most common. In 51 patients, there were no obvious risk factors (32.5%). Hemiplegia was the most common presenting feature (81.5%). The region of left middle cerebral artery was most frequently affected (36.3%), followed by the right middle cerebral artery (29.9%). Of the 157 patients, 56 were treated by intravenous thrombolytic agents (35.7%), all but one of them successfully (the one exception involving hemorrhagic complication). Randomized controlled trials are needed to establish primary prevention, acute treatment, and second-

dary prevention of pediatric ischemic stroke.

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

PMID: 18279753 [PubMed - indexed for MEDLINE]

**9: Rech Soins Infirm. 2008 Mar;(92):59-67.**

**Information needs of families of children with a disability: the viewpoint of parents and health professionals [Article in French]**

Pelchat D, Lefebvre H, Levert MJ, David C.

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This preliminary study aimed at documenting the needs of families having a child with a disability concerning information, from the point of view of both parents and professionals involved with them. Three discussion groups were carried out: two with parents of children with Down's syndrome or cerebral palsy, and another group with health professionals involved with them. The results show that the parents are searching for information concerning the initial health problem, the available health care and other resources that might be of help. Sources of information for parents include the health care professionals, other parents within a similar situation, the media and the Internet. The obtained information influences the parents' adjustment over their child's health situation and also impacts the relationships they have with the health care team. Some recommendations regarding intervention are proposed.

Publication Types:  
English Abstract

PMID: 18500117 [PubMed - in process]

**10: J Rehabil Med. 2008 Feb;40(2):112-8.**

**Social, intimate and sexual relationships of adolescents with cerebral palsy compared with able-bodied age-mates.**

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Collaborators (13)

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**OBJECTIVE:** To describe the social, intimate and sexual relationships of Dutch adolescents with cerebral palsy compared with their able-bodied age mates. **DESIGN:** Cross-sectional study. **SUBJECTS:** A total of 103 adolescents with cerebral palsy without severe learning problems aged 16-20 years. **METHODS:** We used a structured interview and questionnaires to assess subject characteristics such as age, type of cerebral palsy, gross motor function and level of education. Main outcome measures on social, intimate and sexual relationships are the Life-Habits questionnaire, the Vineland Adaptive Behaviour Scale, and a structured interview developed for Dutch studies in able-bodied persons and persons with spina bifida. Experienced competence was assessed with the Dutch version of the Self-Perception Profile of Adolescents and the Physical Disability Sexual and Body Esteem Scale. These data were compared with matching reference data, mainly from able-bodied (Dutch) adolescents. **RESULTS:** Approxi-

mately 30% of the subjects functioned socially below their age level. Adolescents with cerebral palsy find it difficult to develop intimate relationships and they have less sexual experience than their able-bodied age mates. CONCLUSION: Although adolescents with cerebral palsy do have social relationships, it is difficult for them to develop intimate relationships. They perceive various barriers, but seem to have a positive self-perception.

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

PMID: 18509575 [PubMed - in process]



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