Cerebral Palsy INSTITUTE

CP Research News

Monday 10 May 2010

Interventions

1. Disabil Rehabil. 2010 May 6. [Epub ahead of print]

Access of children with cerebral palsy to the physical, social and attitudinal environment they need: a cross-sectional European study.

Colver AF, Dickinson HO, Parkinson K, Arnaud C, Beckung E, Fauconnier J, Marcelli M, McManus V, Michelsen SI, Parkes J, Thyen U.

Department of Institute of Health and Society, Newcastle University, Newcastle upon Tyne, UK.

Purpose. The UN Convention on the Rights of Persons with Disabilities requires states 'to ensure to persons with disabilities access, on an equal basis with others, to the physical environment, transportation, information and communications.' We explored whether this convention was respected for disabled children in Europe. Method. One thousand one-hundred and seventy-four children aged 8-12 years were randomly selected from population-based registers of children with cerebral palsy in eight European regions. 743 children joined the study; one further region recruited 75 children from multiple sources. Researchers visited these 818 children and administered the European Child Environment Questionnaire, which records parents' perceptions of availability of the physical, social and attitudinal environment needed in home, school and community. Multilevel, multivariable regression related child access on these domains to their impairments and socio-demographic characteristics. Results. Children with more impaired walking ability had less access to the physical environment, transport and social support they needed than other children. They also experienced less favourable attitudes from family and friends. However, attitudes of teachers and therapists were similar for children with all levels of impairment. The access of children, across all impairment severities, to their needed environment showed significant variation between regions (p </= 0.0001), some regions consistently providing better access on most or all domains. Conclusion. European states need to substantially improve environmental access for disabled children in order to meet their obligations under UN Conventions. In some regions, many environmental factors should and realistically could be changed. Legislation and regulation should be directed to making this happen. Local environmental planners and health and social service providers should listen carefully to parents to address mismatches between policy intentions and parental experience.

PMID: 20446803 [PubMed - as supplied by publisher]

2. J Pediatr Orthop B. 2010 May 3. [Epub ahead of print]

Genu recurvatum in cerebral palsy - part A: influence of dynamic and fixed equinus deformity on the timing of knee recurvatum in children with cerebral palsy.

Svehlík M, Zwick EB, Steinwender G, Saraph V, Linhart WE.

a Department of Paediatric Orthopaedics and Paediatric Surgery, Medical University of Graz, Auenbruggerplatz,

Graz, Austria b Department of Children and Adult Orthopaedics, Second Medical School, Charles University, Prague, Czech Republic.

The aim of the study was to confirm the hypothesis of the influence of the dynamic and fixed equinus deformity on the timing of knee recurvation (hyperextension). According to our hypothesis, dynamic equinus is linked to early and fixed equinus and to late knee hyperextension. A group 35 children with cerebral palsy (47 lower limbs) was divided into two subgroups according to the timing of maximum knee hyperextension. Clinical examination confirmed our hypothesis. Gait analysis and musculoskeletal modelling results were compared with 12 normally developing children. Both recurvatum groups had forefoot landing and neither achieved normal ankle dorsiflexion. Electromyographic examination revealed an abnormally high soleus activity in a single stance. Muscle length changes of medial gastrocnemius and soleus were in agreement with our hypothesis. Such a finding might simplify the decision as to which treatment to select for equinus deformity, present in patients with genu recurvatum.

PMID: 20442674 [PubMed - as supplied by publisher]

3. Arch Phys Med Rehabil. 2010 May;91(5):781-7.

Test-retest reliability of discrete gait parameters in children with cerebral palsy.

Klejman S, Andrysek J, Dupuis A, Wright V.

Bloorview Research Institute, Bloorview Kids Rehab, Toronto, ON, Canada. sue.redekop@utoronto.ca

OBJECTIVES: To examine the test-retest reliability of discrete gait parameters in children with cerebral palsy (CP) in Gross Motor Function Classification System (GMFCS) levels I, II, and III; to calculate the measurement error between testing sessions of these parameters in the total sample and within GMFCS subgroups using the standard error of measurement; and to evaluate the minimal detectable change (MDC) to identify discrete gait parameters that are most sensitive to change in children with CP. DESIGN: Test-retest reliability study. SETTING: Rehabilitation facility with human movement laboratory. PARTICIPANTS: Ambulatory children with CP (N=28). INTERVENTIONS: Not applicable. MAIN OUTCOME MEASURES: Intraclass correlation coefficients (ICCs), standard error of measurement, and MDC of discrete gait parameters. RESULTS: Parameters measured in the sagittal plane and temporal-spatial parameters were highly reliable across all GMFCS levels (ICC range, .84-.97), while test-retest reliability in the frontal and transverse planes varied from poor to excellent (ICC range, .46-.91). Using MDC as a guide, hip and pelvis parameters in the transverse and frontal planes were least responsive for GMFCS levels I and III (MDC ranges, 8.3 degrees -18.0 degrees and 2.7 degrees -23.4 degrees , respectively), whereas ankle kinematics were the least responsive for level II (MDC range, 8.2 degrees -11.9 degrees). Reliability was dependent on mobility level, with children in GMFCS level III exhibiting greater test-retest variability overall. CONCLUSIONS: Our findings suggest that select discrete gait parameters measured using computerized gait analysis are reliable and potentially responsive measures of performance and can be used as outcome measures in intervention studies.

PMID: 20434617 [PubMed - in process]

4. J Bone Joint Surg Am. 2010 May;92(5):1195-205.

Validity and reliability of measuring femoral anteversion and neck-shaft angle in patients with cerebral palsy.

Chung CY, Lee KM, Park MS, Lee SH, Choi IH, Cho TJ.

Department of Orthopaedic Surgery, Seoul National University Bundang Hospital, Sungnam, Kyungki, South Korea.

BACKGROUND: Increased femoral anteversion and coxa valga are common in patients with cerebral palsy. The purpose of the present study was to determine the validity and reliability of the methods that are commonly used to measure the proximal femoral geometry in patients with cerebral palsy. METHODS: Thirty-six consecutive patients (mean age, eleven years; range, five to twenty years) with cerebral palsy were enrolled in the present study. The validity and the interobserver reliability of the physical examinations performed by three examiners were determined by comparing the results of a trochanteric prominence angle test, hip internal rotation measurements, and hip external rotation measurements (all with the patient in the prone position) with the amount of femoral anteversion on two-

dimensional computed tomography. Validity and intraobserver and interobserver reliability were assessed by comparing the neck-shaft angle on the anteroposterior internal rotation radiograph of the hips with that on the multiplanar reformatted computed tomographic image. RESULTS: The trochanteric prominence angle test showed excellent concurrent validity ($R = 0.862$, $p < 0.001$) and reliability (intraclass correlation coefficient, 0.809). Hip internal rotation also showed good concurrent validity ($R = 0.787$, $p < 0.001$) and excellent reliability (intraclass correlation coefficient, 0.889), whereas hip external rotation appeared to be unsuitable for predicting femoral anteversion. The neck-shaft angle on the anteroposterior internal rotation radiograph of the hips showed excellent concurrent validity ($R = 0.892$, $p < 0.001$) and reliability (intraclass correlation coefficient, 0.912). CONCLUSIONS: A physical examination for determining femoral anteversion and the neck-shaft angle as measured on the internal rotation radiograph of the hips appear to be clinically relevant methods for evaluating the proximal femoral geometry and version in patients with cerebral palsy. Computed tomographic examination can probably be replaced by physical examination and an anteroposterior internal rotation radiograph of the hips for patients with stable hips who are able to walk.

PMID: 20439666 [PubMed - in process]

5. Eur J Paediatr Neurol. 2010 Apr 28. [Epub ahead of print]

The effect of individually defined physiotherapy in children with cerebral palsy (CP).

Van den Broeck C, De Cat J, Molenaers G, Franki I, Himpens E, Severijns D, Desloovere K.

Rehabilitation Sciences and Physiotherapy Ghent, University College Arteveldehogeschool, Ghent University, Belgium.

AIM: This prospective double blind intervention study aims to evaluate the effectiveness of an individually defined physiotherapy program on the function and gait pattern of 16 children with diplegia (age 3-12 year, GMFCS I-II). METHOD: A 6 weeks general training program was followed by a specific training program based on individual goals determined by the results of 3D gait analyses, GMFM-88 and a clinical evaluation. Goal attainment scores were used for the evaluation of the achievement of individual goals. RESULTS: After the general training program, 6.7% of the children achieved the treatment goals, 33.3% stayed at the same level and 60% worsened and this in comparison to 40, 33.3 and 26.6% of the children respectively after the individually defined training program. The improvement for walking, running and jumping of the GMFM-88 was significantly more pronounced after the individually defined ($p < 0.05$), compared to the general training program. Whereas ankle dorsiflexion, spasticity of the hamstrings ($p < 0.01$), selectivity of hip abductors, knee extensors and ankle dorsiflexors significantly improved over the complete period of study ($p < 0.01$), hip extension, step length, stride length, ankle power generation and all hip parameters changed specifically after the individually defined training program ($p < 0.01$). CONCLUSION: A quantified effect is manifest with the application of an individually defined training program over a six weeks period.

PMID: 20434378 [PubMed - as supplied by publisher]

6. Res Dev Disabil. 2010 Apr 28. [Epub ahead of print]

Effect of task constraint on reaching performance in children with spastic diplegic cerebral palsy.

Ju YH, You JY, Cherng RJ.

Institute of Allied Health Sciences, College of Medicine, National Cheng Kung University, Tainan, Taiwan; Department of Psychology, College of Health Sciences, Kaohsiung Medical University, Kaohsiung, Taiwan; Department of Rehabilitation, Kaohsiung Medical University Hospital, Taiwan.

The purposes of the study were to examine the effect of task constraint on the reaching performance in children with spastic cerebral palsy (CP) and to examine the correlations between the reaching performance and postural control. Eight children with CP and 16 typically developing (TD) children participated in the study. They performed a reach-and-return task with a seated posture on a stool. The target for reaching was set at a 120% arm-length distance in three directions (anterior, medial, and lateral). Reaching speed was modulated with a metronome at a rate of 46beats/min. A motion analysis system recorded the kinematic data of reaching at a sampling rate of 150Hz. Postural control was assessed with a pediatric reaching test. Movement time (MT), straightness ratio (SR), hand

peak velocity (PV), and movement unit (MU) of reaching were compared between groups and among task conditions with repeated measure ANOVAs. Pearson's product-moment correlation coefficients were used to examine the correlations between reaching and postural control. Children with CP presented longer MT, larger SR and more MU than did TD children. Further, the children with CP showed larger SR while reaching medially and laterally than anteriorly. But TD children were not affected by these task constraints. Moderate correlations between postural control ability and SR and MU were noted. In conclusion, the children with CP showed a slower, more skewed, less efficient and less coordinated pattern of reaching than the TD children. Reaching laterally and medially seemed to impair the reaching performance (more skewed and less efficient) of the children with CP, but not of the TD children. Reaching laterally and medially may involve trunk rotation which produces more postural challenges than reaching anteriorly. This finding may explain the difference in the effect of task constraint on hand reaching performance between the two groups of children. Moreover, the better the postural control ability, the straighter, and more efficient and coordinated reaching performance the children showed.

PMID: 20434308 [PubMed - as supplied by publisher]

7. Dev Med Child Neurol. 2010 Apr;52(4):314-5. Epub 2010 Jan 5.

Congenital malformations and the cerebral palsies - déjà vu, but now what?

Alberman E.

Centre for Environmental and Preventive Medicine, Barts and The London School of Medicine and Dentistry, UK.

Comment on:

Dev Med Child Neurol. 2010 Apr;52(4):345-51.

PMID: 20059520 [PubMed - indexed for MEDLINE]

8. J Dev Behav Pediatr. 2010 Apr;31(3 Suppl):S86-91.

Chronic hip pain in a boy with mental retardation and cerebral palsy.

Stein MT, Gottsegen D, Blasco PA, Wolraich M, Hennessy MJ.

University of California San Diego, Children's Hospital San Diego, CA, USA.

CASE: Jonny is a 13 year old boy with spastic quadriparesis and severe mental retardation following Haemophilus influenza type B (HIB) meningitis at 2-months of age. Signs of meningitis started on the evening of his 2-month immunizations that included the HIB vaccine. He presented to his pediatrician with left hip pain that occurred intermittently for a few years and more frequently in the past six months. His parents initially attributed the pain to whizzing around the back yard in a motorized wheelchair. An earlier evaluation of hip pain led to bilateral femoral osteotomies for hip dysplasia. Obesity, associated with inactivity and a tendency to consume fatty foods, complicates Jonny's disabilities. His only activity is a modest amount of physical therapy at school and "floor time" for about one hour each day at home. In the office of his pediatrician, Jonny is friendly, smiling, and verbalizing a few words with his limited expressive vocabulary. He is resistant to a hip examination and grimaces with manipulation of his left hip. Spasticity of the left leg appears increased compared to previous examinations. He has nonpitting edema of his lower legs and feet, a cryptorchid left testicle, and a somewhat tender left inguinal area. Jonny lives with his mother and father in a small house on a busy street less than one-half mile from the pediatrician's office. Jonny's pediatrician often sees him in his wheelchair, accompanied by his mother or grandmother, and waves or stops to chat. He has van services to school, and there is a Hoyer lift in the home, but his parents do not own a van. Recently, Jonny's father finds it more difficult to lift him. The family has also been challenged by the mental health problems of Jonny's two older brothers, and a serious eye injury suffered by his middle brother in a motor-vehicle accident. Jonny's pediatrician has cared for him and his two brothers since birth. Although the parents continue to believe that the HIB vaccine caused his catastrophic illness, they remain with the pediatrician. In general, they are satisfied with the individualized educational plan at a local public school. When he was 6.5 years old, Jonny's school aid reported that he attempted to touch her in the genital area. The pediatrician attended the meeting to review this inci-

dent and successfully advocated for Jonny by pointing out that this was an isolated incident; it did not occur again. At 6 years old Jonny functioned in the 1.5-2.5 year old range with motor skills in the 6-12 month level according to the Bayley Scales of Infant Development and the Vineland Adaptive Behavior Scales. In the past a neurologist and a physiatrist saw Jonny, but both of these individuals moved from the community. He had prior evaluations at a children's orthopedic clinic at a small community hospital and at the local Shriner's hospital. He had a tonsillectomy and adenoidectomy at 7 years old. He is currently treated for constipation and receives dental care at a clinic for people with disabilities. His pediatrician has always respected the parents for their care and obvious love for their disabled child. However, parental resistance to addressing major issues such as obesity has frustrated his pediatrician. When the pediatrician suggested that Jonny was eligible for the state's managed care program, which would convert Medicaid coverage to a state sponsored program with more extensive services and case management, Jonny's mother repeatedly said that she would "think it over." At the current visit, the pediatrician recommended an adjustment of Jonny's wheelchair, a hip x-ray, a referral to Shriner's Hospital, and an appointment with a pediatric surgeon to address the undescended testicle and possible hernia. Jonny's mother mentioned that he had been to Shriner's Hospital for hip pain two years earlier but was told nothing could be done "because nothing was wrong with his bone." The hip x-ray was normal as well as a complete blood count and a C-reactive protein. The pediatric surgeon did not find a hernia and deferred treatment of the cryptorchid testicle. His parents contacted the wheelchair company to arrange adjustments. The pediatrician called the medical director at the Shriner's Hospital to discuss Jonny's case, but 2 months after the initial visit, the parents had not arranged for an appointment at the Shriner's Hospital. Jonny's hip pain persisted. The pediatrician now wonders how he can more effectively address Jonny's current problems and improve overall care for him and his family.

PMID: 20414086 [PubMed - in process]

9. Open Orthop J. 2010 Mar 4;4:142-6.

Perforation rates of cervical pedicle screw insertion by disease and vertebral level.

Uehara M, Takahashi J, Hirabayashi H, Hashidate H, Ogihara N, Mukaiyama K, Ikegami S, Kato H.

Department of Orthopaedic Surgery, Shinshu University, School of Medicine, 3-1-1 Asahi, Matsumoto-City, Nagano, 390-8621, Japan.

BACKGROUND: Different perforation rates for cervical pedicle screws by disease are expected in relation to bone quality and pedicle morphology; however, no report comparing pedicle screw perforation rate by disease had previously been published. This study investigated the perforation rates of pedicle screws inserted to cervical pedicle by disease and vertebral level using a CT-based navigation system. MATERIALS/METHODS: Fifty-three patients who underwent cervical pedicle screw insertion using CT based navigation system were studied. Diseases included rheumatoid arthritis (RA) (24 cases), destructive spondyloarthropathy (DSA) (10), cervical spondylotic myelopathy (CSM) (9), spine tumor (6), and cervical spondylotic myelopathy associated with athetoid cerebral palsy (CP) (4). Screw perforation rates for cervical pedicle screws were studied. Major perforation was defined as perforation 50% of screw diameter or more. RESULTS: Major perforation rate by disease from C3 to C7 was as follows: spine tumor (0/24, 0%), RA (2/59, 3.4%), DSA (3/65, 4.6%), CP (2/20, 10.0%), and CSM (6/40, 15.0%). There were no clinically important complications such as vertebra arterial injury, spinal cord injury, or nerve root injury caused by any screw perforation. Major perforation rate by vertebral level was: C2(2/30, 6.7%), C3(4/49, 8.2%), C4(6/43, 14.0%), C5 (1/32, 3.1%), C6(1/41, 2.4%), and C7(1/45, 2.2%), showing highest rate for C4, followed by C3. CONCLUSIONS: Cervical pedicle screw perforation rate by disease was higher in CSM compared to RA and DSA. The perforation rate by vertebral level was higher for C4 and C3, in this order.

PMID: 20448816 [PubMed - in process]

10. Artif Organs. 2010 Mar;34(3):230-4.

Botulinum toxin, physical and occupational therapy, and neuromuscular electrical stimulation to treat spastic upper limb of children with cerebral palsy: a pilot study.

Rodríguez-Reyes G, Alessi-Montero A, Díaz-Martínez L, Miranda-Duarte A, Pérez-Sanpablo AI.

Department of Prosthetics and Orthotics, Instituto Nacional de Rehabilitación, Mexico City, Mexico. grodriguez-

reyes@gmail.com

Spasticity has been successfully managed with different treatment modalities or combinations. No information is available on the effectiveness or individual contribution of botulinum toxin type A (BTA) combined with physical and occupational therapy and neuromuscular electrical stimulation to treat spastic upper limb. The purpose of this study was to assess the effects of such treatment and to inform sample-size calculations for a randomized controlled trial. BTA was injected into spastic upper limb muscles of 10 children. They received 10 sessions of physical and occupational therapy followed by 10 sessions of neuromuscular electrical stimulation on the wrist extensors (antagonist muscles). Degree of spasticity using the Modified Ashworth scale, active range of motion, and manual function with the Jebsen hand test, were assessed. Meaningful improvement was observed in hand function posttreatment (P = 0.03). Median spasticity showed a reduction trend and median amplitude of wrist range of motion registered an increase; however, neither of these were significant (P > 0.05). There is evidence of a beneficial effect of the combined treatment. Adequate information has been obtained on main outcome-measurement variability for calculating sample size for a subsequent study to quantify the treatment effect precisely.

PMID: 20447049 [PubMed - in process]

11. Res Dev Disabil. 2010 Mar-Apr;31(2):517-24. Epub 2010 Jan 6.

Assisting people with multiple disabilities improve their computer-pointing efficiency with hand swing through a standard mouse.

Shih CH, Chiu SK, Chu CL, Shih CT, Liao YK, Lin CC.

Department of Special Education, National Dong Hwa University, No. 123, Hua-Hsi Rd, Hualien 970, Taiwan, ROC. schee@mail.ndhu.edu.tw

This study evaluated whether two people with multiple disabilities would be able to improve their pointing performance using hand swing with a standard mouse through an Extended Dynamic Pointing Assistive Program (EDPAP) and a newly developed mouse driver (i.e., a new mouse driver replaces standard mouse driver, and changes a mouse into a precise two-dimensional motion detector, and intercepts mouse action). Initially, both participants had their baseline sessions. Then intervention started with the first participant. When his performance was consolidated, new baseline and intervention occurred with the second participant. Finally, both participants were exposed to maintenance phase, in which their pointing performance improved significantly. Data indicated that both participants improved their pointing efficiency with the use of EDPAP and remained highly successful through maintenance phase. Implications of the findings are discussed.

PMID: 20056378 [PubMed - indexed for MEDLINE]

12. Res Dev Disabil. 2010 Mar-Apr;31(2):551-9. Epub 2010 Jan 6.

Cognitive modifiability of children with developmental disabilities: a multicentre study using Feuerstein's Instrumental Enrichment--Basic program.

Kozulin A, Lebeer J, Madella-Noja A, Gonzalez F, Jeffrey I, Rosenthal N, Koslowsky M.

Tel Aviv University, School of Health Professionals, Department of Occupational Therapy, Israel.

The study aimed at exploring the effectiveness of cognitive intervention with the new "Instrumental Enrichment Basic" program (IE-basic), based on Feuerstein's theory of structural cognitive modifiability that contends that a child's cognitive functioning can be significantly modified through mediated learning intervention. The IE-basic progam is aimed at enhancing domain-general cognitive functioning in a number of areas (systematic perception, self-regulation abilities, conceptual vocabulary, planning, decoding emotions and social relations) as well as transferring learnt principles to daily life domains. Participants were children with DCD, CP, intellectual impairment of genetic origin, autistic spectrum disorder, ADHD or other learning disorders, with a mental age of 5-7 years, from Canada, Chile, Belgium, Italy and Israel. Children in the experimental groups (N=104) received 27-90 h of the program during 30-45 weeks; the comparison groups (N=72) received general occupational and sensory-motor therapy. Analysis of the pre- to post-test gain scores demonstrated significant (p<0.05) advantage of experimental over compari-

son groups in three WISC-R subtests ("Similarities", "Picture Completion", "Picture Arrangement") and Raven Coloured Matrices. Effect sizes ranged from 0.3 to 0.52. Results suggest that it is possible to improve cognitive functioning of children with developmental disability. No advantage was found for children with specific aetiology. Greater cognitive gains were demonstrated by children who received the program in an educational context where all teachers were committed to the principles of mediated learning.

PMID: 20056377 [PubMed - indexed for MEDLINE]

13. Percept Mot Skills. 2010 Feb;110(1):105-13.

Helping a man with multiple disabilities to use single vs repeated performance of simple motor schemes as different responses.

Lancioni GE, Singh NN, O'Reilly MF, Sigafoos J, Didden R, Smaldone A, La Martire ML.

Department of Psychology, University of Bari, Italy. g.lancioni@psico.uniba.it

A man with multiple disabilities was taught to use single vs repeated performance of simple motor schemes as different responses. Specifically, single and double emissions of a finger movement served as two separate responses, which allowed direct access to different environmental stimuli via microswitch technology. Single and double emissions of a head movement served as two additional responses, which allowed interaction with two different caregivers who were called via voice output communication aids (VOCAs). The results showed that the man, who had pervasive motor impairment, acquired the four responses available and seemed to use them purposefully. The implications of this approach to increase the response options of persons with few controllable motor schemes were discussed.

PMID: 20391876 [PubMed - indexed for MEDLINE]

14. Todays FDA. 2010 Jan-Feb;22(1):53-5, 57, 59.

Practical oral care for people with intellectual disability.

National Institutes of Health.

PMID: 20344910 [PubMed - indexed for MEDLINE]

15. Neuropediatrics. 2009 Dec;40(6):298-300. Epub 2010 May 5.

Detection of focal cerebral injury using diffusion tensor magnetic resonance imaging in a boy with becker muscular dystrophy.

Rha DW, Park ES, Kim J, Kim SH, Chang WH.

Department and Research Institute of Rehabilitation Medicine, Yonsei University College of Medicine, Seoul, Korea.

Here, we report on a boy affected by both cerebral palsy and Becker muscular dystrophy (BMD). He had infrequently used his right hand since birth. But brain magnetic resonance imaging (MRI) taken at the age of 15 months showed no specific finding. Approximately 1 month later, muscle enzymes of his older brother were incidentally found to be elevated. The patient and his brother were diagnosed with progressive muscular dystrophy by gene analysis. At the age of 6 years, he underwent orthopedic surgery due to a right equinovarus deformity and BMD was confirmed by concomitant muscle biopsy. During the post-operative rehabilitation, clumsiness of the right hand was also observed. A follow-up brain MRI with diffusion tensor imaging (DTI) was taken. Although no responsible lesion was found on conventional MRI, DTI and fiber tractography revealed a decrease in the quantity of fibers in the left corticospinal tract. He was additionally diagnosed as having cerebral palsy.

PMID: 20446227 [PubMed - in process]

16. Neuropediatrics. 2009 Dec;40(6):269-74. Epub 2010 May 5.

The short-term effects of combined modified constraint-induced movement therapy and botulinum toxin injection for children with spastic hemiplegic cerebral palsy.

Park ES, Rha DW, Lee JD, Yoo JK, Chang WH.

Department and Research Institute of Rehabilitation Medicine, Yonsei University College of Medicine, Seoul, Korea.

OBJECTIVE: The aim of this study was to investigate whether modified constraint-induced movement therapy (mCIMT) following a botulinum type A toxin (BoNT-A) injection enhances the effects of the BoNT-A injection into the spastic upper limb of children with hemiplegic cerebral palsy (CP). METHODS: A combined therapy with mCIMT and BoNT-A was given to 17 children in group A. Fifteen children in group B received only the BoNT-A injection. The muscle tone, the movement pattern, and the How Often and the How Well scales in the revised Pediatric Motor Activity Log (revised PMAL) were assessed before and 3 weeks after intervention. RESULTS: Three participants in group A dropped out due to poor tolerance of mCIMT. There were significant improvements in the muscle tone and the movement patterns for both groups ($p<0.05$), and the changes were not significantly different between the two groups. The How Often and the How Well scales in the revised PMAL were significantly improved in group A ($p<0.05$), but not in group B. CONCLUSION: A combined therapy of mCIMT and BoNT-A seems to be helpful to enhance the effects of the BoNT-A injection in the functional use of the affected limb in children with hemiplegic CP.

PMID: 20446220 [PubMed - in process]

17. Spine (Phila Pa 1976). 2010 May 4. [Epub ahead of print]

Infection After Spinal Fusion for Pediatric Spinal Deformity: Thirty Years of Experience at a Single Institution.

Cahill PJ, Warnick DE, Lee MJ, Gaughan J, Vogel LE, Hammerberg KW, Sturm PF.

From the *Shriners Hospitals for Children, Philadelphia, PA; daggerDepartment of Orthopaedic Surgery and Rehabilitation, Loyola University Medical Center, Maywood, IL; double daggerDepartment of Orthopaedic Surgery and Sports Medicine, Washington University, Seattle, WA; section signBiostatistics Consulting Center, Temple University School of Medicine, Philadelphia, PA; paragraph signShriners Hospitals for Children, Chicago, IL; and parallelDepartment of Orthopaedic Surgery, Rush University Medical Center, Chicago, IL.

STUDY DESIGN. A retrospective, consecutive case study of 1571 pediatric patients who underwent spinal deformity surgery and had minimum 2-year follow-up. OBJECTIVE. To identify (1) the rate of infection after pediatric spinal deformity surgery; (2) the number of surgeries required to treat a postoperative infection after a pediatric spinal deformity surgery; (3) the percentage of patients with a postoperative infection after pediatric spinal deformity surgery who require implant removal to quantify the effect of removal on the deformity; and (4) the microbiology of postoperative infections after pediatric spinal deformity surgery. SUMMARY OF BACKGROUND DATA.: Several previous reports have discussed the rates of infection after spinal surgery for pediatric spinal deformity. No previous reports have quantified the rate and magnitude of deformity progression after infection in pediatric spinal deformity surgery. METHODS. A retrospective review was performed of the medical records and radiographs of all children undergoing surgery for spinal deformity at the Shriners Hospital for Children in Chicago from January 1, 1975, to June 1, 2005. RESULTS.: The rate of infection varied based on underlying diagnosis: idiopathic scoliosis 0.5%, myelomeningocele 19.2%, myopathies 4.3%, and cerebral palsy 11.2%. On average, 2 surgeries were required to eradicate the infection. Approximately half of the patients required removal of the instrumentation to treat their infection. Forty-four percent of patients who developed an infection had significant progression of their deformity, with an average increase in deformity magnitude of 27 degrees . Implant removal predisposed patients to progression of deformity. The 3 most common organisms in order were Staphylococcus aureus, S. epidermidis, and Pseudomonas aeruginosa. CONCLUSION. Infection after spinal deformity in idiopathic scoliosis is rare but is relatively common in neuromuscular conditions. Eradication of infection can be expected, but implant removal is often required. Should

implants be totally removed, significant progression of the deformity is possible.

PMID: 20445480 [PubMed - as supplied by publisher]

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.

18. J Child Neurol. 2010 May 6. [Epub ahead of print]

Outcomes of Preterm Neonates With Frontal Horn Cysts: A Retrospective Study.

Trawber R, Rao S, Srinivasjois R, Thonell S, Nagarajan L, French N, Jacoby P, McMichael J.

King Edward Memorial Hospital for Women, and Princess Margaret Hospital for Children, Perth, Western Australia.

Isolated paraventricular frontal horn cysts are sometimes encountered on cranial ultrasound examinations of preterm neonates. The etiology and clinical significance of these lesions are unclear. The authors aimed to identify antenatal/intrapartum risk factors associated with the occurrence of these cysts and to assess developmental outcomes of preterm neonates with isolated frontal horn cysts. A retrospective cohort study with matched control design was used. A total of 28 cases were matched for gestation with 56 controls. No antenatal/intrapartum factors were associated with these cysts. At corrected age of 1 year, there was no difference in the mean general quotient between cases and controls (97.75 +/- 17.28 vs 94.94 +/- 9.86; P = .410). In all, 1 case and no controls had a diagnosis of cerebral palsy and 1 case and 3 controls had general quotients less than 80. The authors conclude that isolated paraventricular frontal horn cysts are benign, with no effect on neurodevelopment.

PMID: 20448250 [PubMed - as supplied by publisher]

19. BMC Pediatr. 2010 Apr 30;10(1):27. [Epub ahead of print]

Brain Research to Ameliorate Impaired Neurodevelopment: Home-based Intervention Trial (BRAIN-HIT).

Wallander JL, McClure E, Biasini F, Goudar S, Pasha O, Chomba E, Shearer D, Wright L, Thorsten V, Chakraborty H, Dhaded SM, Mahantshetti NS, Bellad RM, Abbasi Z, Carlo W, Bhi BH.

BACKGROUND: This randomized controlled trial aims to evaluate the effects of an early developmental intervention program on the development of young children in low- and low-middle-income countries who are at risk for neurodevelopmental disability because of birth asphyxia. A group of children without perinatal complications are evaluated in the same protocol to compare the effects of early developmental intervention in healthy infants in the same communities. Birth asphyxia is the leading specific cause of neonatal mortality in low- and low-middle-income countries and is also the main cause of neonatal and long-term morbidity including mental retardation, cerebral palsy, and other neurodevelopmental disorders. Mortality and morbidity from birth asphyxia disproportionately affect more infants in low- and low-middle-income countries, particularly those from the lowest socioeconomic groups. There is evidence that relatively inexpensive programs of early developmental intervention, delivered during home visit by parent trainers, are capable of improving neurodevelopment in infants following brain insult due to birth asphyxia. METHODS: This trial is a block-randomized controlled trial that has enrolled 174 children with birth asphyxia and 257 without perinatal complications, comparing early developmental intervention plus health and safety counseling to the control intervention receiving health and safety counseling only, in sites in India, Pakistan, and Zambia. The interventions are delivered in home visits every two weeks by parent trainers from 2 weeks after birth until age 36 months. The primary outcome of the trial is cognitive development, and secondary outcomes include social-emotional and motor development. Child, parent, and family characteristics and number of home visits completed are evaluated as moderating factors. DISCUSSION: The trial is supervised by a trial steering committee, and an independent data monitoring committee monitors the trial. Findings from this trial have the potential to inform about strategies for reducing neurodevelopmental disabilities in at-risk young children in low and middle income countries. Trial Registration: Clinicaltrials.gov NCT00639184.

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Movement analysis by accelerometry of newborns and infants for the early detection of movement disorders due to infantile cerebral palsy.

Heinze F, Hesels K, Breitbach-Faller N, Schmitz-Rode T, Disselhorst-Klug C.

Chair of Applied Medical Engineering, RWTH Aachen University, Aachen, Germany, heinze@hia.rwth-aachen.de.

So far, developed diagnostic strategies for the early detection of movement disorders due to infantile cerebral palsy (ICP) in newborns are not easily applicable in clinical settings. They are either difficult to acquire or they are too expensive to be established in pediatric clinics and are not sufficiently usable to be integrated into daily routine. The aim of this study therefore was to develop a methodology that allows the objective diagnosis of developing movement disorders in newborns due to ICP. It should be applicable to pediatric offices and should easily integrate in daily routine. To achieve this, a simple to use and low-cost system based on accelerometers was developed to evaluate the newborn's movement. Afterward, a classificator based on a decision tree algorithm was implemented to differentiate between healthy and pathological data in order to propose the most likely diagnosis. The developed methodology was validated in a clinical study with 19 healthy and 4 affected subjects that were evaluated at the first, third and fifths month after birth (corrected age). The overall detection rate of the developed methodology reached between 88 and 92% for all evaluated measurements. The developed methodology is simple to use, therefore is applicable for the objective diagnosis of developing movement disorders in newborns due to ICP and can be established in pediatric offices for use in daily routine.

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