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Interventions and Management

1. J Phys Ther Sci. 2015 Nov;27(11):3487-92. doi: 10.1589/jpts.27.3487. Epub 2015 Nov 30.

An investigation of the relationship of drooling with nutrition and head control in individuals with quadriparetic cerebral palsy.

Taş SA, Çankaya T.

[Purpose] The aim of the present study was to investigate the relationship of drooling, nutrition, and head control in individuals with quadriparetic cerebral palsy. [Subjects and Methods] Fifty-six individuals between the ages 2 and 15 diagnosed with spastic quadriparetic cerebral palsy and their families/caretakers were included in the study. Drooling severity and frequency of individuals was evaluated by using the scale developed by Thomas-Stonell and Greenberg (Drooling Severity and Frequency Scale). Individuals having a drooling severity value of 1 were included in the not drooling group (group 2) (n=27). Individuals having a drooling severity of 2, 3, 4, or 5 were included in the drooling group (group 1) (n=29). The evaluations were applied to both groups. [Results] There were significant differences between the two groups in terms of gestational age, nutrition behavior, eating abilities, head control, gagging, nutritional status (inadequate nutrition, normal nutrition, over weight-obese), and low weight. It was established that as head control increased, drooling severity diminished, and as drooling severity increased, BMI index decreased. Independence of eating ability was found to be greater in the group having better drooling control. [Conclusion] In the present study, it was determined that drooling control affected nutritional functions and that drooling control was affected by head control.

PMID: 26696723

2. Arq Neuropsiquiatr. 2015 Dec 22. pii: S0004-282X2015005011104. [Epub ahead of print]

Cerebral palsy in adult patients: constraint-induced movement therapy is effective to reverse the nonuse of the affected upper limb.

Oliveira AC, Freitas C, Eras-Garcia R, Matuti GS, Santos JF, Oliveira CB.

Objective To determine if the original protocol of Constraint-Induced Movement Therapy (CIMT), is adequate to reverse the nonuse of the affected upper limb (AUL) in patients with Cerebral Palsy (CP) in adulthood. Method: The study included 10 patients diagnosed with CP hemiparesis had attended the adult protocol CIMT, from January/August 2009/2014. Results Average age 24.6 (SD 9.44); MAL average pretreatment How Often (HO) = 0.72 and How Well (HW) = 0.68 and post-treatment HO = 3.77 and HW = 3.60 (p ≤ 0.001) and pretreatment

WMFT average = 21.03 and post-treatment average = 18.91 (p = 0.350). Conclusion The constraint-induced movement therapy is effective to reverse the nonuse learn of the AUL in adult patients with CP.

PMID: 26690842

3. J Hand Surg Am. 2016 Jan;41(1):97. doi: 10.1016/j.jhsa.2015.08.025.

Commentary on "The Effect of Treatment on Stereognosis in Children With Hemiplegic Cerebral Palsy".

Seruya M.

PMID: 26710741

4. Res Dev Disabil. 2015 Dec 14;49-50:129-139. doi: 10.1016/j.ridd.2015.11.024. [Epub ahead of print]

The effects of intensive bimanual training with and without tactile training on tactile function in children with unilateral spastic cerebral palsy: A pilot study.

Kuo HC, Gordon AM, Henrionnet A, Hautfenne S, Friel KM, Bleyenheuft Y.

Children with unilateral spastic cerebral palsy (USCP) often have tactile impairments. Intensive bimanual training improves the motor abilities, but the effects on the sensory system have not been studied. Here we compare the effects of bimanual training with and without tactile training on tactile impairments. Twenty children with USCP (6-15.5 years; MACS: I-III) were randomized to receive either bimanual therapy (HABIT) or HABIT+tactile training (HABIT+T). All participants received 82h of standardized HABIT. In addition 8 sessions of 1h were provided to both groups. The HABIT+T group received tactile training (without vision) using materials of varied shapes and textures. The HABIT group received training with the same materials without tactile directed training (full vision). Primary outcomes included grating orientation task/GOT and stereognosis. Secondary outcomes included two-point discrimination/TPD, Semmes-Weinstein monofilaments/SWM. The GOT improved in both groups after training, while stereognosis of the more-affected hand tended to improve (but p=0.063). No changes were found in the TPD and the SWM. There were no group×test interactions for any measure. We conclude tactile spatial resolution can improve after bimanual training. Either intensive bimanual training alone or incorporation of materials with a diversity of shapes/textures may drive these changes.

PMID: 26698408

5. Clin Biomech (Bristol, Avon). 2015 Dec 8. pii: S0268-0033(15)00322-8. doi: 10.1016/j.clinbiomech.2015.11.020. [Epub ahead of print]

Coordination between pelvis and shoulder girdle during walking in bilateral cerebral palsy.

Tavernese E, Paoloni M, Mangone M, Castelli E, Santilli V.

BACKGROUND: Studies revealed that pelvis and shoulder girdle kinematics is impaired in children with the diplegic form of bilateral cerebral palsy while walking. The features of 3D coordination between these segments, however, have never been evaluated. METHODS: The gait analyses of 27 children with bilateral cerebral palsy (18 males; mean age 124months) have been retrospectively reviewed from the database of a Movement Analysis Laboratory. The spatial-temporal parameters and the range-of-motions of the pelvis and of the shoulder girdle on the three planes of motion have been calculated. Continuous relative phase has been calculated for the 3D pelvis-shoulder girdle couplings on the transverse, sagittal and frontal planes of motion to determine coordination between these segments. Data from 10 typically developed children have been used for comparison. Findings Children with bilateral cerebral palsy walk with lower velocity (P=0.01), shorter steps (P<0.0001), larger base of support (P<0.01) and increased duration of the double support phase (P=0.005) when compared to typically developed children. The mean continuous relative phase on the transverse plane has been found lower in the cerebral palsy group throughout the gait cycle (P=0.003), as well as in terminal stance, pre-swing and mid-swing. The age, gait speed

and pelvis range-of-motions on the transverse plane have been found correlated to continuous relative phase on the transverse plane. Interpretation Compared with typically developed children, children with bilateral cerebral palsy show a more in-phase coordination between the pelvis and the shoulder girdle on the transverse plane while walking.

PMID: 26690753

6. J Bone Joint Surg Am. 2015 Dec 16;97(24):2024-31. doi: 10.2106/JBJS.O.00505.

Proximal Femoral Varus Derotation Osteotomy in Children with Cerebral Palsy: The Effect of Age, Gross Motor Function Classification System Level, and Surgeon Volume on Surgical Success.

Shore BJ, Zurakowski D, Dufreny C, Powell D, Matheney TH, Snyder BD.

BACKGROUND: The purpose of this study was to evaluate mid-term results of proximal femoral varus derotation osteotomy (VDRO) in children with cerebral palsy and determine what effect age, Gross Motor Function Classification System (GMFCS) level, and surgeon volume had on surgical success. METHODS: We analyzed a cohort of children with cerebral palsy who underwent VDRO for hip displacement at a tertiary-level pediatric hospital between 1994 and 2007. Age, sex, GMFCS level, preoperative radiographic parameters, previous botulinum toxin administration or soft-tissue release, adjunctive pelvic osteotomy, the performance of bilateral surgery at the index VDRO, and surgeon volume (the number of procedures performed) were recorded. Results were analyzed via univariate and multivariate analyses for association with the need for revision hip surgery. Kaplan-Meier survivorship curves were generated, determining the time from index surgery to failure (defined as the need for subsequent surgical procedures on the hip and/or pelvis, or a hip migration percentage of >50% at the time of final follow-up), and were further stratified according to osseous versus soft-tissue revision. RESULTS: A total of 567 VDROs were performed in 320 children (mean age [and standard deviation], 8.2 ± 3.8 years). The mean follow-up was 8.3 years (range, three to eighteen years). Of the initial 320 patients, 117 (37%) were considered to have had failure. Multivariate Cox regression analysis confirmed that younger age at surgery (p < 0.001), increased GMFCS level (p = 0.01), and lower annual surgical hip volume (p = 0.02) were significant independent predictors of any type of surgical revision. Furthermore, soft-tissue release at VDRO was protective against revision (p = 0.02). Five-year survivorship analysis revealed a 92% success rate for children classified as GMFCS levels I and II compared with a 76% success rate for those of GMFCS level V (p < 0.01). CONCLUSIONS: This study demonstrated a 37% failure rate after VDRO in children with cerebral palsy. Older age, lower GMFCS level, and increased surgeon volume were strong predictors of surgical success.
LEVEL OF EVIDENCE: Prognostic Level III. See Instructions for Authors for a complete description of levels of evidence.

PMID: 26677236

7. West Indian Med J. 2015 May 6. doi: 10.7727/wimj.2014.255. [Epub ahead of print]

Impacts of Comprehensive Rehabilitation Therapy on Trunk Controlling Ability of Children with Cerebral Palsy.

Wu JX, Shi SX, Wang B, Kan XL.

OBJECTIVE: This study aims to investigate the impacts of the comprehensive treatment on the trunk controlling ability (TCA) of cerebral palsy children (CPC). METHODS: Twenty children with spastic cerebral palsy had the truncal stability parameters in the sitting posture and the symmetry parameters of left-right-forwards-backwards centre of pressure evaluated by the stationary stability assessment module of the PK 254 P balance training instrument. After six-month trunk control training with PT technology and balancing instrument, the above indicators were re-evaluated, and the evaluations before and after the treatment were analysed to assess the therapeutic effect. RESULTS: The difference in the truncal stability parameters before and after the treatment was statistically significant (p < 0.05); the difference in the symmetry parameters of forwards-backwards centre of pressure was significant (p < 0.05). CONCLUSIONS: The balancing instrument training, combined with PT technology training,

could effectively improve the TCA of CPC, and the balancing instrument could also provide the objective and quantitative efficacy assessment toward the TCA of CPC.

PMID: 26681371

8. J Pediatr Orthop. 2015 Dec 17. [Epub ahead of print]

Why No Signals? Cerebral Anatomy Predicts Success of Intraoperative Neuromonitoring During Correction of Scoliosis Secondary to Cerebral Palsy.

Mo AZ, Asemota AO, Venkatesan A, Ritzl EK, Njoku DB, Sponseller PD.

BACKGROUND: Intraoperative neuromonitoring (IONM) is widely used to reduce postoperative neurological complications during scoliosis correction. IONM allows intraoperative detection of neurological insults to the spinal cord and enables surgeons to react in real time. IONM failure rates can reach 61% in patients with cerebral palsy (CP). Factors decreasing the quality of IONM signals or making IONM impossible in CP patients undergoing scoliosis correction have not been well described. METHODS: We categorized IONM data from 206 children with CP who underwent surgical scoliosis correction at a single institution from 2002 through 2013 into 3 groups: (1) "no signals," if neither somatosensory-evoked potentials (SSEP) nor transcranial motor-evoked potentials (TcMEP) could be obtained; (2) "no sensory," if no interpretable SSEP were obtained regardless of interpretable TcMEP; and (3) "no motor," if no interpretable TcMEP were obtained regardless of interpretable SSEP. We analyzed preexisting neuroimaging, available for 93 patients, and neurological status of the full cohort against these categories. Statistical analysis of univariate and multivariate associations was performed using logistic regression. Odds ratios (ORs) were calculated with significance set at $P<0.05$. RESULTS: Multivariate analysis showed significant associations of periventricular leukomalacia (PVL), hydrocephalus, and encephalomalacia with lack of meaningful and interpretable signals. Focal PVL (Fig. 1) was associated with no motor (OR=39.95; P=0.04). Moderate hydrocephalus was associated with no signals (OR=32.35; P<0.01), no motor (OR=10.14; P=0.04), and no sensory (OR=8.44; P=0.03). Marked hydrocephalus (Fig. 2) was associated with no motor (OR=20.46; P<0.01) and no signals (OR=8.83; P=0.01). Finally, encephalomalacia (Fig. 3) was associated with no motor (OR=6.99; P=0.01) and no signals (OR=4.26; P=0.03). CONCLUSION: Neuroanatomic findings of PVL, hydrocephalus, and encephalomalacia are significant predictors of limited IONM signals, especially TcMEP. LEVEL OF EVIDENCE: Level IV.

PMID: 26683503

9. J Pediatr Orthop B. 2015 Dec 17. [Epub ahead of print]

Modified Grice-Green subtalar arthrodesis performed using a partial fibular graft yields satisfactory results in patients with cerebral palsy.

Güven M, Tokyay A, Akman B, Encan ME, Altntaş F.

The aim of this study was to report the experience with the use of a modified Grice-Green technique, which was performed using a partial subperiosteal fibular bone graft because of valgus unstable foot in children with cerebral palsy. Fifteen feet of 11 patients were evaluated on the basis of the appearance of the feet, clinical symptoms, and radiographic measurements. After an average follow-up duration of 24 (9-39) months, all feet showed satisfactory clinical and radiological results. Solid fusion and sustained correction took place in all feet. The gap at the donor site was bridged with new bone in all cases. No donor-site morbidity was detected. This modification of the Grice-Green technique can be used effectively in the correction of planovalgus foot in cerebral palsy.

PMID: 26683367

10. Med Sci Sports Exerc. 2015 Dec 15. [Epub ahead of print]

Decision Trees for Detection of Activity Intensity in Youth with Cerebral Palsy.

Trost SG, Fragala-Pinkham M, Lennon N, O'Neil ME.

PURPOSE: To develop and test decision tree (DT) models to classify physical activity (PA) intensity from accelerometer output and Gross Motor Function Classification System (GMFCS) classification level in ambulatory youth with cerebral palsy (CP); and 2) compare the classification accuracy of the new DT models to that achieved by previously published cut-points for youth with CP. METHODS: Youth with CP (GMFCS Levels I - III) (N=51) completed seven activity trials with increasing PA intensity while wearing a portable metabolic system and ActiGraph GT3X accelerometers. DT models were used to identify vertical axis (VA) and vector magnitude (VM) count thresholds corresponding to sedentary (SED) (<1.5 METs), light PA (LPA) (≥1.5 and <3 METs) and moderate-to-vigorous PA (MVPA) (≥3 METs). Models were trained and cross-validated using the 'rpart' and 'caret' packages within R. RESULTS: For the VA (VA_DT) and VM decision trees (VM_DT), a single threshold differentiated LPA from SED, while the threshold for differentiating MVPA from LPA decreased as the level of impairment increased. The average cross-validation accuracy for the VC_DT was 81.1%, 76.7%, and 82.9% for GMFCS levels I, II, and III, respectively. The corresponding cross-validation accuracy for the VM_DT was 80.5%, 75.6%, and 84.2%, respectively. Within each GMFCS level, the decision tree models achieved better PA intensity recognition than previously published cut-points. The accuracy differential was greatest among GMFCS level III participants, in whom the previously published cut-points misclassified 40% of the MVPA activity trials. CONCLUSION: GMFCS-specific cut-points provide more accurate assessments of MVPA levels in youth with CP across the full spectrum of ambulatory ability.

PMID: 26673127

11. Disabil Rehabil Assist Technol. 2015 Dec 23:1-10. [Epub ahead of print]

Are we there yet? Evaluating commercial grade brain-computer interface for control of computer applications by individuals with cerebral palsy.

Taherian S, Selitskiy D, Pau J, Claire Davies T.

PURPOSE: Using a commercial electroencephalography (EEG)-based brain-computer interface (BCI), the training and testing protocol for six individuals with spastic quadriplegic cerebral palsy (GMFCS and MACS IV and V) was evaluated. METHOD: A customised, gamified training paradigm was employed. Over three weeks, the participants spent two sessions exploring the system, and up to six sessions playing the game which focussed on EEG feedback of left and right arm motor imagery. RESULTS: The participants showed variable inconclusive results in the ability to produce two distinct EEG patterns. Participant performance was influenced by physical illness, motivation, fatigue and concentration. CONCLUSIONS: The results from this case study highlight the infancy of BCIs as a form of assistive technology for people with cerebral palsy. Existing commercial BCIs are not designed according to the needs of end-users. Implications for Rehabilitation Mood, fatigue, physical illness and motivation influence the usability of a brain-computer interface. Commercial brain-computer interfaces are not designed for practical assistive technology use for people with cerebral palsy. Practical brain-computer interface assistive technologies may need to be flexible to suit individual needs.

PMID: 26699697

12. J Pediatr Psychol. 2015 Dec 24. pii: jsv118. [Epub ahead of print]

Parenting Intervention Combined With Acceptance and Commitment Therapy: A Trial With Families of Children With Cerebral Palsy.

Whittingham K, Sanders MR, McKinlay L, Boyd RN.

OBJECTIVE: To examine the effects of Stepping Stones Triple P (SSTP) and Acceptance and Commitment

Therapy (ACT) on child functioning, quality of life, and parental adjustment. METHOD: 67 parents (97.0% mothers) of children (64.2% male; mean age 5.3 ± 3.0 years) with cerebral palsy participated in a randomized controlled trial with three groups: wait-list control, SSTP, and SSTP + ACT. This article details the secondary outcomes. RESULTS: In comparison with wait-list, the SSTP + ACT group showed increased functional performance and quality of life as well as decreased parental psychological symptoms. No differences were found for parental confidence. No differences were found between SSTP and wait-list or between SSTP and SSTP + ACT. CONCLUSIONS: ACT-integrated parenting intervention may be an effective way to target child functioning, quality of life, and parental adjustment.

PMID: 26702629

13. J Pediatr (Rio J). 2015 Dec 14. pii: S0021-7557(15)00172-2. doi: 10.1016/j.jped.2015.05.005. [Epub ahead of print]

Translation and validation of the Brazilian version of the Cerebral Palsy Quality of Life Questionnaire for Children - child report.

Braccialli LM, Almeida VS, Sankako AN, Silva MZ, Braccialli AC, Carvalho SM, Magalhães AT.

OBJECTIVE: To verify the psychometric properties of the Cerebral Palsy: Quality of Life Questionnaire Children - child report (CPQol-Child) questionnaire, after it was translated and culturally adapted into Brazilian Portuguese. METHODS: After the translation and cultural adaptation of the tool into Brazilian Portuguese, the questionnaire was answered by 65 children with cerebral palsy, aged 9-12 years. The intraclass correlation coefficient and Cronbach's alpha were used to assess the reliability and internal consistency of the tool and its validity was analyzed through the association between CPQol-Child: self-report tool and Kidscreen-10 using Pearson's correlation coefficient. RESULTS: Internal consistency ranged from 0.6579 to 0.8861, the intraobserver reliability from 0.405 to 0.894, and the interobserver from 0.537 to 0.937. There was a weak correlation between the participation domain and physical health of CPQol-Child: self-report tool and Kidscreen-10. CONCLUSION: The analysis suggests that the tool has psychometric acceptability for the Brazilian population.

PMID: 26699433

14. Arch Phys Med Rehabil. 2015 Dec 18. pii: S0003-9993(15)01497-5. doi: 10.1016/j.apmr.2015.11.016. [Epub ahead of print]

Longitudinal Study of Oropharyngeal Dysphagia in Preschool Children with Cerebral Palsy.

Benfer KA, Weir KA, Bell KL, Ware RS, Davies PS, Boyd RN.

OBJECTIVE: To determine changes in prevalence and severity of oropharyngeal dysphagia (OPD) in children with cerebral palsy (CP) and relationship to health outcomes. DESIGN: Longitudinal cohort study. SETTING: Community and tertiary institutions. PARTICIPANTS: 53 children with confirmed CP diagnosis assessed first at 18-24 months (Ax1 mean age 22.9 months c.a. (SD=2.9), 33 males, Gross Motor Function Classification System (GMFCS) I=22, II=7, III=11, IV=5, V=8) and at 36 months (Ax2). INTERVENTIONS: none MAIN OUTCOME MEASURES: OPD was classified using the Dysphagia Disorders Survey (DDS) and signs suggestive of pharyngeal dysphagia. Nutritional status was measured using Z-scores for weight, height, and body mass index (BMI). Gross motor skills were classified on GMFCS and motor type/ distribution. RESULTS: Prevalence of OPD reduced from 62% to 59% between ages. 30% of children had an improvement in severity of OPD (>smallest detectable change), and 4% had worse OPD. Gross motor function was strongly associated with OPD at both assessments, on the DDS (Ax1 OR=20.3, p=0.011; Ax2 OR=28.9, p=0.002), pharyngeal signs (Ax 1 OR=10.6, p=0.007; Ax2 OR=15.8, p=0.003), and OPD severity (Ax1 β=6.1, p<0.001; Ax2 β=5.5 p<0.001). OPD at 18-24 months was related to health outcomes at 36 months: low Z-scores for weight (adj β=1.2, p=0.03) and BMI (adj β=1.1, p=0.048), increased parent stress (adj OR=1.1, p=0.049). CONCLUSIONS: Classification and severity of OPD remained relatively stable between 18-24 months and 36 months. Gross motor function was the best predictor of OPD. These findings

contribute to developing more effective screening processes which consider critical developmental transitions which are anticipated to present challenges for children from each of the GMFCS levels.

PMID: 26707458

15.Ugeskr Laeger. 2015 Dec 21;177(52). pii: V07150627.

[Pain among children with cerebral palsy]. [Article in Danish]

Rastoden E, Brown A, Pedersen CR.

Although children diagnosed with cerebral palsy have a number of pain triggers (directly from the cerebral palsy, from sequelae and iatrogenic), pain is underdiagnosed. The gap between research and clinical practice is well-known as this group of patients demand special knowledge regarding monitoring of pain. This article presents various pain-monitoring methods. Combining different methods may improve pain assessment and thereby improve quality of life for children with cerebral palsy.

PMID: 26692225

16. Zhongguo Zhen Jiu. 2015 Sep;35(9):901-4.

[Impacts on motor function in the children of cerebral palsy treated with acupuncture and acupoint embedding therapy]. [Article in Chinese]

Zhang J, Xu K, Ruan Y.

OBJECTIVE: To observe the efficacy difference on the motor function in the children of cerebral palsy between acupuncture combined with acupoint embedding therapy and simple acupuncture. METHODS: One hundred and twenty children of cerebral palsy were randomized into an observation group and a control group, 60 cases in, each one. In the observation group, acupuncture was applied in combination with acupoint embedding therapy. For the acupoint embedding therapy, the main acupoints were Pishu (BL 20), Shenshu (BL 23); the supplementary points were Dazhui (GV 14), Mingmen (GV 4), Yaoyangguan (GV 3), Sanjiaoshu (BL 22), Xinshu (BL 15) and Ganshu (BL 18). The catgut was embedded to the acupoints. Acupuncture was applied to the acupoints on the head and four limbs and the needles were retained for 40 min after qi arrival. In the control group, the simple acupuncture was applied, except for the acupoint embedding therapy. The rest treatment was the same as the observation group. The treatment lasted continuously for 3 months in the two groups. Before and after treatment, the gross motor function measure (GMFM) and the gross motor function classification system (GMFCS) were used for the assessment and the efficacy was analyzed. RESULTS: (1) After treatment, the total score of GMFM was increased in the two groups (both $P<0.01$) and the score in the observation group was higher than that in the control group ($P<0.05$). (2) The scores in A and B areas of GMFM were all improved in the two groups after treat ment (all $P<0.01$) and the scores in the observation group were higher than those in the control group ($P<0.01$ $P<0.05$). (3) The total effective rate was 76. 7% (46/60) in the observation group, which was better than 55. 0% (33/60) in the control group ($P<0.01$). CONCLUSION: The combined therapy of acupuncture and acupoint embedding much better improves the motor function in the children of cerebral palsy as compared with the simple acupuncture.

PMID: 26721142

17. Zhongguo Dang Dai Er Ke Za Zhi. 2015 Dec;17(12):1338-41.

[Risk factors for interictal epileptiform discharges on electroencephalogram in children with spastic hemiplegic cerebral palsy]. [Article in Chinese]

Li SY, Qian XG, Zhao YL, Fu WJ, Tan XR, Liu ZH.

OBJECTIVE: To investigate the clinical symptoms and features of interictal epileptiform discharges (IED) on

electroencephalogram (EEG) in children with spastic hemiplegic cerebral palsy (CP) and to analyze the risk factors for IED. METHODS: Eighty-three children with spastic hemiplegic CP were recruited, and their clinical data, results of video-electroencephalogram, imaging findings, and cognitive levels were collected. The influencing factors for IED were determined by multiple logistic regression analysis. RESULTS: The incidence of epilepsy was 13% in children with spastic hemiplegic CP; 34% of these cases had IED. The incidence of epilepsy in children with IED (32%) was significantly higher than that in those without IED (4%) (P<0.01). The incidence of IED in children with complications and brain cortex impairment increased significantly (P<0.01). The incidence of IED varied significantly between patients with different cognitive levels (P<0.01). Brain cortex impairment (OR=11.521) and low cognitive level (OR=2.238) were risk factors for IED in children with spastic hemiplegic CP (P<0.05). CONCLUSIONS: Spastic hemiplegic CP is often found with IED on EEG, and the incidence of epilepsy is higher in children with IED than in those without IED. Brain cortex impairment and low cognitive level have predictive values for IED in children with spastic hemiplegic CP.

PMID: 26695676

18. Res Dev Disabil. 2015 Dec 16;49-50:171-180. doi: 10.1016/j.ridd.2015.11.019. [Epub ahead of print]

Screening for psychopathology in a national cohort of 8- to 15-year-old children with cerebral palsy.

Rackauskaite G, Bilenberg N, Bech BH, Uldall P, Østergaard JR.

Cerebral palsy (CP) is often accompanied by psychopathology and learning disability. AIMS: (1) to evaluate the prevalence of psychopathology as estimated by the Child Behavior Checklist (CBCL) parental questionnaire in 8- to 15-year-old Danish children with CP and to analyze its association with cognitive ability and families' social characteristics; (2) to examine to what extent children with CP had been evaluated by a child psychiatrist and/or psychologist. METHOD: The parents of 462 children with CP answered a questionnaire about their child's treatment and the family's characteristics and 446 the CBCL. The cutoff for psychopathology was the Total CBCL score or DSM-oriented scores above the 93rd percentile in an age- and gender-stratified population. RESULTS: The psychopathology screening was positive in 46.2% (CI 41.6-50.8%) against 15.1% in general population. Cognitive disability was associated with an increased prevalence of psychopathology (odds ratio (OR) 2.6, CI 1.4-4.6, for Developmental Quotient of cognitive function (DQ) 50-85 and OR 3.0, CI 1.3-7.0, for DQ<50). Children with CP and a single parent showed increased odds for a positive CBCL screening compared to children living with two parents (OR 2.1, 95% CI 1.1-4.0). Children with DQ 50-85 more often had a psychological evaluation. A positive CBCL screening was strongly associated with a psychiatric assessment (21% vs. 7%, p<0.01). CONCLUSION: The high prevalence of emotional and behavioral problems indicates that screening for psychopathology should be a part of multidisciplinary follow-up of CP. The CBCL can be used as a screening instrument in children with CP without severe motor and cognitive disability.

PMID: 26707927

Prevention and Cure

19. BJOG. 2015 Dec 22. doi: 10.1111/1471-0528.13827. [Epub ahead of print]

Association of placental weight with cerebral palsy: population-based cohort study in Norway.

Strand KM, Andersen GL, Haavaldsen C, Vik T, Eskild A.

OBJECTIVE: To study the risk of cerebral palsy (CP) associated with placental weight, and also with placental weight/birthweight ratio and placental weight/birth length ratio. DESIGN: Population-based cohort study. SETTING: Perinatal data in the Medical Birth Registry of Norway were linked with clinical data in the CP Register of Norway. POPULATION: A total of 533 743 singleton liveborn children in Norway during 1999-2008. Of these, 779 children were diagnosed with CP. METHODS: Placental weight, placental weight/birthweight ratio, and placental weight/birth length ratio were grouped into gestational age-specific quartiles. Odds ratios (OR) with 95% confidence intervals (95% CI) for CP were calculated for children with exposure variables in the lowest or in the highest quartile, using

the second to third quartile as the reference. MAIN OUTCOME MEASURES: CP and CP subtypes. RESULTS: Overall, children with low placental weight had increased risk for CP (OR 1.5, 95% CI 1.2-1.7). Low placental weight/birthweight ratio (OR 1.2, 95% CI 1.0-1.4) and low placental weight/birth length ratio (OR 1.5, 95% CI 1.2-1.8) were also associated with increased risk for CP. In children born at term, low placental weight was associated with a twofold increase in risk for spastic bilateral CP (including both quadriplegia and diplegia) (OR 2.1, 95% CI 1.5 -2.9). In children born preterm, high placental ratios were associated with increased risk for spastic quadriplegia. CONCLUSIONS: Our results suggest that placental dysfunction may be involved in causal pathways leading to the more severe subtypes of CP. TWEETABLE ABSTRACT: Low placental weight increases the risk for cerebral palsy, especially for the spastic bilateral subtype.

PMID: 26692053

20. BMC Pregnancy Childbirth. 2015 Dec 22;15(1):347. doi: 10.1186/s12884-015-0785-8.

Magnesium sulphate for fetal neuroprotection: benefits and challenges of a systematic knowledge translation project in Canada.

Teela KC, De Silva DA, Chapman K, Synnes AR, Sawchuck D, Basso M, Liston RM, von Dadelszen P, Magee LA; MAG-CP Collaborative Group.

BACKGROUND: Administration of magnesium sulphate (MgSO4) to women with imminent preterm birth at <34 weeks is an evidence-based antenatal neuroprotective strategy to prevent cerebral palsy. Although a Society of Obstetricians and Gynaecologists of Canada (SOGC) national guideline with practice recommendations based on relevant clinical evidence exists, ongoing controversies about aspects of this treatment remain. Given this, we anticipated managed knowledge translation (KT) would be needed to facilitate uptake of the guidelines into practice. As part of the Canadian Institutes of Health Research (CIHR)-funded MAG-CP (MAGnesium sulphate to prevent Cerebral Palsy) project, we aimed to compare three KT methods designed to impact both individual health care providers and the organizational systems in which they work. METHODS: The KT methods undertaken were an interactive online e-learning module available to all SOGC members, and at MAG-CP participating sites, on-site educational rounds and focus group discussions, and circulation of an anonymous 'Barriers and Facilitators' survey for the systematic identification of facilitators and barriers for uptake of practice change. We compared these strategies according to: (i) breadth of respondents reached; (ii) rates and richness of identified barriers, facilitators, and knowledge needed; and (iii) cost. RESULTS: No individual KT method was superior to the others by all criteria, and in combination, they provided richer information than any individual method. The e-learning module reached the most diverse audience of health care providers, the site visits provided opportunity for iterative dialogue, and the survey was the least expensive. Although the site visits provided the most detailed information around individual and organizational barriers, the 'Barriers and Facilitators' survey provided more detail regarding social-level barriers. The facilitators identified varied by KT method. The type of knowledge needed was further defined by the e -learning module and surveys. CONCLUSIONS: Our findings suggest that a multifaceted approach to KT is optimal for translating national obstetric guidelines into clinical practice. As audit and feedback are essential parts of the process by which evidence to practice gaps are closed, MAG-CP is continuing the iterative KT process described in this paper concurrent with tracking of MgSO4 use for fetal neuroprotection and maternal and child outcomes until September 2015; results are anticipated in 2016.

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Localization of Basal Ganglia and Thalamic Damage in Dyskinetic Cerebral Palsy.

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BACKGROUND: Dyskinetic cerebral palsy affects 15%-20% of patients with cerebral palsy. Basal ganglia injury is associated with dyskinetic cerebral palsy, but the patterns of injury within the basal ganglia predisposing to dyskinetic cerebral palsy are unknown, making treatment difficult. For example, deep brain stimulation of the globus pallidus interna improves dystonia in only 40% of patients with dyskinetic cerebral palsy. Basal ganglia injury

heterogeneity may explain this variability. METHODS: To investigate this, we conducted a qualitative systematic review of basal ganglia and thalamic damage in dyskinetic cerebral palsy. Reviews and articles primarily addressing genetic or toxic causes of cerebral palsy were excluded yielding 22 studies (304 subjects). RESULTS: Thirteen studies specified the involved basal ganglia nuclei (subthalamic nucleus, caudate, putamen, globus pallidus, or lentiform nuclei, comprised by the putamen and globus pallidus). Studies investigating the lentiform nuclei (without distinguishing between the putamen and globus pallidus) showed that all subjects (19 of 19) had lentiform nuclei damage. Studies simultaneously but independently investigating the putamen and globus pallidus also showed that all subjects (35 of 35) had lentiform nuclei damage (i.e., putamen or globus pallidus damage); this was followed in frequency by damage to the putamen alone (70 of 101, 69%), the subthalamic nucleus (17 of 25, 68%), the thalamus (88 of 142, 62%), the globus pallidus (7/35, 20%), and the caudate (6 of 47, 13%). Globus pallidus damage was almost always coincident with putaminal damage. CONCLUSIONS: Noting consistent involvement of the lentiform nuclei in dyskinetic cerebral palsy, these results could suggest two groups of patients with dyskinetic cerebral palsy: those with putamen-predominant damage and those with panlenticular damage involving both the putamen and the globus pallidus. Differentiating between these groups could help predict response to therapies such as deep brain stimulation.

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