Cerebral Palsy Alliance

NEWS
Cerebral Palsy Research

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Professor Nadia Badawi
Macquarie Group Foundation Chair of Cerebral Palsy
PO Box 560, Darlinghurst, New South Wales 2010 Australia

Interventions and Management

1. Dev Med Child Neurol. 2013 Jul 30. doi: 10.1111/dmcn.12212. [Epub ahead of print]

Development of the Mini-Assisting Hand Assessment: evidence for content and internal scale validity.

Greaves S, Imms C, Dodd K, Krumlinde-Sundholm L.

Royal Children's Hospital, Melbourne, Vic., Australia; La Trobe University, Melbourne, Vic., Australia.

AIM: To describe the development of the Mini-Assisting Hand Assessment (Mini-AHA) for children with signs of unilateral cerebral palsy (CP) aged 8 to 18 months, and evaluate aspects of content and internal scale validity. METHOD: The ability of the video-recorded Mini-AHA play session to provoke bimanual performance in children with unilateral CP and typical development was evaluated. Original AHA test items were examined for their suitability for younger children and possible new items were generated. Data from 108 assessments of children with unilateral CP (86 children, 53 males, 33 females; mean age 13mo, SD 3mo, range 8-18mo) were entered into a Rasch measurement model analysis to evaluate internal scale validity. A Spearman's correlation analysis explored the relationship between age and ability measures for children with unilateral CP. The frequency of maximum scores in 40 children with typical development (22 males, 18 females; mean age 12mo, SD 3mo) was examined. RESULTS: The Mini-AHA play session provoked bimanual responses in typically developing children 99% of the time. Person and item fit criteria established 20 items for the scale. The resultant unidimensional scale also demonstrated excellent discriminative features through high separation reliability. The item calibration values covered the range of person ability measures well. Age was not related to the ability measures for children with unilateral CP (rs =0.178). All children with typical development achieved maximum scores. INTERPRETATION: Accumulated evidence shows that the Mini-AHA validly measures use of the affected hand during bimanual performance for children with unilateral CP aged 8 to 18 months. The Mini-AHA has the potential to be a useful assessment to evaluate functional hand use and the effects of intervention in an age group when potential for change is high.

PMID: 23899017 [PubMed - as supplied by publisher]

2. Neurorehabil Neural Repair. 2013 Jul 30. [Epub ahead of print]

Randomized Trial of Modified Constraint-Induced Movement Therapy With and Without an Intensive Therapy Program in Children With Unilateral Cerebral Palsy.

Klingels K, Feys H, Molenaers G, Verbeke G, Van Daele S, Hoskens J, Desloovere K, De Cock P.

Department of Rehabilitation Sciences, Katholieke Universiteit Leuven, Belgium.

BACKGROUND: Constraint-induced movement therapy (CIMT) has gained emerging evidence and popularity in children with unilateral cerebral palsy (CP). However, many issues remain unanswered regarding the best approach. OBJECTIVE: This study investigated the additional effects of an intensive therapy program to promote hand function combined with home-based modified CIMT (m-CIMT). METHODS: Fifty-one children (mean age 8 years 9 months) were randomized to m-CIMT alone or m-CIMT with intensive therapy (IT). All children had to wear a constraint on the unaffected hand for 1 hour, 5 days/week for 10 weeks. Children in the m-CIMT + IT group also received 3 sessions of 45 minutes weekly of intensive therapy for distal muscle strengthening and hand function, using unimanual and bimanual activities. The Assisting Hand Assessment (AHA) was the primary outcome measure. Secondary outcome measures were muscle tone, strength, Melbourne Assessment, Jebsen-Taylor test, and ABILHAND-Kids questionnaire. Assessments were administered at baseline, after intervention, and at 10-week follow-up. RESULTS: Significant between-group differences in AHA were in favor of the m-CIMT + IT group ($P = .04$). Both groups demonstrated comparable improvements in muscle tone ($P = .002$), strength ($P < .0001$), grip strength ($P = .02$), and unimanual capacity (Melbourne Assessment and Jebsen-Taylor, $P < .0001$). Younger children and children with poorer hand function benefited from both interventions, whereas older children and children with better hand function only benefited from the combined approach. CONCLUSIONS: The combination of m-CIMT with an intensive therapy program on distal hand function and strength enhances the effects of m-CIMT alone for improving bimanual performance.

PMID: 23901061 [PubMed - as supplied by publisher]

3. Dev Med Child Neurol. 2013 Jul 30. doi: 10.1111/dmcn.12219. [Epub ahead of print]

Motor learning in children with hemiplegic cerebral palsy and the role of sensation in short-term motor training of goal-directed reaching.

Robert MT, Guberek R, Sveistrup H, Levin MF.

Integrated Program of Neuroscience, McGill University, Montreal, QC, Canada; Center for Interdisciplinary Research in Rehabilitation (CRIR), Montreal, QC, Canada.

AIM: Our aim was to determine if improved upper limb kinematics in children with cerebral palsy (CP) during a reach-to-grasp task could be retained and transferred to a similar task. We also characterized the relationship between sensation and motor learning. METHOD: We used a prospective, single-participant research design with 16 children (seven males, nine females; mean/median age 8.6/9y; age range 6-11y) with spastic hemiparesis (Manual Ability Classification System levels II-IV). Children were randomly allocated to one of two groups: (1) task-oriented training with or (2) without trunk restraint. The intervention consisted of three 1-hour sessions per week for 5 weeks (total 15h). Evaluations consisted of sensory modalities (tactile threshold, touch, proprioception, stereognosis) and upper limb kinematics during reach-to-grasp of an object located near and far from the body (five assessments: three pre-intervention, immediately post-intervention and 3mo post-intervention). RESULTS: Motor improvements could be retained 3 months after the intervention and transferred to a similar task in children with CP. Proprioception and tactile thresholds were associated with retention of improvements in endpoint velocity ($F2,13 =4.832$, $p=0.027$). INTERPRETATION: Practice of activities aimed at improving upper limb kinematics led to better learning and retention of movement patterns in children with CP. Our results underline the importance of sensation for motor learning in children with CP.

PMID: 23899048 [PubMed - as supplied by publisher]

4. J Child Orthop. 2012 Aug;6(4):313-8. doi: 10.1007/s11832-012-0415-1. Epub 2012 Jul 14.

Anterior distal femoral hemiepiphysiodesis in the treatment of fixed knee flexion contracture in neuromuscular patients.

Al-Aubaidi Z, Lundgaard B, Pedersen NW.

Department of Orthopedics, Odense University Hospital, Soender Boulevard 29, 5000 Odense C, Denmark.

AIM: Patients with neuromuscular diseases such as cerebral palsy (CP) and meningomyelocele (MMC) are prone to develop fixed knee flexion contracture. Distal femoral extension osteotomy allows acute correction of the deformity, but it is an extensive surgical procedure, and the complication rate is rather high. Immobilization can prolong the rehabilitation period, and may even result in deteriorated walking ability. The aim of this retrospective study was to evaluate the results of using anterior hemiepiphysiodesis of the distal femur to treat fixed flexion contracture of the knee. MATERIALS AND METHODS: We studied 21 patients in our department from 2003 to 2009. Mean age was 10 years (5-15). Twelve suffered from MMC, five from CP, two from arthrogryposis, one had an enzyme defect, and one had Down's syndrome. Thirteen patients had a bilateral and eight a unilateral procedure. None of the patients underwent any other procedures. Two staples or 8-plates were inserted using two parapatellar incisions. Nine were operated on with staples and 12 with 8-plates. The plates or staples were removed when the desired effect of full knee extension was achieved or the patient reached skeletal maturity. RESULTS: Mean fixed flexion contracture was 20° (10°-40°). Staples or 8-plates were removed after a mean of 24 (6-42) months. Mean fixed flexion contracture at removal was 10° (0°-30°). Two Complications were seen: one infection and one supracondylar fracture. CONCLUSION: Anterior distal femoral hemiepiphysiodesis using 8-plates or staples seems to be effective for correcting fixed knee flexion deformity in skeletally immature individuals. The complication rate is low (10 %). Our results are comparable to those of Kramer, Klatt, and Stevens. This procedure should be the primary treatment for fixed knee flexion contractures in neuromuscular patients with sufficient remaining growth.

PMID: 23904898 [PubMed] Free PMC Article

5. J Foot Ankle Surg. 2013 Jul 25. pii: S1067-2516(13)00259-7. doi: 10.1053/j.jfas.2013.06.010. [Epub ahead of print]

Long-term Outcome of Planovalgus Foot Surgical Correction in Children with Cerebral Palsy.

Kadhim M, Holmes L Jr, Miller F.

Department of Orthopaedic Surgery, Alfred I. duPont Hospital for Children, Wilmington, DE.

Pes planovalgus deformity results from changes in the anatomic relations among tarsal bones. Foot deformity and pain can affect the patient's ability to ambulate and are common indications for surgery. The present study was a retrospective study aimed at assessing the effectiveness and complications of subtalar fusion and calcaneal lengthening during long-term follow-up in ambulatory children with cerebral palsy. Pedobarographic measurements, ankle range of motion, and radiographic indexes were used to assess the outcome of surgery. The functional abilities of the patients were assessed using the gross motor functional classification system. Pain complaints were reported to evaluate potential risk factors. A total of 24 patients (43 feet) were included, with mean age at surgery of 11 ± 3.2 (range 4.7 to 18.3) years and mean follow-up duration of 10.9 ± 2.7 (range 6.3 to 15.4) years. Of the 43 feet, 15 were treated with calcaneal lengthening (mostly gross motor functional classification system level I and II) and 28 with subtalar fusion (mostly gross motor functional classification system level III and IV). Improvement was observed in both surgery groups during long-term follow-up. The need for additional surgery was observed more among patients with poor ambulation who were treated with subtalar fusion. Young patients who underwent surgery were more likely to develop foot pain. Foot pain was less common among children with poor functional abilities and patients who underwent subtalar fusion. Surgical correction of planovalgus deformity has good outcomes after both subtalar fusion and calcaneal lengthening, with maintenance of the deformity correction during long-term follow-up.

PMID: 23890990 [PubMed - as supplied by publisher]

6. J Pediatr Orthop B. 2013 Sep;22(5):437-439.

Bilateral proximal femur and femoral head regrowth following proximal femoral resection in a child with spastic cerebral palsy.

Ibrahim DA, Choi PD, Skaggs DL.

Children's Orthopaedic Center, Children's Hospital Los Angeles, Los Angeles, California, USA.

This is a case of a child with spastic quadriplegic cerebral palsy who had regrowth of her proximal femurs following bilateral proximal femur resections.

PMID: 23907179 [PubMed - as supplied by publisher]

7. Pediatr Phys Ther. 2013 Jul 29. [Epub ahead of print]

Sedentary Behavior: Implications for Children With Cerebral Palsy.

Innes J, Darrah J.

Edmonton Public School Board (Ms Innes), Edmonton, Alberta, Canada; Department of Physical Therapy (Dr Darrah), Faculty of Rehabilitation Medicine, University of Alberta, Edmonton, Alberta, Canada.

PURPOSE: To review the research associated with sedentary behavior with adults and children in the general population and to discuss the application of this research for children with cerebral palsy. SUMMARY OF KEY POINTS: Increased sedentary behavior and decreased physical activity are independent constructs with different definitions, physiological mechanisms, and health outcomes. The parameters of sedentary behavior developed for children with typical motor abilities may not be valid for children with cerebral palsy. STATEMENT OF CONCLUSIONS: Research to identify measurement tools, health associations, and potential interventions for children with cerebral palsy is needed. RECOMMENDATIONS FOR CLINICAL PRACTICE: Interventions to decrease sedentary behavior differ from current interventions to increase physical activity with children with cerebral palsy. Before designing interventions to decrease sedentary behavior, research is needed to determine valid definitions and measurement approaches for children with cerebral palsy, as those derived for children with typical motor development may have limited application.

PMID: 23900023 [PubMed - as supplied by publisher]

8. Dev Med Child Neurol. 2013 Jul 30. doi: 10.1111/dmcn.12232. [Epub ahead of print]

Anaerobic tests for wheelchair-using children with cerebral palsy: the 'scroll saw' of the exercise test toolbox?

Maher C.

School of Health Sciences, University of South Australia, Adelaide, SA, Australia.

PMID: 23899097 [PubMed - as supplied by publisher]

9. Ortop Traumatol Rehabil. 2013 Jun 28;15(3):253-7. doi: 10.5604/15093492.1058420.

The effect of a hippotherapy session on spatiotemporal parameters of gait in children with cerebral palsy - pilot study.

Manikowska F, Józwiak M, Idzior M, Chen PJ, Tarnowski D.

Department of Pediatric Orthopedics and Traumatology, Poznan University of Medical Sciences, Poland.

Background: Hippotherapy has been shown to produce beneficial effects by improving the most difficult motor functions, such as sitting, running, jumping, coordination, as well as balance and muscle strength in children with motor developmental delays. The aim of this study was to analyze the effect of hippotherapy on spatiotemporal parameters of gait in cerebrally palsied children. Material and methods: 16 ambulatory cerebrally palsied children (GMFCS Level I-III; Female: 10, Male: 6; Age: 5.7-17.5 years old) qualified for hippotherapy were investigated. Basic spatiotemporal parameters of gait, including walking speed, cadence, step length, stride length and the left-right symmetry, were collected using a three-dimensional accelerometer device (DynaPort MiniMod) before and immediately after a hippotherapy session. The Wilcoxon test was used to verify the differences between pre- and post-session results. Results: Changes of walking speed were statistically significant. With the exception of step length, all spatiotemporal parameters improved, i.e. were closer to the respective reference ranges after the session. However, these changes were not statistically significant. Conclusion: One session of hippotherapy may have a significant effect on the spatiotemporal parameters of gait in cerebrally palsied children.

PMID: 23898002 [PubMed - in process]

10. Arch Phys Med Rehabil. 2013 Jul 23. pii: S0003-9993(13)00545-5. doi: 10.1016/j.apmr.2013.07.010. [Epub ahead of print]

Recipients of Electric Powered Indoor/outdoor Wheelchairs provided by a National Health Service: a cross sectional study.

Frank AO, De Souza LH.

Stanmore Specialist Wheelchair Service, Royal National Orthopaedic Hospital, Brockley Hill, Stanmore, HA7 4LP, UK. Electronic address: andrew.frank1@btinternet.com.

OBJECTIVE: To describe the characteristics, across all ages, of powered wheelchair users and the assistive technology prescribed by a regional specialist wheelchair service DESIGN: Cross-sectional study SETTING: Regional wheelchair service provided to those fulfilling strict eligibility criteria by a National Health Service serving a population of 3 million. PARTICIPANTS: 544 Electric Powered Indoor/outdoor wheelchair (EPIOC) users. INTERVENTIONS: Not applicable MAIN OUTCOME MEASURES: Demographic, clinical/diagnostic details of EPIOC recipients including pain, (kypho)scoliosis and ventilators. Technical features including specialised (adaptive) seating (SS), tilt in space (TIS), and modified control systems. Factors were related to age groups: 1 (0-15), 2 (16-24), 3 (25-54), 4 (55-74) and 5 (75+). RESULTS: 262 men mean age 41.7 (range 8-82, sd 20.7) and 282 women mean age 47.2 (range 7-92, sd 19.7) years were studied. Neurological/neuromuscular conditions predominated (81%) with cerebral palsy (CP) (18.9%) and multiple sclerosis (16.4%). Conditions presenting at birth or during childhood constituted 39%. 99 had problematic pain, 83 a (kypho)scoliosis and 11 used ventilators. SS was provided to 169 users (31%), the majority had CP or muscular dystrophy. TIS was used by 258 (53%). Younger people were more likely to receive TIS than older ones. Only 92 had SS and TIS, mean age 29 (range 8-72, sd 17.8) years. 52 used modified control systems. CONCLUSIONS: The diversity of EPIOC users across age and diagnostic groups is shown. Their complex interrelationships with these technical features of EPIOC prescription are explored. Younger users were more complex due to age-related changes. This study provides outcomes of the EPIOC prescription for this heterogeneous group of very severely disabled people.

PMID: 23891668 [PubMed - as supplied by publisher]

11. Dev Med Child Neurol. 2013 Jul 27. doi: 10.1111/dmcn.12214. [Epub ahead of print]

Reliability and validity of short-term performance tests for wheelchair-using children and adolescents with cerebral palsy.

Verschuren O, Zwinkels M, Obeid J, Kerkhof N, Ketelaar M, Takken T.

Rudolf Magnus Institute of Neuroscience and Center of Excellence for Rehabilitation Medicine, University Medical Center Utrecht and Rehabilitation Center De Hoogstraat, Utrecht, The Netherlands; Rehabilitation Centre De Hoogstraat, Utrecht, The Netherlands; Partner of Shared Utrecht Pediatric Exercise Research (SUPER) Lab,

Utrecht, the Netherlands.

AIM: To investigate the test-retest reproducibility of the Muscle Power Sprint Test (MPST), the 10 × 5-m sprint test, and the arm-cranking Wingate Anaerobic Test (WAnT) in children and adolescents with cerebral palsy (CP). A secondary objective was to assess the construct validity of the MPST. METHOD: Twenty-three participants with spastic CP (mean age 13y 3mo, range 7-18y, SD 3.6y; 18 males, five females, two classified as having spastic unilateral CP, 21 as having spastic bilateral CP) using a manual wheelchair for at least part of the day were recruited and tested in different rehabilitation settings in the Netherlands. Participants were classified as in Gross Motor Function Classification System Expanded and Revised (GMFCS-E&R) levels III and IV. RESULTS: Intraclass correlation coefficients (range 0.93-0.99; 95% confidence interval 0.82-1.0) for all variables indicated highly acceptable reproducibility. Limits of agreement analysis revealed satisfactory levels of agreement. The MPST variables demonstrated very strong significant positive correlations for peak power and mean power from both tests (peak power: r=0.91, p<0.001; mean power: r=0.88, p<0.001). INTERPRETATION: The MPST, the 10 × 5-m sprint test, and the arm-cranking WAnT are reproducible tests for measuring anaerobic performance and agility in adolescents with spastic CP who self-propel a manual wheelchair. The MPST has been shown to be a valid test to measure anaerobic performance in this population.

PMID: 23889498 [PubMed - as supplied by publisher]

12. Clin Rehabil. 2013 Jul 29. [Epub ahead of print]

The effect of feedback respiratory training on pulmonary function of children with cerebral palsy: a randomized controlled preliminary report.

Lee HY, Cha YJ, Kim K.

Department of Rehabilitation Science, The Graduate School, Daegu University, Gyeongsan, Gyeongbuk, Republic of Korea.

Objective: To investigate the effect of feedback respiratory training on pulmonary function of children with cerebral palsy. Design: Randomized controlled experimental study. Setting: Outpatient rehabilitation hospital. Subjects: Twenty-two children with cerebral palsy were randomly assigned to two groups: the experimental group (feedback respiratory training) and the control group. Interventions: Feedback respiratory training and comprehensive rehabilitation therapy were performed by children in the experimental group. Comprehensive rehabilitation therapy was performed by children in the control group. Children in both groups received training three times per week for a period of four weeks. Outcome measures: Forced vital capacity, forced expiratory volume at one second, peak expiratory flow, vital capacity, tidal volume, inspiratory reserve volume and expiratory reserve volume were assessed before and after four weeks training period. Results: Significant improvements in pulmonary function were observed after training in the experimental group ($P < 0.05$). Greater gains were observed in the experimental group than in the control group ($P < 0.05$). Values of forced vital capacity increased by 50%, forced expiratory volume at one second increased by 40% as a result of training in the experimental group. The control group showed no significant changes in pulmonary function after training ($P > 0.05$).Conclusion:Participation in feedback respiratory training resulted in improvement of pulmonary function of children with cerebral palsy.

PMID: 23897949 [PubMed - as supplied by publisher]

13. Masui. 2013 Jul;62(7):855-8.

Use of RRa sensor in a pediatric patient with post-adenotonsillectomy [Article in Japanese]

Niwa Y, Inoue S, Nakamura F, Taga N, Takeuchi M, Konishi H.

Department of Anesthesiology and Critical Care Medicine, Jichi Medical University, Shimotsuke 329-0498.

Rad-87 and RRa are new acoustic monitoring devices which can monitor the respiratory rate. To our knowledge, no studies have reported the RRa sensor used in pediatric patients after surgery. We succeeded in measuring the

respiratory rate with the RRa sensor in the Pediatric Intensive Care Unit(PICU). A 10-year-old boy, 14.5 kg in weight and 119.6 cm in height, with cerebral palsy, mental retardation, epilepsy, and obstructive sleep apnea due to adenoidal and tonsillar hypertrophy, was scheduled for adenotonsillectomy under general anesthesia. Anesthesia was maintained with oxygen, air, sevoflurane (1.5-2.0%), remifentanil (0.1 to 0.5 microg . kg-1. min-1), and fentanyl (4 microg . kg-1). The operating time was 55 minutes, and the duration of anesthesia was 133 minutes. After finishing the surgery, we attached the RRa sensor to his anterior neck and monitored his respiratory rate. Furthermore, RRa could count his respiratory rate, during transfer from the operating room to PICU. The patient was sedated with dexmedetomidine (0.28 microg . kg-1 . min-1) at PICU, and his respiratory rate was accurately measured with the RRa sensor. We hope that Rad-87 and RRa sensors will become useful for measuring the respiratory rate in pediatric patients in the future.

PMID: 23905411 [PubMed - in process]

14. Cochrane Database Syst Rev. 2013 Jul 31;7:CD003943. doi: 10.1002/14651858.CD003943.pub3.

Gastrostomy feeding versus oral feeding alone for children with cerebral palsy.

Gantasala S, Sullivan PB, Thomas AG.

Department of Paediatrics, John Radcliffe Hospital, Headley Way, Headington, Oxford, UK, OX39DU.

BACKGROUND: Children with cerebral palsy can be significantly disabled in terms of their ability to suck, chew and swallow. This can lead to significant impairment in feeding and, eventually, to undernutrition. It can also result in aspiration of food into the lungs. Length of feeding time may be considerably increased and, instead of being an enjoyable experience, mealtimes may be distressing for both child and carer. For children unable to maintain a normal nutritional state feeding by mouth, gastrostomy or jejunostomy tubes are increasingly being used to provide the digestive system with nutrients. A gastrostomy tube is a feeding tube inserted surgically through the abdominal wall directly into the stomach. A jejunostomy feeding tube is inserted into the jejunum, part of the small intestine, either directly or via a previous gastrostomy. Although gastrostomy or jejunostomy placement may greatly facilitate the feeding of children with cerebral palsy, many carers find it very emotionally difficult to accept this intervention. Moreover, the intervention is costly and there is the possibility of complications. The effectiveness and safety of the treatment requires further assessment. This review is an update of one previously published in 2004. OBJECTIVES: To assess the effects of nutritional supplementation given via gastrostomy or jejunostomy to children with feeding difficulties due to cerebral palsy. SEARCH METHODS: For this update, we searched the following databases in July 2012: CENTRAL, MEDLINE , Embase, CINAHL, Science Citation Index, Conference Proceedings Citation Index, LILACS and Zetoc. We searched for trials in ICTRP and Clinicaltrials.gov, and for theses in WorldCat and Proquest Index to Theses. We also contacted other researchers and experts in this field. SELECTION CRITERIA: We looked for randomised controlled trials that compared delivery of nutrition via a gastrostomy or jejunostomy tube compared with oral feeding alone for children up to the age of 16 years. DATA COLLECTION AND ANALYSIS: Screening of search results was undertaken independently by two review authors. No data extraction was possible as there were no included studies. MAIN RESULTS: No trials were identified that met the inclusion criteria for this review. AUTHORS' CONCLUSIONS: Considerable uncertainty about the effects of gastrostomy for children with cerebral palsy remains. A well designed and conducted randomised controlled trial should be undertaken to resolve the current uncertainties about medical management for children with cerebral palsy and physical difficulties in eating.

PMID: 23900969 [PubMed - in process]

15. Res Dev Disabil. 2013 Jul 23;34(10):3202-3210. doi: 10.1016/j.ridd.2013.06.035. [Epub ahead of print]

Development of The Viking Speech Scale to classify the speech of children with cerebral palsy.

Pennington L, Virella D, Mjøen T, da Graça Andrada M, Murray J, Colver A, Himmelmann K, Rackauskaite G, Greitane A, Prasauskiene A, Andersen G, de la Cruz J.

Institute of Health and Society, Newcastle University, Sir James Spence Institute, Royal Victoria Infirmary, Newcastle upon Tyne NE1 4LP, UK. Electronic address: lindsay.pennington@ncl.ac.uk.

Surveillance registers monitor the prevalence of cerebral palsy and the severity of resulting impairments across time and place. The motor disorders of cerebral palsy can affect children's speech production and limit their intelligibility. We describe the development of a scale to classify children's speech performance for use in cerebral palsy surveillance registers, and its reliability across raters and across time. Speech and language therapists, other healthcare professionals and parents classified the speech of 139 children with cerebral palsy (85 boys, 54 girls; mean age 6.03 years, SD 1.09) from observation and previous knowledge of the children. Another group of health professionals rated children's speech from information in their medical notes. With the exception of parents, raters reclassified children's speech at least four weeks after their initial classification. Raters were asked to rate how easy the scale was to use and how well the scale described the child's speech production using Likert scales. Inter-rater reliability was moderate to substantial (k>.58 for all comparisons). Test-retest reliability was substantial to almost perfect for all groups (k>.68). Over 74% of raters found the scale easy or very easy to use; 66% of parents and over 70% of health care professionals judged the scale to describe children's speech well or very well. We conclude that the Viking Speech Scale is a reliable tool to describe the speech performance of children with cerebral palsy, which can be applied through direct observation of children or through case note review.

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16. Epilepsia. 2013 Jul 29. doi: 10.1111/epi.12328. [Epub ahead of print]

Epilepsy and risk of death and sudden unexpected death in the young: A nationwide study.

Holst AG, Winkel BG, Risgaard B, Nielsen JB, Rasmussen PV, Haunsø S, Sabers A, Uldall P, Tfelt-Hansen J.

The Danish National Research Foundation Center for Cardiac Arrhythmia (DARC), Copenhagen, Denmark; Laboratory of Molecular Cardiology, Department of Cardiology, The Heart Centre, Copenhagen University Hospital Rigshospitalet, Copenhagen, Denmark.

PURPOSE: Patients with epilepsy are at increased risk of premature death from all causes and likely also from sudden unexplained death (SUD). Many patients with epilepsy have significant comorbidity, and it is unclear how much of the increased risk can be explained by epilepsy itself. We aimed to chart the incidence of sudden unexpected death in epilepsy (SUDEP) and estimate the risk of death from all causes and SUD conferred by epilepsy independently. METHODS: We conducted a historical cohort study using data from Danish registries and a complete manual review of all death certificates. The population studied consisted of all Danish residents in the age group 1-35 years, in the period 2000-2006 (inclusive), and the main outcome measures were risk of death and SUD. KEY FINDINGS: We identified 33,022 subjects with epilepsy (median follow-up 3.7 years) and 3,001,952 subjects without (median follow-up 7.0 years). Among 685 deaths in the population with epilepsy, we identified 50 cases of definite and probable SUDEP corresponding to an incidence rate of 41.1 (95% confidence interval [CI] 31.6-54.9) per 100,000 person-years. Incidence rates increased with age from 17.6 (95% CI 9.5-32.8) in the age group 1-18 years to 73.8 (95% CI 52.5-103.8) for the age group 24-35 years. Having epilepsy increased the crude risk of death with a hazard ratio (HR) of 11.9 (95% CI 11.0-12.9). When adjusting for sex and comorbidities often encountered in patients with epilepsy (neurologic disease including cerebral palsy, psychiatric disease including mental retardation, and congenital disorders), as well as the Charlson comorbidity score, the HR fell to 5.4 (95% CI 4.9-6.0). The crude HR for SUD was 27.5 (95% CI 18.1-41.8) and fell to 16.3 (95% CI 9.8-26.9) when adjusted for the same covariates as above. SIGNIFICANCE: Epilepsy in and of itself carries a significant risk of premature death and SUD. These findings highlight the potential gains of risk factor modification for the prevention of premature death and SUDEP in patients with epilepsy.

PMID: 23895621 [PubMed - as supplied by publisher]

Prevention and Cure

17. Arch Dis Child Fetal Neonatal Ed. 2013 Jul 29. doi: 10.1136/archdischild-2013-303692. [Epub ahead of print]

Apgar scores at 10 min and outcomes at 6-7 years following hypoxic-ischaemic encephalopathy.

Natarajan G, Shankaran S, Laptook AR, Pappas A, Bann CM, McDonald SA, Das A, Higgins RD, Hintz SR, Vohr BR; for the Extended Hypothermia Subcommittee of the Eunice Kennedy Shriver National Institute of Child Health and Human Development Neonatal Research Network.

Department of Pediatrics, Wayne State University, Detroit, Michigan, USA.

AIM: To determine the association between 10 min Apgar scores and 6-7-year outcomes in children with perinatal hypoxic-ischaemic encephalopathy (HIE) enrolled in the National Institute of Child Health and Human Development Neonatal Research Network (NICHD NRN) whole body cooling randomised controlled trial (RCT). METHODS: Evaluations at 6-7 years included the Wechsler Preschool and Primary Scale of Intelligence III or Wechsler Intelligence Scale for Children IV and Gross Motor Functional Classification Scale. Primary outcome was death/ moderate or severe disability. Logistic regression was used to examine the association between 10 min Apgar scores and outcomes after adjusting for birth weight, gestational age, gender, outborn status, hypothermia treatment and centre. RESULTS: In the study cohort (n=174), 64/85 (75%) of those with 10 min Apgar score of 0-3 had death/disability compared with 40/89 (45%) of those with scores >3. Each point increase in 10 min Apgar scores was associated with a significantly lower adjusted risk of death/disability, death, death/IQ <70, death/ cerebral palsy (CP) and disability, IQ<70 and CP among survivors (all p<0.05). Among the 24 children with a 10 min Apgar score of 0, five (20.8%) survived without disability. The risk-adjusted probabilities of death/disability were significantly lower in cooled infants with Apgar scores of 0-3; there was no significant interaction between cooling and Apgar scores (p=0.26). CONCLUSIONS: Among children with perinatal HIE enrolled in the NICHD cooling RCT, 10 min Apgar scores were significantly associated with school-age outcomes. A fifth of infants with 10 min Apgar score of 0 survived without disability to school age, suggesting the need for caution in limiting resuscitation to a specified duration.

PMID: 23896791 [PubMed - as supplied by publisher]

18. Placenta. 2013 Jul 26. pii: S0143-4004(13)00589-4. doi: 10.1016/j.placenta.2013.07.002. [Epub ahead of print]

The immunological basis of villitis of unknown etiology - Review.

Tamblyn JA, Lissauer DM, Powell R, Cox P, Kilby MD.

Theme of Reproduction, Genes and Development, School of Clinical and Experimental Medicine, University of Birmingham, Birmingham B15 2TG, UK; Academic Department, Centre for Women's and Children's Health, College of Medical and Dental Sciences, University of Birmingham, B15 2TT, UK. Electronic address: jxt577@doctors.org.uk.

Villitis of unknown etiology (VUE) represents a common placental inflammatory lesion, primarily, but not exclusively, identifiable T lymphocytes at term. Despite considerable evidence to contest that this simply represents a benign pathological finding, VUE remains a significantly undervalued diagnosis. Given its association with adverse pregnancy outcomes; including fetal growth restriction, preterm birth, and recurrent pregnancy loss, an increased awareness amongst clinician obstetricians is certainly warranted. The underlying immunopathogenesis of VUE remains uncertain. Despite initial theories that this represents an infectious placental lesion of undiagnosed pathogenic source, a more complex sequence of events involving the "breakdown" of maternal-fetal tolerance is emerging. Characterization of a unique inflammatory phenomenon in which both maternal and fetal T lymphocytes and Höfbauer cells interact has captivated particular research interest and has generated analogies to both the problems of allograft rejection and graft-versus-host disease (GvHD). Within the context of VUE, this review evaluates how disruption of the multidimensional immunological mechanisms underlying feto-maternal tolerance may permit abnormal lymphocyte infiltration into placental villi. We shall review the existing evidence for these

events in VUE and outline areas of certain future interest.

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The Effect of Hypothermia Therapy on Cortical Laminar Disruption following Ischemic Injury in Neonatal Mice.

Kida H, Nomura S, Shinoyama M, Ideguchi M, Owada Y, Suzuki M.

Department of Systems Neuroscience, Graduate School of Medicine Yamaguchi University, Ube, Japan.

Hypothermia has been proposed as a treatment for reducing neuronal damage in the brain induced by hypoxic ischemia. In the developing brain, hypoxic ischemia-induced injury may give rise to cerebral palsy (CP). However, it is unknown whether hypothermia might affect the development of CP. The purpose of this study was to investigate whether hypothermia would have a protective effect on the brains of immature, 3-day old (P3) mice after a challenge of cerebral ischemia. Cerebral ischemia was induced in P3 mice with a right common carotid artery ligation followed by hypoxia (6% O2, 37°C) for 30 min. Immediately after hypoxic ischemia, mice were exposed to hypothermia (32°C) or normothermia (37°C) for 24 h. At 4 weeks of age, mouse motor development was tested in a behavioral test. Mice were sacrificed at P4, P7, and 5 weeks to examine brain morphology. The laminar structure of the cortex was examined with immunohistochemistry (Cux1/Ctip2); the number of neurons was counted; and the expression of myelin basic protein (MBP) was determined. The hypothermia treatment was associated with improved neurological outcomes in the behavioral test. In the normothermia group, histological analyses indicated reduced numbers of neurons, reduced cortical laminar thickness in the deep, ischemic cortical layers, and significant reduction in MBP expression in the ischemic cortex compared to the contralateral cortex. In the hypothermia group, no reductions were noted in deep cortical layer thickness and in MBP expression in the ischemic cortex compared to the contralateral cortex. At 24 h after the hypothermia treatment prevented the neuronal cell death that had predominantly occurred in the ischemic cortical deep layers with normothermia treatment. Our findings may provide a preclinical basis for testing hypothermal therapies in patients with CP induced by hypoxic ischemia in the preterm period.

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