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NEWS
Cerebral Palsy Research

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Interventions and Management

1. [The First Russian Consensus on the Multilevel Abobotulinumtoxin A Injections in Spastic Forms of Cerebral Palsy].

[Article in Russian; Abstract available in Russian from the publisher]

Zh Nevrol Psikhiatr Im S S Korsakova. 2016;116(11):121-130.

Kurenkov AL, Klochkova OA, Zmanovskaya VA, Fal'kovsky IV, Kenis VM, Vladykina LN, Krasavina DA, Nosko AS, Rychkova LV, Karimova KM, Bursagova BI, Namazova-Baranova LS, Mamed'yarov AM, Kuzenkova LM, Dontsov OG, Ryzhenkov MA, Butorina MN, Pavlova OL, Kharlamova NN, Dankov DM, Levitina EV, Popkov DA, Ryabykh SO, Medvedeva SN, Gubina EB, Agranovich OV, Kiseleva TI, Vasil'eva ON, Zykov VP, Mikhnovich VI, Belogorova TA. Spasticity treatment is one of the key aspects of the contemporary cerebral palsy (CP) rehabilitation that influences on the effectiveness of other methods. The paper presents the first Russian document that unites the recommendations for the BTA treatment of CP and could be used as the guideline for the multilevel injections. The Russian consensus on the multilevel botulinum toxin A (BTA) treatment of spastic CP is based on the international data and the results of national studies. The authors describe typical CP spasticity patterns in the upper and lower extremities, give recommended intervals for the BTA (Abobotulinum toxin A) dosages for the whole injection procedure and for the separate muscles. The method of dosage calculation for functional segments is also described. Attention is paid to the frequency, optimal intervals between the repeated injections and the whole duration of BTA treatment. The authors discuss effectiveness and safety of BTA, factors that potentially influence the results of the injections, including ultrasound and electromyography control, and indications for the continuation and termination of treatment.

PMID: 28091513

2. The management of scoliosis in children with cerebral palsy: a review.

Cloake T, Gardner A.

J Spine Surg. 2016 Dec;2(4):299-309. doi: 10.21037/jss.2016.09.05.

Children who suffer with cerebral palsy (CP) have a significant chance of developing scoliosis during their early years and adolescence. The behavior of this scoliosis is closely associated with the severity of the CP disability and unlike idiopathic scoliosis, it continues to progress beyond skeletal maturity. Conservative measures may slow the progression of the curve, however, surgery remains the only definitive management option. Advances in surgical technique over the last 50 years have provided methods to effectively treat the deformity while also reducing complication rates. The increased risk of surgical complications with these complex patients make decisions about treatment challenging, however with careful pre-operative

optimization and post-operative care, surgery can offer a significant improvement in quality of life. This review discusses the development of scoliosis in CP patient, evaluates conservative and surgical treatment options and assesses post-operative outcome.

PMID: 28097247

3. Three-dimensional lumbar segment movement characteristics during paediatric cerebral palsy gait.

Kiernan D, Malone A, O'Brien T, Simms CK.

Gait Posture. 2017 Jan 3;53:41-47. doi: 10.1016/j.gaitpost.2017.01.001. [Epub ahead of print]

Kinematic analysis of the trunk during cerebral palsy (CP) gait has been well described. In contrast, movement of the lumbar spine is generally ignored. This is most likely due to the complex nature of the spine. As an alternative to using complex sensor protocols, this study modelled the lumbar region as a single segment and investigated characteristic patterns of movement during CP gait. In addition, the impact of functional level of impairment and the relationship with lower lumbar spinal loading were examined. Fifty-two children with CP (26 GMFCS I and 26 GMFCS II) and 26 controls were recruited. A full barefoot 3-dimensional kinematic and kinetic analysis were conducted. Lumbar segment movement demonstrated increased forward flexion for CP children. This movement became more pronounced according to GMFCS level with GMFCS II children demonstrating increases of up to 8°. In addition, a moderate correlation was present between lumbar flexion/extension and L5/S1 sagittal moments ($r=0.427$ in the global frame and $r=0.448$ with respect to the pelvis, $p<0.01$). Children with CP demonstrated increased movement of the lumbar region compared to TD, with movement becoming more excessive as GMFCS level increased. Excessive forward flexion and loading at the lumbar spine were linked. However, the moderate correlation suggests other contributors to increased loading were present. In conclusion, this study is a first step at identifying how lumbar segment movement is altered during CP gait.

PMID: 28088678

4. The Direct Anterior Approach for Complex Primary Total Hip Arthroplasty: The Extensile Acetabular Approach on a Regular Operating Room Table.

Molenaers B, Driesen R, Molenaers G, Corten K.

J Arthroplasty. 2016 Dec 22. pii: S0883-5403(16)30901-9. doi: 10.1016/j.arth.2016.12.016. [Epub ahead of print]

BACKGROUND: The direct anterior approach on a regular operating room table has been reported with low dislocation rates. This might be beneficial for complex primary total hip arthroplasty (THA) such as in patients with cerebral palsy or following femoral or pelvic osteotomies. Extending the approach is often required to overcome problems such as acetabular deformities or severe contractures. METHODS: We retrospectively evaluated the results and complications of 29 patients with 37 complex primary THA in which an extensile approach was used. The extensile approach is described. Functional scores were collected in case the patient was ambulatory independently (n = 17). RESULTS: The average age was 35 years (range 15-85) with a mean follow-up of 39 months (range 12-60). There were 3 (8%) intra-operative and 4 (11%) early post-operative complications (<3 months), of which 3 (8%) were anterior dislocations. Late complications (>3 months) consisted of a fibrous ingrown stem, a socket loosening following a pelvic fracture, and a late hematogenous infection (8%). Seventy-one percent of the complications occurred in the first 18 cases (49%) indicating a learning curve. The mean post-operative Harris Hip Score was 79 (range 56-97). CONCLUSION: Complex THA can be safely conducted through the extensile anterior approach on a regular operating room table with the use of conventional implants, even in cases with a high risk of dislocation.

PMID: 28087159

5. WAKE-up exoskeleton to assist children with Cerebral Palsy: design and preliminary evaluation in level walking.

Patane F, Rossi S, Del Sette F, Taborri J, Cappa P.

IEEE Trans Neural Syst Rehabil Eng. 2017 Jan 11. doi: 10.1109/TNSRE.2017.2651404. [Epub ahead of print]

This paper presents the modular design and control of a novel compliant lower limb multi-joint exoskeleton for the rehabilitation of ankle knee mobility and locomotion of pediatric patients with neurological diseases, such as Cerebral Palsy (CP). The device consists of an untethered powered knee-ankle-foot orthosis (KAFO), addressed as WAKE-up (Wearable Ankle Knee Exoskeleton), characterized by a position control and capable of operating synchronously and synergistically with the human musculoskeletal system. The WAKE-up mechanical system, control architecture and feature extraction are described. Two test benches were used to mechanically characterize the device. The full system showed a maximum value of hysteresis equal to 8.8 % and a maximum torque of 5.6 N m/rad. A Pre-clinical use was performed, without body weight support, by four typically developing children and three children with CP. The aims were twofold: (i) to test the structure under weight-bearing conditions and (ii) to ascertain its ability to provide appropriate assistance to the ankle and the knee during overground walking in a real environment. Results confirm the effectiveness of the WAKE-up design in providing torque assistance in accordance to the volitional movements especially in the recovery of correct foot landing at the start of the gait cycle.

PMID: 28092566

6. [Botulinum toxin A and physical therapy in gait in cerebral palsy].

[Article in Spanish; Abstract available in Spanish from the publisher]

García-Sánchez SF, Gómez-Galindo MT, Guzmán-Pantoja JE.

Rev Med Inst Mex Seguro Soc. 2017 Jan-Feb;55(1):18-24.

BACKGROUND: Cerebral palsy (PCI) is the leading cause of disability in children. Botulinum toxin type A (TBA) is a treatment to improve the function and pattern in the gait, although with a few studies that quantify the improvement. METHODS: Quasi-experimental study was conducted from May 2010 to September 2011, in Integrated Rehabilitation Center, in 36 patients with spastic PCI. Was evaluated: functionality of travel by the scale of Koman, speed of the gait with tone scale of Ashworth and arches of passive mobility, were applied TBA and was sent to 10 sessions of physical therapy, with measurements taken before, the 1st and 4th month. RESULTS: 30 Patients completed the study, between the ages of 2 and 12 years, the majority had improvement in the functionality of the gear, tone, dorsiflexion and abduction of ankles to the motion, which was maintained at 4 months. CONCLUSIONS: Botulinum toxin is an effective treatment to increase the arches of mobility and functionality of the gait of patients with hemiparesis and spastic paraparesis.

PMID: 28092243

7. [A Pediatric Case of Intractable Cerebrospinal Fluid Leakage after Implantation of an Intrathecal Baclofen Pump].

[Article in Japanese]

Morishita A, Aihara H, Nakai T, Adachi M.

No Shinkei Geka. 2017 Jan;45(1):33-38. doi: 10.11477/mf.1436203444.

Intrathecal baclofen(ITB)infusion can offer a useful treatment for severe spasticity;however, numerous complications have been reported. We report a pediatric case in which intractable cerebrospinal fluid(CSF)leakage associated with several inconvenient symptoms arose after implantation of the ITB pump system. A 10-year-old girl with spastic quadriparesis and athetoid cerebral palsy underwent implantation of an ITB delivery system. After discharge, she presented with fluid collection surrounding the pump in the abdomen. The volume of fluid increased and was percutaneously aspirated every other week. However, conservative management failed to relieve fluid collection, which was suspected to be due to CSF leakage. She underwent additional purse-string suture of the point inserted catheter insertion in the back, epidural blood patch, and

subfascial implantation of an anchor. However, none of these therapies proved effective. Progressive enlargement of the accumulated fluid was observed. Furthermore, symptoms of ITB withdrawal appeared. Lumbar-peritoneal shunting was performed, and the subcutaneous fluid collection was relieved postoperatively. The course after shunting was uneventful;hence, the dose of baclofen was stabilized. No recurrence of fluid collection was encountered for two years. Intractable CSF leakage was thought to be caused by wasting, occult hydrocephalus, and twisted movements. This case indicates that care is required in the management of CSF leakage after ITB pump implantation.

PMID: 28100860

8. Factors in the Efficacy, Safety, and Impact on Quality of Life for Treatment of Drooling with Botulinum Toxin Type A in Patients with Cerebral Palsy.

Gonzalez-L MD, Martinez C, Bori Y Fortuny I, Suso-Vergara S.

Am J Phys Med Rehabil. 2017 Feb;96(2):68-76. doi: 10.1097/PHM.0000000000000525.

OBJECTIVE: To assess the efficacy and safety of botulinum toxin A (BoNT-A) injected in both submandibular and parotid versus only in parotid glands as a treatment for drooling in patients with spastic and dyskinetic cerebral palsy (CP), including an assessment of impact on quality of life (QoL) based on items from the International Classification of Functioning, Disability, and Health (ICF) core set. DESIGN: Forty patients with CP 18 years or older (mean, 21.8 years) participated in a prospective, single-center, randomized controlled interventional study. All participants were classified as Gross Motor Function Classification System level III or higher and all had significant drooling as defined in prior studies. One group (group A) was treated with 100 U of BoNT-A, and another group (group B) served as control. In the treatment group, all patients first received combined parotid and submandibular injections, and then parotid injections only. The main outcome variables were a postinjection decrease in the drooling quotient (DQ) of 50% or more, total flow of 30% or more, and QoL as assessed by a set of 10 items related to drooling from the ICF. RESULTS: The proportion of patients who achieved at least 50% reduction in DQ was 45% in group A versus 0.0% in group B; 0.0% ($P = 0.0012$); and of those who achieved at least 30% reduction in total flow was 90% in group A versus 10% in group B ($P < 0.0001$). Within group A, 42.1% of the dyskinetic patients versus 58.0% of the spastic ones showed 50% or better response in DQ, which is not a statistically significant difference ($P = 0.8045$). With regard to ICF questions, group A showed statistically significant improvements in several related items. There did not seem to be a significant difference in overall response for providing parotid-only injections. Additional correlations and uncommon adverse effect experiences are also reviewed. CONCLUSION: Botulinum toxin A injection of the salivary glands is frequently effective and generally safe for the treatment of drooling in patients with either spastic or dyskinetic CP, both in objective measurement of saliva production and subjective symptoms related to the condition. There does not seem to be a significant advantage of injecting both submandibular and parotid glands over injecting parotid glands alone.

PMID: 28099276

9. Lethal mechanisms in gastric volvulus.

Omond KJ, Byard RW.

Med Sci Law. 2017 Jan 1:25802416689764. doi: 10.1177/0025802416689764. [Epub ahead of print]

A 55-year-old wheelchair-bound woman with severe cerebral palsy was found at autopsy to have marked distention of the stomach due to a volvulus. The stomach was viable, and filled with air and fluid and had pushed the left dome of the diaphragm upwards causing marked compression of the left lung with a mediastinal shift to the right (including the heart). There was no evidence of gastric perforation, ischaemic necrosis or peritonitis. Removal of the organ block revealed marked kyphoscoliosis. Histology confirmed the viability of the stomach and biochemistry showed no dehydration. Death in cases of acute gastric volvulus usually occurs because of compromise of the gastric blood supply resulting in ischaemic necrosis with distention from swallowed air and fluid resulting in perforation with lethal peritonitis. Hypovolaemic shock may also occur. However, the current case demonstrates an alternative lethal mechanism, that of respiratory compromise due to marked thoracic organ compression.

PMID: 28094603

10. Do Neurocognitive SCAT3 Baseline Test Scores Differ Between Footballers (Soccer) Living With and Without Disability? A Cross-Sectional Study.

Weiler R, van Mechelen W, Fuller C, Ahmed OH, Verhagen E.

Clin J Sport Med. 2017 Jan 17. doi: 10.1097/JSM.0000000000000407. [Epub ahead of print]

OBJECTIVE: To determine if baseline Sport Concussion Assessment Tool, third Edition (SCAT3) scores differ between athletes with and without disability. DESIGN: Cross-sectional comparison of preseason baseline SCAT3 scores for a range of England international footballers. SETTING: Team doctors and physiotherapists supporting England football teams recorded players' SCAT 3 baseline tests from August 1, 2013 to July 31, 2014. PARTICIPANTS: A convenience sample of 249 England footballers, of whom 185 were players without disability (male: 119; female: 66) and 64 were players with disability (male learning disability: 17; male cerebral palsy: 28; male blind: 10; female deaf: 9). ASSESSMENT AND OUTCOME MEASURES: Between-group comparisons of median SCAT3 total and section scores were made using nonparametric Mann-Whitney-Wilcoxon ranked-sum test. MAIN RESULTS: All footballers with disability scored higher symptom severity scores compared with male players without disability. Male footballers with learning disability demonstrated no significant difference in the total number of symptoms, but recorded significantly lower scores on immediate memory and delayed recall compared with male players without disability. Male blind footballers' scored significantly higher for total concentration and delayed recall, and male footballers with cerebral palsy scored significantly higher on balance testing and immediate memory, when compared with male players without disability. Female footballers with deafness scored significantly higher for total concentration and balance testing than female footballers without disability. CONCLUSIONS: This study suggests that significant differences exist between SCAT3 baseline section scores for footballers with and without disability. Concussion consensus guidelines should recognize these differences and produce guidelines that are specific for the growing number of athletes living with disability.

PMID: 28107219

11. Biofeedback interventions for people with cerebral palsy: a systematic review protocol.

MacIntosh A, Vignais N, Biddiss E.

Syst Rev. 2017 Jan 13;6(1):3. doi: 10.1186/s13643-017-0405-y.

BACKGROUND: Cerebral palsy is a life-long disability that affects motor control and activities of daily living. Depending on the type of cerebral palsy, some individuals may have trouble performing tasks with one or both of their arms and/or legs. Different strategies exist to help develop motor capacity. Biofeedback therapy is a commonly applied rehabilitation strategy. In biofeedback therapy, information about the motor behavior while completing a task is given back to the individual to help improve their performance. This can provide valuable information that would otherwise be unknown to the individual. Biofeedback may also have a unique method of operation in clinical populations, such as people with cerebral palsy. Therefore, it is important to identify the most effective mechanisms for specific populations. This review aims to evaluate the effects of biofeedback interventions that have been used towards improving motor performance and motor learning in people with cerebral palsy. METHODS: Using a customized strategy, MEDLINE, CINAHL, Embase, PsycINFO, Cochrane Central Register of Controlled Trials, SCOPUS, SPORTDiscus, and PEDro databases will be searched. Two independent reviewers will screen titles and abstracts, review full texts for inclusion criteria, and extract data from relevant articles using a standardized template. Quality of evidence and risk of bias will be assessed through the Grading of Recommendations Assessment, Development, and Evaluation (GRADE) methodology. DISCUSSION: Several studies have investigated biofeedback-based interventions for people with cerebral palsy. However, there is a great variety and limited consensus regarding how to implement biofeedback mechanisms. This systematic review will consolidate the current evidence to direct future study and develop effective biofeedback rehabilitation strategies.

PMID: 28086958

12. myTREEHOUSE Self-Concept Assessment: preliminary psychometric analysis of a new self-concept assessment for children with cerebral palsy.

Cheong SK, Lang CP, Hemphill SA, Johnston LM.

Dev Med Child Neurol. 2017 Jan 19. doi: 10.1111/dmcn.13392. [Epub ahead of print]

AIM: To evaluate the preliminary validity and reliability of the myTREEHOUSE Self-Concept Assessment for children with cerebral palsy (CP) aged 8 to 12 years. METHOD: The myTREEHOUSE Self-Concept Assessment includes 26 items divided into eight domains, assessed across three Performance Perspectives (Personal, Social, and Perceived) and an additional Importance Rating. Face and content validity was assessed by semi-structured interviews with seven expert professionals regarding the assessment construct, content, and clinical utility. Reliability was assessed with 50 children aged 8 to 12 years with CP (29 males, 21 females; mean age 10y 2mo; Gross Motor Function Classification System [GMFCS] level I=35, II=8, III=5, IV=1; mean Wechsler Intelligence Scale for Children - Fourth Edition [WISC-IV]=104), whose data was used to calculate internal consistency of the scale, and a subset of 35 children (20 males, 15 females; mean age 10y 5mo; GMFCS level I=26, II=4, III=4, IV=1; mean WISC-IV=103) who participated in test-retest reliability within 14 to 28 days. RESULTS: Face and content validity was supported by positive expert feedback, with only minor adjustments suggested to clarify the wording of some items. After these amendments, strong internal consistency (Cronbach's α 0.84-0.91) and moderate to good test-retest reliability (intraclass correlation coefficient 0.64-0.75) was found for each component. INTERPRETATION: The myTREEHOUSE Self-Concept Assessment is a valid and reliable assessment of self-concept for children with CP aged 8 to 12 years.

PMID: 28101883

13. First words: speech and language interventions in cerebral palsy.

Novak I, Spirit-Jones A, Morgan C.

Dev Med Child Neurol. 2017 Jan 16. doi: 10.1111/dmcn.13383. [Epub ahead of print]

[This commentary is on the original article by Chorna et al.]

PMID: 28090650

14. Long-time sickness absence among parents of pre-school children with cerebral palsy, spina bifida and down syndrome: a longitudinal study.

Brekke I, Früh EA, Kvarme LG, Holmstrøm H.

BMC Pediatr. 2017 Jan 18;17(1):26. doi: 10.1186/s12887-016-0774-8.

BACKGROUND: Taking care of a child with special needs can be draining and difficult and require a lot of parental time and resources. The present study investigated the long-term sickness absence of parents who have children with spina bifida, cerebral palsy and Down syndrome compared to that of parents without a child with special needs. METHODS: The sample consisted of primiparae women who gave birth between 2001 and 2005 and the fathers of the children (N = 202,593). Data were obtained from the Medical Birth Registry of Norway (MBRN), which is linked to the Central Population Register, education and income registries and Historical Event Database (FD-Trygd) of Statistics Norway (SSB). The linkage data provide longitudinal data, together with annual updates on children and their parents. Statistical analyses were performed using difference-in-difference (DD) study design. RESULTS: Caring for a child with special needs affected maternal sickness absence, particularly in the first year after the birth. The level of sickness absence of mothers caring for a child with spina bifida and cerebral palsy was greater than that of mothers caring for a child with Down syndrome. In contrast, the sickness absence of fathers caring for a child with special needs was, on average, comparable to that of fathers without a special-needs child in the post-birth period. CONCLUSIONS: Caring for a child with special needs affected the long-term sickness absence of mothers but not fathers. The findings indicate that the burden of care in the case of children with special needs falls especially on the mother.

PMID: 28100193

15. Family adaptation to cerebral palsy in adolescents: A European multicenter study.

Guyard A, Michelsen SI, Arnaud C, Fauconnier J.

Res Dev Disabil. 2017 Feb;61:138-150. doi: 10.1016/j.ridd.2016.11.010. Epub 2017 Jan 10.

BACKGROUND AND AIM: Factors promoting family adaptation to child's disability are poorly studied together. The aim of the study was to describe the family adaptation to disability and to identify determinants associated with using a global theoretical model. MATERIALS AND METHODS: 286 families of teenagers [13-17 years] with cerebral palsy (CP) from 4 European disability registers were included and visited at home. Face to face interviews were performed in order to measure parental distress, perceived impact in various dimensions of family life, family resources and stressors. Relationships were modelled with structural equations. RESULTS: 31.8% of parents living with an adolescent with CP showed clinically significant high stress requiring professional assistance. The main stressors were the level of motor impairment and behavioural disorders in adolescent. A good family functioning was the best protective factor. Respite in care and a parents' positive attitude were significantly related to less parental distress. Material support, socioeconomical level, marital status or parental qualifications did not appear to be significant protector factors. CONCLUSIONS: Particular attention must be paid not only on physical condition but also on adolescent psychological problems to improve family adaptation. Families at risk of experiencing severe distress should be targeted early and proactive caregiver interventions on the whole family should be performed. WHAT THIS PAPER ADDS: Family is a dynamic system: facing disability, it tries to recover its balance with available resources and its perception of the situation. Literature highlights potential stressors and protecting factors that could affect the disabled child's family adaptation but few papers study a global model including most of these factors. This study validated a global theoretical model of family adaptation to disability at adolescence. It identified behaviour disorders and motor impairment level as main stressors, family functioning as the largest protecting factors, and equipment and financial support as non significant protective factors.

PMID: 28087202

Prevention and Cure

16. MRI Patterns of brain injury and neurodevelopmental outcomes in neonates with severe anaemia at birth.

Loureiro B, Martinez-Biarge M, Foti F, Papadaki M, Cowan FM, Wusthoff CJ.

Early Hum Dev. 2017 Jan 17;105:17-22. doi: 10.1016/j.earlhumdev.2017.01.001. [Epub ahead of print]

AIMS: To define patterns of brain injury and associated neurodevelopmental outcomes in infants with severe neonatal anaemia. METHODS: We studied 20 infants with severe anaemia at birth (haemoglobin<7g/dL). Clinical details were analysed for causes of anaemia and co-morbidities. All had early brain magnetic resonance imaging (MRI) scans, which were reviewed for injury pattern. Neurodevelopmental outcomes were assessed at a median age of 24months. RESULTS: The aetiology of the anaemia was feto-maternal haemorrhage in 17 and antepartum haemorrhage in 3 infants. The predominant site of injury was the white matter, which was affected in all infants, with differing grades of severity and with cystic evolution in 45%. Only one infant showed an injury pattern typical of an acute severe hypoxic-ischaemic insult. Outcomes correlated closely to the severity of MRI findings. Cerebral palsy was seen only with the most severe neuroimaging patterns (n=6). Global developmental delay, learning or behavioural problems and seizures were common with moderate injury. Visual impairment occurred, particularly with posterior injury. Microcephaly developed in 45%. INTERPRETATION: Severe neonatal anaemia at birth was associated with a white matter predominant pattern of injury, the severity of which was related to neurodevelopmental outcomes. Early MRI and long-term follow-are advisable following severe neonatal anaemia.

PMID: 28107673

17. Fidgety movements in infants born very preterm: predictive value for cerebral palsy in a clinical multicentre setting.

Datta AN, Furrer MA, Bernhardt I, Hüppi PS, Borradori-Tolsa C, Bucher HU, Latal B, Grunt S, Natalucci G; GM Group.

Dev Med Child Neurol. 2017 Jan 19. doi: 10.1111/dmcn.13386. [Epub ahead of print]

AIM: This study assessed predictive values of fidgety movement assessment (FMA) in a large sample of infants born very preterm for developmental abnormalities, in particular for cerebral palsy (CP) at 2 years in an everyday clinical setting. METHOD: This is a multicentre study of infants born preterm with gestational age lower than 32.0 weeks. FMA was performed at 3 months corrected age; neurodevelopment (Bayley Scales of Infant Development, 2nd edition) and neurological abnormalities were assessed at 2 years. Predictive values of FMA for the development of CP were calculated and combined with abnormalities at cerebral ultrasound. RESULTS: Five hundred and thirty-five infants (gestational age 28.2wks [standard deviation 1.3wks]) were included. Eighty-one percent showed normal fidgety movements and 19% atypical (82 absent, 21 abnormal) fidgety movements. Absent fidgety movements predicted CP at 2 years with an odds ratio (OR) of 8.9 (95% confidence interval [CI] 4.1-17.0), a combination of atypical fidgety movements and major brain lesion on cerebral ultrasound predicted it with an OR of 17.8 (95% CI 5.2-61.6). Mean mental developmental index of infants with absent fidgety movements was significantly lower (p=0.012) than with normal fidgety movements. INTERPRETATION: Detection of infants at risk for later CP through FMA was good, but less robust when performed in a routine clinical setting; prediction improved when combined with neonatal cerebral ultrasound.

PMID: 28102574

18. Children with motor impairment related to cerebral palsy: Prevalence, severity and concurrent impairments in China.

He P, Chen G, Wang Z, Guo C, Zheng X.

J Paediatr Child Health. 2017 Jan 17. doi: 10.1111/jpc.13444. [Epub ahead of print]

AIM: Cerebral palsy (CP) is the most common cause of motor impairment in childhood. This study aimed to examine the prevalence, severity and concurrent impairments of CP-related motor impairment among Chinese children. METHODS: Children with CP-related motor impairment aged 0-17 years were identified through a national population-based survey based on World Health Organization International Classification of Functioning, Disability and Health. Logistic regression models allowing for weights were used to examine individual and family factors in relation to CP-related motor impairment. RESULTS: The weighted prevalence of CP-related motor impairment was 1.25 per 1000 children (95% confidence interval (CI): 1.16, 1.35) in China. Male children, children in multiples and in families where adults suffered from CP, were more likely to be affected by CP-related motor impairment. For mild, moderate, severe and extremely severe groups of motor impairment, weighted proportions of CP were 14.12% (95%CI: 11.70, 16.95), 20.35% (95%CI: 17.48, 23.56), 27.44% (95%CI: 24.25, 30.87) and 38.09% (95%CI: 34.55, 41.76), respectively; and weighted proportions of concurrent visual, hearing and cognitive impairment were 5.00% (95%CI: 3.59, 6.91), 6.98% (95%CI: 5.34, 9.08) and 71.06% (95%CI: 67.57, 74.31), respectively. CONCLUSIONS: Gender, multiple births and family adults with CP were significantly associated with CP-related motor impairment in Chinese children. Proportions of CP and concurrent impairments that increased with severity of motor impairment were observed.

PMID: 28094881