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Interventions and Management

1. Whole body organization during a symmetric bimanual pick up task for children with unilateral cerebral palsy.

Hung YC, Spingarn A.

Gait Posture. 2018 May 24;64:38-42. doi: 10.1016/j.gaitpost.2018.05.028. [Epub ahead of print]

BACKGROUND: Information on whole-body coordination involving bimanual coordination for children with unilateral spastic cerebral palsy (USCP) is limited. **RESEARCH QUESTION:** The purpose of the current study is to test the hypothesis that during a whole-body pick up task, children with USCP will organize their whole-body movements and bimanual coordination differently than typically-developing children (TDC). **METHODS:** Twelve children with USCP (average age: 8.3; MACS levels: I-II) and twelve age-matched TDC participated in the study. Children were asked to reach down, grasp, and pick up an empty box to waist height while Kinematic and Kinetic data were recorded and analyzed using a VICON system and two AMTI force plates. **RESULTS:** Children with USCP had longer overall movement time, reaching down time, and grasping movement time (all $P < 0.05$) than TDC. Less bimanual coordination was indicated by greater finger vertical position differences and movement onset and offset timing differences (all $P < 0.05$). Additionally, greater bilateral joint position on differences were found for shoulder, elbow, hip, and knee when reaching down and for shoulder and elbow at the end of the task (all $P < 0.05$). Greater asymmetric bilateral ground reaction force and greater lateral and anterior center of pressure excursion were also found in children with USCP (all $P < 0.05$). **SIGNIFICANCE:** Impairments in both bimanual and whole-body coordination were found during a simple whole-body task in children with USCP. Future treatments or assessments should consider whole-body tasks involving dual task constraints.

PMID: [29843118](#)

2. Effects of Lycra suits in children with cerebral palsy.

Romeo DM, Specchia A, Sini F, Bompard S, Di Polito A, Del Vecchio A, Ferrara P, Bernabei R, Mercuri E.

Eur J Paediatr Neurol. 2018 May 3. pii: S1090-3798(17)32031-7. doi: 10.1016/j.ejpn.2018.04.014. [Epub ahead of print]

Lycra garments have recently been used for children with cerebral palsy (CP), with favorable effects on alignment, biomechanics and neuromuscular activity. The aim of the present study is to determine the efficacy of a Lycra suit in improving motor function and static balance in children with CP. Five children with CP wore the Lycra suit for more than 4 h per day for 6 months. They were all assessed at baseline and 6 months after with an evaluation of static balance, using a "seated stabilometry exam", and a motor function assessment, using the Gross Motor Function Measure and Gross Motor function Classification System. The assessment of static balance was performed with and without the suit. Another 5 children with CP performed the same assessments and were used as a control group. An immediate improvement of static balance was observed at baseline, with the first use of the Lycra suit. Further improvement was observed at the 6 month follow up, with a statistical significance for the parameters assessing the antero-posterior axis. Both parents and children also reported functional benefits. Further studies are needed on long-term functional effects in a large cohort of children.

PMID: [29802022](#)

3. Dyskinetic vs Spastic Cerebral Palsy: A Cross-sectional Study Comparing Functional Profiles, Comorbidities, and Brain Imaging Patterns.

Reid SM, Meehan EM, Reddihough DS, Harvey AR.

J Child Neurol. 2018 Jan 1;883073818776175. doi: 10.1177/0883073818776175. [Epub ahead of print]

The authors aimed to describe the distribution of predominant and secondary motor types and compare functional profiles, comorbidities, and brain imaging patterns between dyskinetic and spastic cerebral palsy. Children recruited from a cerebral palsy register were assessed at age 5, 10, or 15. Motor types, topography, functional classifications, and comorbidities were recorded. Univariable logistic regression was used to compare dyskinesia with spasticity, with and without adjustment for topography. Neuroimaging classifications were extracted from the register. Of 243 children with spasticity or dyskinesia, the predominant motor type was spastic in 183 and dyskinetic in 56. Dyskinesia was associated with comparatively poorer function, total body involvement, and gray matter injury. After adjustment for topography, dyskinesia was associated with similar or better function. The study suggests that practical tools routinely incorporated into clinical practice would facilitate accurate and reliable classification of predominant and secondary motor types, topography, and functional abilities.

PMID: [29808776](#)

4. Characteristics of Lower Leg Muscle Activity in Patients with Cerebral Palsy during Cycling on an Ergometer.

Roy S, Alves-Pinto A, Lampe R.

Biomed Res Int. 2018 May 9;2018:6460981. doi: 10.1155/2018/6460981. eCollection 2018.

PURPOSE: Cycling on ergometer is often part of rehabilitation programs for patients with cerebral palsy (CP). The present study analyzed activity patterns of individual lower leg muscle during active cycling on ergometer in patients with CP and compared them to similar recordings in healthy participants.

METHODS: Electromyographic (EMG) recordings of lower leg muscle activity were collected from 14 adult patients and 10 adult healthy participants. Activity of the following muscles was recorded: Musculus tibialis anterior, Musculus gastrocnemius, Musculus rectus femoris, and Musculus biceps femoris. Besides qualitative analysis also quantitative analysis of individual muscle activity was performed by computing the coefficient of variation of EMG signal amplitude. **RESULTS:** More irregular EMG patterns were observed in patients in comparison to healthy participants: agonist-antagonist cocontractions were more frequent, muscle activity measured at specific points of the cycle path was more variable, and dynamic range of muscle activity along the cycle path was narrower in patients. Hypertonicity was also more frequent in patients. **CONCLUSION:** Muscle activity patterns during cycling differed substantially across patients. It showed irregular nature and occasional sharp high peaks. Dynamic range was also narrower than in controls. Observations underline the need for individualized cycling training to optimize rehabilitation effects.

PMID: [29854772](#)

5. Medial gastrocnemius structure and gait kinetics in spastic cerebral palsy and typically developing children: A cross-sectional study.

Martín Lorenzo T, Rocon E, Martínez Caballero I, Lerma Lara S.

Medicine (Baltimore). 2018 May;97(21):e10776. doi: 10.1097/MD.000000000010776.

To compare medial gastrocnemius muscle-tendon structure, gait propulsive forces, and ankle joint gait kinetics between typically developing children and those with spastic cerebral palsy, and to describe significant associations between structure and function in children with spastic cerebral palsy. A sample of typically developing children (n=9/16 limbs) and a sample of children with spastic cerebral palsy (n=29/43 limbs) were recruited. Ultrasound and 3-dimensional motion capture were used to assess muscle-tendon structure, and propulsive forces and ankle joint kinetics during gait, respectively. Children with spastic cerebral palsy had shorter fascicles and muscles, and longer Achilles tendons than typically developing children. Furthermore, total negative power and peak negative power at the ankle were greater, while total positive power, peak positive power, net power, total vertical ground reaction force, and peak vertical and anterior ground reaction forces were smaller compared to typically developing children. Correlation analyses revealed that smaller resting ankle joint angles and greater maximum dorsiflexion in children with spastic cerebral palsy accounted for a significant decrease in peak negative power. Furthermore, short fascicles, small fascicle to belly ratios, and large tendon to fascicle ratios accounted for a decrease in propulsive force generation. Alterations observed in the medial gastrocnemius muscle-tendon structure of children with spastic cerebral palsy may impair propulsive mechanisms during gait. Therefore, conventional treatments should be revised on the basis of muscle-tendon adaptations.

PMID: [29794756](#)

6. Relationship between Subtalar Joint Stiffness and Relaxed Calcaneal Stance Position in Cerebral Palsy Children with Valgus Deformities.

Chen W, Yao J, Yang Y, Liu X, Wang L, Pu F, Fan Y.

Biomed Res Int. 2018 Apr 30;2018:6576108. doi: 10.1155/2018/6576108. eCollection 2018.

Relaxed calcaneal stance position (RCSP) is an important index in the correctional treatment of foot valgus deformities for cerebral palsy (CP) children. However, patients with similar RCSP showed diverse outcomes when accepting similar treatment, as the corrective resistance of subtalar joint (STJ) could be quite different. This study aimed to investigate the relationship between STJ stiffness and RCSP in different loading conditions. 38 valgus feet of 19 CP subjects were included in the study. A reposition force was applied beneath the STJ and pushed the foot from pronated position to neutral position. The STJ stiffness was calculated as the slope of the line fitting the force-displacement data. Correlations between the STJ stiffness, RCSP, and composite spasticity index (CSI) were analyzed. The spearman correlation coefficient indicated that STJ stiffness had no correlation with RCSPs, yet it had negative correlation with the change of RCSP under difference loading conditions (Δ RCSP_{1w-0w} and Δ RCSP_{0.5w-0w}). STJ stiffness was also correlated with the composite spasticity index (CSI), implying that this index had an advantage in reflecting the mechanism of valgus deformity and should be considered as a necessary measurement of foot valgus in CP children. The present method for quantification of STJ stiffness could improve the accuracy in the diagnosis and classification of foot deformity and may help increase the understanding of the biomechanical factors in foot deformity rehabilitation.

PMID: [29854778](#)

7. [Ilizarov technique combined with limited surgery for correction of spastic clubfoot in adolescents with cerebral palsy].

Gao C, Wu H, Xiao P, Wu X.

Zhongguo Xiu Fu Chong Jian Wai Ke Za Zhi. 2018 Feb 1;32(2):182-186. doi: 10.7507/1002-1892.201710045. Chinese.

OBJECTIVE: To evaluate the effectiveness of Ilizarov technique combined with soft tissue release and muscle strength balance in the treatment of spastic clubfoot in adolescents with cerebral palsy. **METHODS:** A retrospective analysis of clinical data of 29 cases (33 feet) of cerebral palsy spastic clubfoot deformity conformed to the selection criteria between June 2011 and September 2016. Among them, 17 were male (20 feet) and 12 were female (13 feet) with an age range from 13 to 28 years (mean, 17.6 years). According to Diméglio classification, 19 feet were rated as grade II and 14 feet as grade III. All patients were treated with soft tissue release and muscle balance, while using Ilizarov technique to correct varus deformity. Began to gradually adjust the external fixator after 5-7 days of operation, until to reach satisfactory foot ankle form. Orthopedic brace was used after removal of external fixator, and the wearing time gradually reduced to completely abandon the brace. **RESULTS:** All 29 patients (33 feet) were followed up 12-22 months with an average of 18 months. All patients restored line plantar foot without needle infection and nerve or vessel injury. One foot had a mild relapse of deformity at 6 months after removal of external fixator, and the gait restored to normal after symptomatic treatment. The rest of 32 feet had no deformity recurrence during the follow-up. At last follow-up, International Club Foot Study Group (ICFSG) score (5.21 ± 3.91) was significantly lower than the preoperative score (36.73 ± 4.80), and the difference was significant ($t=47.227$, $P=0.000$). The results were excellent in 27 feet, good in 3 feet, and fair in 3 feet, and the excellent and good rate was 90.91%. The patients were very satisfied in 27 feet and satisfied in 6 feet by self-evaluation of effectiveness. **CONCLUSION:** Ilizarov technique is effective in treatment of clubfoot. And it is also a feasible method to treat spastic clubfoot in adolescents with cerebral palsy when combined with appropriate soft tissue surgery according to the patient's symptoms and signs.

PMID: [29806409](#)

8. Clinical characteristics and functional status of children with different subtypes of dyskinetic cerebral palsy.

Sun D, Wang Q, Hou M, Li Y, Yu R, Zhao J, Wang K.

Medicine (Baltimore). 2018 May;97(21):e10817. doi: 10.1097/MD.0000000000010817.

Dyskinetic cerebral palsy (CP) is the second major subtype of CP. Dyskinetic CP can be classified into different subtypes, but the exact clinical characteristics of these subtypes have been poorly studied. To investigate the clinical characteristics and functional classification of dyskinetic CP from the perspective of neurologic subtypes in a hospital-based follow-up study. This was an observational study of consecutive children with dyskinetic CP treated at The Affiliated Women & Children Hospital of Qingdao University (China) from October 2005 to February 2015. The children were stratified according to their neurologic subtype and assessed with the Gross Motor Function Classification System (GMFCS), Manual Ability Classification System (MACS), and Communication Function Classification System (CFCS). MRI scanning was conducted at 1 year of age for most children. Twenty-six participants (28.0%) had dystonic CP, 26 (28.0%) had choreoathetotic CP, and 41 (44.1%) had mixed CP. Auditory impairment and basal ganglion lesions occurred more frequently in the dystonia group ($n=8$, 31%; and $n=16$, 67%), while seizures, microcephaly, white matter lesions, and mixed lesions were more frequent in the mixed type ($n=14$, 34%; $n=10$, 24%; $n=15$, 41%; $n=12$, 32%). Functional classification levels were distributed unequally among the 3 subgroups ($P<.01$).

No significant difference between GMFCS and MACS was found among the 3 subgroups ($P > .05$). Different subtypes of dyskinetic CP have specific comorbidities, radiological characteristics, and functional attributes according to their etiological factors and brain lesions. Children with dystonic CP have more limited functional status than children with choreoathetotic CP.

PMID: [29794768](#)

9. A food bolus obstructing the oesophagus in a patient with infantile cerebral palsy.

Vong KS, Mohamad I, Salim R.

Malays Fam Physician. 2018 Apr 30;13(1):34-36. eCollection 2018.

INTRODUCTION: A foreign body (FB) in the upper aerodigestive tract is a fairly common encounter. Fish bones are the commonest FB seen in adults. The commonest presentation is odynophagia. Usually, the patient will point at the level of FB on the neck to indicate the location. **METHODS:** Clinical report. **RESULTS:** This case report describes a large FB in an adult with underlying infantile cerebral palsy. Besides dysphagia, it was associated with drooling of saliva and pain in the throat region. **CONCLUSION:** FB ingestion with complete obstruction of the oesophagus is an emergency. It may cause total dysphagia as the passage of food is completely blocked.

PMID: [29796208](#)

10. ESMAC BEST PAPER 2017: Using machine learning to overcome challenges in GMFCS level assignment.

Schwartz MH, Munger ME.

Gait Posture. 2018 Apr 16;63:290-295. doi: 10.1016/j.gaitpost.2018.04.017. [Epub ahead of print]

We used the random forest classifier to predict Gross Motor Function Classification System (GMFCS) levels I-IV from patient reported abilities recorded on the Gillette Functional Assessment Questionnaire (FAQ). The classifier exhibited outstanding accuracy across GMFCS levels I-IV, with 83%-91% true positive rate (TPR), area under the receiver operation characteristic (ROC) curve greater than 0.96 for all levels, and misclassification by more than one level only occurring 1.2% of the time. This new approach to GMFCS level assignment overcomes several difficulties with the current method: (i) it is based on a broad spectrum of functional abilities, (ii) it resolves functional ability profiles that conflict with existing GMFCS level definitions, (iii) it is based entirely on self-reported abilities, and (iv) it removes complex age dependence. Further work is needed to examine inter-center differences in classifier performance-which would most likely reflect interpretive differences in GMFCS level definitions between centers.

PMID: [29807334](#)

11. International Classification of Functioning, Disability and Health Core Sets for cerebral palsy, autism spectrum disorder, and attention-deficit-hyperactivity disorder.

Schiariti V, Mahdi S, Bölte S.

Dev Med Child Neurol. 2018 May 30. doi: 10.1111/dmcn.13922. [Epub ahead of print]

AIM: Capturing functional information is crucial in childhood disability. The International Classification of Functioning, Disability and Health (ICF) Core Sets promote assessments of functional abilities and disabilities in clinical practice regarding circumscribed diagnoses. However, the specificity of ICF Core Sets for childhood-onset disabilities has been doubted. This study aimed to identify content commonalities and differences among the ICF Core Sets for cerebral palsy (CP), and the newly developed Core Sets for autism spectrum disorder (ASD) and attention-deficit-hyperactivity disorder (ADHD). **METHOD:** The categories within each Core Set were aggregated at the ICF component and chapter levels. Content comparison was conducted using descriptive analyses. **RESULTS:** The activities and participation component of the ICF was the most covered across all Core Sets. Main differences included representation of ICF components and coverage of ICF chapters within each component. CP included all ICF components, while ADHD and ASD predominantly focused on activities and participation. Environmental factors were highly represented in the ADHD Core Sets (40.5%) compared to the ASD (28%) and CP (27%) Core Sets. **INTERPRETATION:** International Classification of Functioning, Disability and Health Core Sets for CP, ASD, and ADHD capture both common but also unique functional information, showing the importance of creating condition-specific, ICF-based tools to build functional profiles of individuals with childhood-onset disabilities. **WHAT THIS PAPER ADDS:** The International Classification of Functioning, Disability and Health (ICF) Core Sets for cerebral palsy (CP), autism spectrum disorder (ASD), and attention-deficit-hyperactivity disorder (ADHD) include unique functional information. The ICF-based tools for CP, ASD, and ADHD differ in terms of representation and coverage of ICF components and ICF chapters. Representation of environmental factors uniquely influences functioning and disability across ICF Core Sets for CP, ASD and ADHD.

PMID: [29845609](#)

12. Seasonal Variations in Cerebral Palsy Births.

Sienkiewicz D, Paszko-Patej G, Okurowska-Zawada B, Kułak W.

Arch Med Res. 2018 May 23. pii: S0188-4409(18)30179-6. doi: 10.1016/j.arcmed.2018.05.001. [Epub ahead of print]

INTRODUCTION: Previous studies of cerebral palsy (CP) suggest that it seasonal variations in the incidence of CP. The purpose of this paper was to compare seasonal variations in the incidence of cerebral palsy (CP) in Podlaskie Province, Poland, between 1990-1999 (study 2005) and 2000-2014 (study 2017) in a retrospective case-controlled study. **MATERIALS AND METHODS:** Data were obtained from the hospital database. We compared CP births between January 1, 1990, and December 31, 1999, n = 212 (116 boys, 96 girls) and January 1, 2000, and December 31, 2014, n = 205 (114 boys, 91 girls). We used Cosinor analysis to examine the seasonality of CP births. **RESULTS:** The highest number of CP births occurred in spring and the lowest in winter, with intermediate values in summer and autumn. This seasonal pattern was significant for spring vs. winter. The peaks in the numbers of CP births occurred in May and August; the lowest numbers of CP births occurred in February, December, and November. In the 2017 study, we observed a slight increase in spastic tetraplegia and a decrease in mixed CP. No significant correlations between mean temperature and Apgar score, low birth weight, and asphyxia were found. **CONCLUSIONS:** Our study confirmed the existence of seasonal patterns for CP births.

PMID: [29803546](#)

Prevention and Cure

13. Executive function in school-aged children with cerebral palsy: Relationship with speech and language.

Sakash A, Broman AT, Rathouz PJ, Hustad KC.

Res Dev Disabil. 2018 Jul;78:136-144. doi: 10.1016/j.ridd.2018.05.015. Epub 2018 May 28.

BACKGROUND AND AIMS: Although children with cerebral palsy (CP) are at an increased risk for developing speech, language, and executive function (EF) impairments, little is known regarding the relationship among these risk factors. The current study examined how different profiles of speech and language impairment might be associated with impairments in EF skills in school-aged children with CP. **METHODS AND PROCEDURES:** Forty-seven school-aged children with CP were included. Each child contributed between one and four data points for a total of 87 data points. Children were classified into speech and language profile groups at each data point. EF skills were examined using the Behavior Rating Inventory of Executive Function questionnaire. **OUTCOMES AND RESULTS:** Compared to a mean of 50 from a normative population of children, mean scores on all measures of EF were significantly elevated for all groups ($p < .05$). The proportion of children with CP with elevated EF scores was significantly higher for all groups compared to the expected proportion in a normal population of children ($p < .05$). **CONCLUSIONS AND IMPLICATIONS:** Children with CP who do not have impairments in speech or language may be at risk for EF difficulties which may negatively affect social communication, academic performance, and functional independence.

PMID: [29853333](#)

14. Maternal thyroid disorder in pregnancy and risk of cerebral palsy in the child: a population-based cohort study.

Petersen TG, Andersen AN, Uldall P, Paneth N, Feldt-Rasmussen U, Tollånes MC, Strandberg-Larsen K.

BMC Pediatr. 2018 May 31;18(1):181. doi: 10.1186/s12887-018-1152-5.

BACKGROUND: Cerebral palsy is the most frequent motor disability in childhood, but little is known about its etiology. It has been suggested that cerebral palsy risk may be increased by prenatal thyroid hormone disturbances. The objective of this study was to investigate whether maternal thyroid disorder is associated with increased risk of cerebral palsy. **METHODS:** A population-based cohort study using two study populations. 1) 1,270,079 children born in Denmark 1979-2007 identified in nationwide registers, and 2) 192,918 children born 1996-2009 recruited into the Danish National Birth Cohort and The Norwegian Mother and Child Cohort study, combined in the MOTHERS and BABIES in Norway and Denmark (MOBAND) collaboration cohort. Register-based and self-reported information on maternal thyroid disorder was studied in relation to risk of cerebral palsy and its unilateral and bilateral spastic subtypes using multiple logistic regression. Children were followed from the age of 1 year to the age of 6 years, and cerebral palsy was identified in nationwide registers with verified diagnoses. **RESULTS:** In register data, hypothyroidism was recognized in 12,929 (1.0%), hyperthyroidism in 9943 (0.8%), and unclassifiable thyroid disorder in 753 (<0.1%) of the mothers. The odds ratio for an association between maternal thyroid disorder and bilateral spastic cerebral palsy was 1.0 (95% CI: 0.7-1.5). Maternal thyroid disorder identified during pregnancy was associated with elevated risk of unilateral spastic cerebral palsy (odds ratio 3.1 (95% CI: 1.2-8.4)). In MOBAND, 3042

(1.6%) of the mothers reported a thyroid disorder in pregnancy, which was not associated with cerebral palsy overall (odds ratio 1.2 (95% CI: 0.6-2.4)). **CONCLUSIONS:** Maternal thyroid disorder overall was not related to bilateral spastic cerebral palsy, but maternal thyroid disorder identified in pregnancy was associated with increased risk of unilateral spastic cerebral palsy. These findings should be replicated in studies making use of maternal blood samples.

PMID: [29855286](#)

15. Factors affecting neurodevelopmental outcome at 2 years in very preterm infants below 1250 grams: a prospective study.

Agarwal PK, Shi L, Rajadurai VS, Zheng Q, Yang PH, Khoo PC, Quek BH, Daniel LM.

J Perinatol. 2018 Jun 1. doi: 10.1038/s41372-018-0138-3. [Epub ahead of print]

OBJECTIVE: To evaluate the neurodevelopmental outcomes of preterm very-low birth weight (PT/VLBW) infants at 2 years and identify risk factors associated with significant developmental delay or neurodevelopmental impairment (NDI). **STUDY DESIGN:** We evaluated 165 PT/VLBW infants born between January 2010 and December 2011, using the Bayley Scales of Infant and Toddler Development 3rd Edition (Bayley-III). NDI was defined as the presence of neurosensory impairment or significant delay with Bayley-III score < 70 in any domain and risk factors for delay/NDI were assessed using logistic regressions. **RESULTS:** Median Bayley-III composite scores in the cognitive, language and motor domains were 95, 89 and 94, respectively. NDI was present in 20% of the children, with 5-18% having significant delay in either cognitive, language or motor domain, seven (4%) children had cerebral palsy, three (2%) were deaf and none were blind. Regression models identified significant positive associations of delayed cognitive skills with male gender (Odds ratio (OR) 22.4, 95% confidence interval (CI) 1.5-341.1; P = 0.025), lack of antenatal steroids (ANS) (OR 41.5, 95% CI 3.5-485.7; P = 0.003), and hypotension needing inotropes (OR 36.0, 95% CI 2.6-506.0; P = 0.008); delayed language skills with lower maternal education (OR 3.8, 95% CI 1.4-10.3; P = 0.10), lack of ANS (OR 2.8, 95% CI 1.1-7.4; P = 0.04), and 5 minute Apgar Score ≤ 5 (OR 7.4, 95% CI 1.4-38.4; P = 0.017) and delayed motor skills with chronic lung disease at 36 weeks (OR 38.3, 95% CI 2.4-603.4; P = 0.010). NDI was associated with lack of ANS (OR 2.91, 95% CI 1.21-7.00; P = 0.02) and use of postnatal steroids (OR 3.36, 95% CI 1.07-10.54; P = 0.0374). **CONCLUSION:** Risk factors for both NDI and individual domain delay were identified and will be helpful in planning of specific and targeted early intervention services.

PMID: [29855557](#)

16. Association between sedation-analgesia and neurodevelopment outcomes in neonatal hypoxic-ischemic encephalopathy.

Natarajan G, Shankaran S, Lupton AR, McDonald SA, Pappas A, Hintz SR, Das A; NICHD Neonatal Research Network (NRN) Whole Body Hypothermia Subcommittee.

J Perinatol. 2018 May 24. doi: 10.1038/s41372-018-0126-7. [Epub ahead of print]

OBJECTIVE: To evaluate the association between sedation-analgesia (SA) during initial 72 h and death/disability at 18 months of age in neonatal hypoxic-ischemic encephalopathy (HIE). **DESIGN:** This was a secondary analysis of the NICHD therapeutic hypothermia (TH) randomized controlled trial in moderate or severe HIE. Receipt of SA and anticonvulsant medications at five time points were considered: prior to and at baseline, 24, 48, and 72 h of TH or normothermia. Disability was defined as mental developmental index < 85, cerebral palsy, blindness, hearing impairment, or Gross Motor Function Classification System 2-5. **RESULTS:** Of the 208 RCT participants, 38 (18%) infants had no exposure to SA or anticonvulsants at any of the five time points, 20 (10%) received SA agents only, 81 (39%) received anticonvulsants only, and 69 (33%) received both SA and anticonvulsants. SA category drugs were not administered in 57% of infants while 18% received SA at ≥ 3 time points; 72% infants received anticonvulsants during 72 h of intervention. At 18 months of age, disability among survivors and death/disability was more frequent in the groups receiving anticonvulsants, with (48 and 65%) or without (37 and 58%) SA, compared to groups with no exposure (14 and 34%) or SA (13 and 32%) alone. Severe HIE (aOR 3.60; 1.59-8.13), anticonvulsant receipt (aOR 2.48; 1.05-5.88), and mechanical ventilation (aOR 7.36; 3.15-17.20) were independently associated with 18-month death/disability, whereas TH (aOR 0.28; 0.13-0.60) was protective. SA exposure showed no association with outcome. **CONCLUSIONS:** The risk benefits of SA in HIE need further investigation.

PMID: [29795315](#)

17. Preterm premature rupture of membranes at 22-25 weeks' gestation: perinatal and 2-year outcomes within a national population-based study (EPIPAGE-2).

Lorthe E, Torchin H, Delorme P, Ancel PY, Marchand-Martin L, Foix-L'heliass L, Benhammou V, Gire C, D'Ercole C, Winer N, Sentilhes L, Subtil D, Goffinet F, Kayem G.

Am J Obstet Gynecol. 2018 May 28. pii: S0002-9378(18)30439-3. doi: 10.1016/j.ajog.2018.05.029. [Epub ahead of print]

BACKGROUND: Most clinical guidelines state that with early preterm premature rupture of membranes, obstetric and pediatric teams must share a realistic and individualized appraisal of neonatal outcomes with parents and consider their wishes for all decisions. However, we currently lack reliable and relevant data, according to gestational age at rupture of membranes, to adequately counsel parents during pregnancy and to reflect on our policies of care at these extreme gestational ages.

OBJECTIVE: To describe both perinatal and 2-year outcomes of preterm infants born after preterm premature rupture of membranes at 22-25 weeks' gestation. **STUDY DESIGN:** EPIPAGE-2 is a French national prospective population-based cohort of preterm infants born in 546 maternity units in 2011. Inclusion criteria in this analysis were women diagnosed with preterm premature rupture of membranes at 22-25 weeks' gestation and singleton or twin gestations with fetus(es) alive at rupture of membranes. Latency duration, antenatal management, and outcomes (survival at discharge, survival at discharge without severe morbidity, and survival at 2 years' corrected age without cerebral palsy) were described and compared by gestational age at preterm premature rupture of membranes. **RESULTS:** Among the 1435 women with a diagnosis of preterm premature rupture of membranes, 379 were at 22-25 weeks' gestation, with 427 fetuses (331 singletons and 96 twins). Median GA at preterm premature rupture of membranes and at birth were 24 (interquartile range 23-25) and 25 (24-27) weeks, respectively. For each gestational age at preterm premature rupture of membranes, nearly half of the fetuses were born within the week after the rupture of membranes. Among the 427 fetuses, 51.7% were survivors at discharge (14.1%, 39.5%, 66.8% and 75.8% with preterm premature rupture of membranes at 22, 23, 24 and 25 weeks, respectively), 38.8% were survivors at discharge without severe morbidity and 46.4% were survivors at 2 years without cerebral palsy, with wide variations by gestational age at preterm premature rupture of membranes. Survival at 2 years without cerebral palsy was low with preterm premature rupture of membranes at 22 and 23 weeks but reached approximately 60% and 70% with preterm premature rupture of membranes at 24 and 25 weeks. **CONCLUSION:** Preterm premature rupture of membranes at 22-25 weeks is associated with high incidence of mortality and morbidity, with wide variations by gestational age at preterm premature rupture of membranes. However, a non-negligible proportion of children survive without severe morbidity both at discharge and at 2-years' corrected age.

PMID: [29852153](#)