

Monday 25 January 2010

This free weekly bulletin lists the latest research on cerebral palsy (CP), as indexed in the NCBI, PubMed (Medline) and Entrez (GenBank) databases.

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## Interventions

### 1. *Am J Phys Med Rehabil.* 2010 Feb;89(2):99-106.

#### **Effects of weight resistance on the temporal parameters and electromyography of sit-to-stand movements in children with and without cerebral palsy.**

Liao HF, Gan SM, Lin KH, Lin JJ.

School and Graduate Institute of Physical Therapy, College of Medicine, National Taiwan University Hospital, College of Medicine, Taipei, Taiwan, Republic of China.

**OBJECTIVE:** The purpose of this study was to examine the differences in phase durations and electromyography between children with and without cerebral palsy during sit-to-stand movements with weight resistance. **DESIGN:** Fifteen children with cerebral palsy and 15 age-matched children with typical development were recruited. They performed sit-to-stand movements while wearing a vest with four different loads (none, low, moderate, and high). Three phases during sit-to-stand and electromyography of vastus lateralis, gluteus maximus, and medial hamstring were recorded. **RESULTS:** The ascending phase and peak electromyography of vastus lateralis showed a significant interaction between groups and resistance conditions. The children with cerebral palsy took a longer time to stand up than the control group when the load was high ( $P = 0.004$ ). The peak electromyography of vastus lateralis increased with increasing resistance in the control group ( $P < 0.017$ ) but not in children with cerebral palsy. Children with cerebral palsy had a higher cocontraction ratio of the medial hamstring/vastus lateralis than the control group ( $P = 0.001$ ) at all resistance levels. **CONCLUSIONS:** Children with cerebral palsy took a longer time for the task but did not increase agonist contraction as the control group in response to higher loads. Future research is suggested to see whether agonist contraction will be improved with strengthening therapy.

PMID: 20090426 [PubMed - in process]

### 2. *Neurosurgery.* 2010 Feb;66(2):319-22.

#### **Intracranial migration of a fractured intrathecal catheter from a baclofen pump system: case report and analysis of possible causes.**

Maugans TA.

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**OBJECTIVE:** This case report describes a new complication associated with a baclofen pump in which its fractured intrathecal catheter migrated into the patient's ventricular system. A thecal model was developed to evaluate catheter buoyancy in artificial cerebrospinal fluid (CSF). The literature was reviewed to identify possible mechanical and physiologic causes of catheter migration. **CLINICAL PRESENTATION:** A 16-year-old boy with cerebral palsy presented with cervical pain, nausea, and vomiting. He was known to have a nonfunctioning baclofen pump with a 1-piece intrathecal catheter. Imaging studies showed mild ventriculomegaly and a fractured segment of the

intrathecal catheter that extended from the cervical subarachnoid space into the third and fourth ventricles. **INTERVENTION:** The patient had complete symptom resolution after undergoing urgent surgical removal of the catheter segment. Manufacturer analysis of the retrieved catheter revealed a crushed, jagged proximal end. In an experimental thecal sac model, catheter segments in lengths of 0.5 to 89 cm were denser than the artificial CSF and, therefore, did not float in the thecal sac. This finding negates the role of buoyancy in migration. Review of the literature advocates for caudocranial CSF flow patterns as a plausible mechanism for migration. **CONCLUSION:** This complication alerts surgeons to the migration risk of loose intrathecal catheter segments into the ventricular system. CSF flow patterns and mechanical processes, but not material properties of the catheter, are likely causes.

PMID: 20087131 [PubMed - in process]

### 3. Phys Ther. 2010 Jan 21. [Epub ahead of print]

#### **Pediatric Endurance and Limb Strengthening (PEDALS) for Children With Cerebral Palsy Using Stationary Cycling: A Randomized Controlled Trial.**

Fowler EG, Knutson LM, Demuth SK, Siebert KL, Simms VD, Sugi MH, Souza RB, Karim R, Azen SP; for the Physical Therapy Clinical Research Network (PTClinResNet).

Department of Orthopaedic Surgery, Director of Research and Education and Peter William Shapiro Chair, UCLA/Orthopaedic Hospital Center for Cerebral Palsy, University of California at Los Angeles, and Faculty, Tarjan Center at UCLA, 22-70 Rehabilitation Center, 1000 Veteran Ave, Los Angeles, CA 90095-1795 (USA).

**Background:** Effective interventions to improve and maintain strength (force-generating capacity) and endurance are needed for children with cerebral palsy (CP). **Objective:** This study was performed to examine the effects of a stationary cycling intervention on muscle strength, locomotor endurance, preferred walking speed, and gross motor function in children with spastic diplegic CP. **Design:** This was a phase I randomized controlled trial with single blinding. **Setting:** The interventions were performed in community-based outpatient physical therapy clinics. **Outcome assessments** were performed in university laboratories. **Participants:** Sixty-two ambulatory children aged 7 to 18 years with spastic diplegic CP and Gross Motor Function Classification System levels I to III participated in this study. **Intervention and Measurements** Participants were randomly assigned to cycling or control (no-intervention) groups. Thirty intervention sessions occurred over 12 weeks. **Primary outcomes** included peak knee extensor and flexor moments, the 600-Yard Walk-Run Test, the Thirty-Second Walk Test, and the Gross Motor Function Measure sections D and E (GMFM-66). **RESULTS:** Significant baseline-postintervention improvements were found for the 600-Yard Walk-Run Test, the GMFM-66, peak knee extensor moments at 120 degrees /s, and peak knee flexor moments at 30 degrees /s for the cycling group. Improved peak knee flexor moments at 120 degrees /s were found for the control group only, although not all participants could complete this speed of testing. Significant differences between the cycling and control groups based on change scores were not found for any outcomes. **Limitations:** Heterogeneity of the patient population and intrasubject variability were limitations of the study. **CONCLUSIONS:** Significant improvements in locomotor endurance, gross motor function, and some measures of strength were found for the cycling group but not the control group, providing preliminary support for this intervention. As statistical differences were not found in baseline-postintervention change scores between the 2 groups; the results did not demonstrate that stationary cycling was more effective than no intervention. The results of this phase I study provide guidance for future research.

PMID: 20093327 [PubMed - as supplied by publisher]

### 4. Cochrane Database Syst Rev. 2010 Jan 20;(1):CD003469.

#### **Botulinum toxin A as an adjunct to treatment in the management of the upper limb in children with spastic cerebral palsy (UPDATE).**

Hoare BJ, Wallen MA, Imms C, Villanueva E, Rawicki HB, Carey L.

School of Occupational Therapy, La Trobe University, Victorian Paediatric Rehabilitation Service, Monash Medical Centre, 246 Clayton Road, Clayton, Victoria, Australia, 3086.

**BACKGROUND:** Cerebral palsy (CP) is "a group of permanent disorders of the development of movement and pos-

ture causing activity limitation(s) that are attributed to non-progressive disturbance that occurred in the developing fetal or infant brain" (Rosenbaum 2007, p.9). The spastic motor type is the most common form of CP. Therapeutic management may include splinting/casting, passive stretching, facilitation of posture/movement, spasticity-reducing medication and surgery. Botulinum toxin-A (BoNT-A) is now used as an adjunct to these techniques in an attempt to reduce spasticity, improve range of movement and function. OBJECTIVES: To assess the effectiveness of injections of BoNT-A or BoNT-A and occupational therapy in the treatment of the upper limb in children with CP. SEARCH STRATEGY: We searched the Cochrane Controlled Trials Register/CENTRAL (The Cochrane Library, Issue 3, 2008), MEDLINE (1966 to August Week 1 2008), EMBASE (1980 to 2008 Week 28) and CINAHL (1982 to August Week 1 2008). SELECTION CRITERIA: All randomised controlled trials (RCTs) comparing BoNT-A injection or BoNT-A injection and occupational therapy in the upper limb(s) with other types of treatment (including no treatment or placebo) in children with CP. DATA COLLECTION AND ANALYSIS: Two authors using standardised forms extracted the data independently. Each trial was assessed for internal validity and rated for quality using the PEDro scale. Data were extracted and entered into RevMan 5.0.15. MAIN RESULTS: Ten trials met the inclusion criteria. PEDro quality ratings ranged from 6/10 to 10/10. Concentration of BoNT-A ranged from 50U/1.0ml to 200U/1.0ml saline with doses of 0.5U to 16U/kg body weight and total doses of 220 to 410 Units (Botox(R)). A combination of BoNT-A and occupational therapy is more effective than occupational therapy alone in reducing impairment, improving activity level outcomes and goal achievement, but not for improving quality of life or perceived self-competence. When compared with placebo or no treatment, there is moderate evidence that BoNT-A alone is not effective. AUTHORS' CONCLUSIONS: This systematic review found high level evidence supporting the use of BoNT-A as an adjunct to managing the upper limb in children with spastic CP. BoNT-A should not be used in isolation but should be accompanied by planned occupational therapy. Further research is essential to identify children most likely to respond to BoNT-A injections, monitor longitudinal outcomes, determine timing and effect of repeated injections and the most effective dosage, dilution and volume schedules. The most effective adjunct therapies including frequency and intensity of delivery also requires investigation.

PMID: 20091546 [PubMed - in process]

##### 5. J Pediatr Orthop B. 2010 Jan 20. [Epub ahead of print]

#### **Are knee kinematic anomalies in swing due to rectus femoris spasticity different from those due to femoral anteversion in children with cerebral palsy? A quantitative evaluation using 3D gait analysis.**

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Quantitative comparison of gait strategy between stiff knee gait caused by rectus femoris spasticity versus that caused by femoral anteversion was the objective of this study. Twenty-three diplegic were divided into group 1 (excessive femoral anteversion without rectus femoris spasticity) and group 2 (normal femoral anteversion and rectus femoris spasticity). Both groups showed low knee flexion during swing (KMSw), but although group 1 exhibited normal KMSw timing and high hip intrarotation, group 2 presented delayed KMSw timing, with normal hip rotation. Reduced KMSw may be because of two different conditions: excessive femoral anteversion, leading only to KMSw reduction, and rectus femoris spasticity, inducing coexistence of reduced KMSw and its delayed timing.

PMID: 20093956 [PubMed - as supplied by publisher]

##### 6. Dev Med Child Neurol. 2010 Jan 18. [Epub ahead of print]

#### **Lower-extremity selective voluntary motor control in patients with spastic cerebral palsy: increased distal motor impairment.**

Fowler EG, Staudt LA, Greenberg MB.

UCLA/Orthopaedic Hospital Center for Cerebral Palsy, and Tarjan Center for Disabilities at UCLA, David Geffen School of Medicine at UCLA, Los Angeles, CA, USA.

Aim: Multiple impairments contribute to motor deficits in spastic cerebral palsy (CP). Selective voluntary motor con-

trol (SVMC), namely isolation of joint movement upon request, is important, but frequently overlooked. This study evaluated the proximal to distal distribution of SVMC impairment among lower extremity joints. Method: Using a recently developed tool, the Selective Control Assessment of the Lower Extremity (SCALE), we evaluated the SVMC of the hip, knee, ankle, subtalar joint, and toes in a cross-sectional, observational study of 47 participants with spastic, diplegic, hemiplegic, and quadriplegic CP (22 males, 25 females; mean age 11y 9mo, SD 4y 8mo; Gross Motor Function Classification System levels I-IV). Results: Statistically significant decreases in SCALE scores from hip to toes were found using the Page statistical test for trend ( $p < 0.001$ ). Statistically significant differences ( $p < 0.05$ ) were found between all joint pairs, except toes versus subtalar, toes versus ankle, and right ankle versus subtalar joints. Cross-tabulation of score frequencies for all pairs revealed that proximal joint scores were higher or equal to distal ones 81 to 100% of the time. Excluding toes versus subtalar joints, proximal scores exceeded distal ones 94 to 100% of the time. Interpretation: We confirmed increasing proximal to distal SVMC impairment, which may have implications for treatment and research.

PMID: 20089048 [PubMed - as supplied by publisher]

### 7. J Neurosurg. 2010 Jan 15. [Epub ahead of print]

#### **Coupled obturator neurotomies and lidocaine intrathecal infusion to treat bilateral adductor spasticity and drug-refractory pain.**

Carrillo-Ruiz JD, Andrade P, Godínez-Cubillos N, Montes-Castillo ML, Jiménez F, Velasco AL, Castro G, Velasco F.

Functional Neurosurgery, Stereotaxy, and Radiosurgery Unit, Mexico General Hospital;

Spastic diplegia is present in three-fourths of children with cerebral palsy, interfering with gait and frequently accompanied by severe pain. The authors report the case of a 28-year-old woman with history of perinatal hypoxia, who presented with cerebral palsy and severe spastic diplegia (Ashworth Scale Score 4, Tardieu Scale Score 5) and was confined to a wheelchair. She complained of pain in the left hip and knee with mixed neuropathic and somatic components. She consistently rated pain intensity as 10 of 10 on a visual analog scale, and her symptoms were resistant to multiple treatments. The patient underwent selective bilateral adductor myotomies and the implantation of an infusion pump for intrathecal lidocaine application. Postoperative control of pain and spasticity was dramatic (scores of 0 on the Ashworth, Tardieu, and visual analog scales) and persisted throughout a follow-up period of 36 months. This is the first report in the literature of combined selective neurotomies for the treatment of spasticity and chronic lidocaine subarachnoid infusion to treat associated pain. This therapy could represent an alternative to treat spasticity associated with neuropathic and somatic pain.

PMID: 20078194 [PubMed - as supplied by publisher]

### 8. Nippon Rinsho. 2010 Jan;68(1):27-32.

#### **Cerebral palsy [Article in Japanese]**

Kitazumi E.

National Rehabilitation Center for Disabled Children.

Around adolescence and thereafter, many cases with severe cerebral palsy have worsening of respiration and swallowing due to worsening of deformity and other factors. Appropriate management including prone positioning, naso-pharyngeal air-way, and positive pressure breathing with mask and bag or in-ex sufflator is effective for chronic respiratory disorder. Modification of posture or food texture according to the result of video-fluorographic examination may be effective for dysphagia along with intermittent oral catheterization feeding. Gastro-esophageal reflux and stasis in duodenum get worse around this age. Gastro-jejunal feeding with hand-made catheter set is useful. Cervical myelopathy and radiculopathy may be critical in athetoid type of cerebral palsy. Pseudoseizure as expression of conversion disorder should be considered especially around this age.

PMID: 20077786 [PubMed - in process]

**9. Chin J Integr Med. 2009 Dec;15(6):454-7. Epub 2010 Jan 18.****Effect of warming moxibustion on Shenque acupoint for the treatment of acute diarrhea in children with infantile cerebral palsy.**

Zhang HY, Lu SF, Xiao N.

Department of Rehabilitation, Children's Hospital Affiliated to Chongqing Medical University, China.

**OBJECTIVE:** To observe the effect of warming moxibustion on Shenque acupoint (RN8) for the treatment of acute diarrhea in children with infantile cerebral palsy (ICP). **METHODS:** Clinical observation was performed on 60 ICP children suffering from acute diarrhea, who were randomly assigned to two groups equally. The Mox group was treated with warming moxibustion on Shenque acupoint (RN8) and the control group treated with Smecta. The efficacy was evaluated by markedly effective rate and total effective rate after a 6-day treatment, diarrhea arresting time as well as stool examination normalization rate and rotavirus negative reversion rate after a 3-day treatment. **RESULTS:** The total effective rate in the two groups was insignificantly different ( $P>0.05$ ), but the markedly effective rate was significantly higher in the Mox group than in the control group ( $P<0.01$ ); a significant difference was also seen between groups in terms of diarrhea arresting time, stool examination normalization rate and rotavirus negative reversion rate (all  $P<0.05$ ). **CONCLUSION:** Warming moxibustion on Shenque acupoint is an effective treatment for acute diarrhea in ICP children, with advantages of simple manipulation and rapid effect initiation.

PMID: 20082252 [PubMed - in process]

**10. Oper Orthop Traumatol. 2009 Dec;21(6):533-44.****Dorsal release of the ankle with transfer of the posterior tibial tendon in patients with paralytic drop foot [Article in German]**

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**OBJECTIVE :** Realignment of a fixed drop foot to restore gait pattern. **INDICATIONS :** Drop foot due to various neurologic disorders (cerebral spastic palsy, traumatic nerve palsy, Charcot-Marie-Tooth disease) with/without dynamic equinovarus deformity and undisturbed function of the posterior tibial muscle-tendon unit. **CONTRAINDICATIONS :** Osseous deformities leading to drop foot, degenerative joint disease of the ankle, flexion deformity of the midfoot, scar adhesions around the muscle-tendon unit of the posterior tibial muscle, functional deficits of the posterior tibial muscle, ulcers, or soft-tissue damage. **SURGICAL TECHNIQUE :** Prone position: Z-shaped lengthening of the Achilles tendon and open arthrolysis of the posterior ankle and subtalar joint. Supine position: distal tenotomy of the posterior tibial tendon at the navicular. Exposure of the tendon proximally to the medial malleolus. Transposition of the tendon slip along the posterior tibial surface through the interosseous membrane to the distal lower leg. Further rerouting of the tendon beneath the extensor retinaculum to the midfoot. Reinsertion of the posterior tibial tendon to the second or third cuneiform bone. **POSTOPERATIVE MANAGEMENT :** Immobilization of the ankle in neutral position within a plaster or a walker for 6 weeks, followed by a rigid orthosis and physiotherapy. **RESULTS :** Six patients (mean age 52 years) presented with a neurologic fixed drop foot deformity that had developed more than 8.3 years ago. After 12 months, five patients showed a neutral hindfoot position; one patient exhibited a plantar flexion of 5 degrees. Active dorsiflexion was limited in four patients (MRC [Medical Research Council] 2/5) and not visible in one patient. Total range of motion comprised 20 degrees (active) and 35 degrees (passive). During barefoot walking patients showed a regular swing phase of the concerned leg. Patients estimated the overall result as good or excellent.

PMID: 20087715 [PubMed - in process]



**11. J Child Neurol. 2009 Oct;24(10):1230-5.****Pediatric constraint-induced movement therapy is associated with increased contralateral cortical activity on functional magnetic resonance imaging.**

Sutcliffe TL, Logan WJ, Fehlings DL.

Department of Pediatrics, Stanford University School of Medicine, Stanford, California, USA.

The mechanism behind constraint-induced movement therapy (constraint therapy) success is unknown. Study objectives were to evaluate cortical change after modified constraint therapy and explore a novel approach to quantify developmental disregard. Five participants underwent modified constraint therapy. Functional magnetic resonance imaging (MRI) and clinical measures were done pretreatment and posttreatment. Developmental disregard indices were calculated. Four participants showed clinical improvement posttreatment. Functional MRI laterality indices were variable pretreatment and exclusively contralateral among participants posttreatment. The disregard index range was -12.9 to 62.6 among participants. Disregard indices were correlated with change scores after treatment on the Pediatric Motor Activity Log amount of use domain ( $r = .93$ ,  $P = .02$ ), Assisting Hand Assessment ( $r = .93$ ,  $P = .02$ ), and grip strength ( $r = .92$ ,  $P = .03$ ). Study results suggest that a shift to or persistence of contralateral cortical activity for affected hand movement is important for constraint therapy mechanism of action; and developmental disregard may be a predictor of positive response to treatment.

PMID: 19805822 [PubMed - indexed for MEDLINE]

**Epidemiology / Aetiology / Diagnosis & Early Treatment****12. Cochrane Database Syst Rev. 2010 Jan 20;(1):CD001146.****Early (< 8 days) postnatal corticosteroids for preventing chronic lung disease in preterm infants.**

Halliday HL, Ehrenkranz RA, Doyle LW.

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**BACKGROUND:** Chronic lung disease (CLD) remains a major problem in neonatal intensive care units. Persistent inflammation in the lungs is the most likely underlying pathogenesis. Corticosteroids have been used to either prevent or treat CLD because of their potent anti-inflammatory effects. **OBJECTIVES:** To determine if postnatal corticosteroid treatment is of benefit in the prevention of chronic lung disease (CLD) in preterm infants. This review examines the outcome of trials where preterm infants at risk of CLD were given postnatal corticosteroids within the first seven days of life. **SEARCH STRATEGY:** Randomised controlled trials (RCTs) of postnatal corticosteroid therapy were sought from the Cochrane Controlled Trials Register, MEDLINE (1966 - May 2008), hand searching paediatric and perinatal journals, examining previous review articles and information received from practising neonatologists. Authors of all studies were contacted, where possible, to confirm details of reported follow-up studies, or to obtain any information about long-term follow-up where none had been reported. **SELECTION CRITERIA:** Randomised controlled trials of postnatal corticosteroid treatment within the first 7 days of life (early) in high risk preterm infants were selected for this review. Most studies evaluated the use of dexamethasone but we also included studies that assessed hydrocortisone, even if it was used to manage hypotension. **DATA COLLECTION AND ANALYSIS:** Data regarding clinical outcomes including mortality, CLD (including late rescue with corticosteroids, and need for home oxygen therapy), death or CLD, failure to extubate, complications during the primary hospitalisation (including infection, hyperglycaemia, hypertension, pulmonary air leak, patent ductus arteriosus (PDA), severe intraventricular haemorrhage (IVH), periventricular leucomalacia (PVL), necrotising enterocolitis (NEC), gastrointestinal bleeding, intestinal perforation, severe retinopathy of prematurity (ROP), and long-term outcome (including blindness, deafness, cerebral palsy and major neurosensory disability) were abstracted and analysed using RevMan 5. **MAIN RESULTS:** Twenty-eight RCTs enrolling a total of 3740 participants were eligible for inclusion in this review. A meta-analysis of these trials demonstrated significant benefits as regards earlier extubation and decreased risks of CLD at both 28 days and 36 weeks' postmenstrual age (PMA), death or CLD at 28 days and 36 weeks' PMA, PDA and ROP, including severe ROP. There were no significant differences in the rates of neonatal or subsequent mortality, infection, severe IVH, PVL, NEC or pulmonary haemorrhage. Gastrointestinal bleeding and

intestinal perforation were important adverse effects and the risks of hyperglycaemia, hypertension, hypertrophic cardiomyopathy and growth failure were also increased. In the twelve trials that reported late outcomes, several adverse neurological effects were found at follow-up examinations including developmental delay (not defined), cerebral palsy and abnormal neurological examination. However, major neurosensory disability was not significantly increased, either overall in the seven studies where this outcome could be determined, or in the two individual studies where the rates of cerebral palsy or abnormal neurological examination were significantly increased. Moreover, the rates of the combined outcomes of death or cerebral palsy, or of death or major neurosensory disability were not significantly increased. Dexamethasone was the drug used in most studies ( $n = 20$ ); only eight studies used hydrocortisone. In subgroup analyses by type of corticosteroid, most of the beneficial and harmful effects were attributable to dexamethasone; hydrocortisone had little effect on any outcomes except for an increase in intestinal perforation and a borderline reduction in PDA. **AUTHORS' CONCLUSIONS:** The benefits of early postnatal corticosteroid treatment ( $\leq 7$  days), particularly dexamethasone, may not outweigh the known or potential adverse effects of this treatment. Although early corticosteroid treatment facilitates extubation and reduces the risk of chronic lung disease and patent ductus arteriosus, it causes short-term adverse effects including gastrointestinal bleeding, intestinal perforation, hyperglycaemia, hypertension, hypertrophic cardiomyopathy and growth failure. Long-term follow-up studies report an increased risk of abnormal neurological examination and cerebral palsy. However, the methodological quality of the studies determining long-term outcomes is limited in some cases; the surviving children have been assessed predominantly before school age, and no study has been sufficiently powered to detect important adverse long-term neurosensory outcomes. There is a compelling need for the long-term follow-up and reporting of late outcomes, especially neurological and developmental outcomes, among surviving infants who participated in all randomised trials of early postnatal corticosteroid treatment. Hydrocortisone in the doses and regimens used in the reported RCTs has few beneficial or harmful effects and cannot be recommended for prevention of CLD.

PMID: 20091516 [PubMed - in process]

### 13. Cochrane Database Syst Rev. 2010 Jan 20;(1):CD001079.

#### Prophylactic protein free synthetic surfactant for preventing morbidity and mortality in preterm infants.

Soll R, Ozek E.

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**BACKGROUND:** Respiratory distress syndrome (RDS) is caused by a deficiency or dysfunction of pulmonary surfactant. A variety of surfactant products including protein free synthetic surfactant have been developed and tested in the prevention and treatment of RDS. **OBJECTIVES:** To assess the effect of prophylactic administration of protein free synthetic surfactant (SS) on mortality, chronic lung disease and other morbidities associated with prematurity in preterm newborns at risk for developing RDS. Subgroup analysis were planned according to the degree of prematurity, surfactant product and dosage schedule. **SEARCH STRATEGY:** Searches were made of the The Cochrane Library, MEDLINE, OVID, EMBASE, CINAHL from 1966 to 2009. In addition, previous reviews including cross references and abstracts from the Society for Pediatric Research were searched. No language restrictions were applied. **SELECTION CRITERIA:** Randomized and quasi-randomized controlled trials that compared the effect of protein free SS administered to high risk preterm newborns at or shortly after birth in order to prevent RDS, mortality and complications of prematurity. **DATA COLLECTION AND ANALYSIS:** Data regarding clinical outcomes was excerpted from the clinical trials by the reviewers. Data were analyzed according to the standards of the Cochrane Neonatal Review Group. **MAIN RESULTS:** Studies of prophylactic administration of protein free SS note a variable improvement in the respiratory status and a decrease in respiratory distress syndrome in infants who receive prophylactic protein free SS. The meta-analysis supports a decrease in the risk of pneumothorax (typical relative risk 0.67, 95% CI 0.50, 0.90), pulmonary interstitial emphysema (typical relative risk 0.68, 95% CI 0.50, 0.93), and neonatal mortality (typical relative risk 0.70, 95% CI 0.58, 0.85). No differences were seen in the risk of intraventricular hemorrhage, necrotizing enterocolitis, bronchopulmonary dysplasia, retinopathy of prematurity and cerebral palsy. The meta-analysis supports an increase in the risk of patent ductus arteriosus associated with prophylactic SS administration (typical relative risk 1.11, 95% CI 1.00, 1.22), and an increase in the risk of pulmonary hemorrhage (typical relative risk 3.28, 95% CI 1.50, 7.16). **AUTHORS' CONCLUSIONS:** Prophylactic intratracheal administration of protein free synthetic surfactant to infants at risk of developing respiratory distress syndrome has been demonstrated to improve clinical outcome. Infants who receive prophylactic protein free SS have a decreased risk of pneumothorax, a decreased risk of pulmonary interstitial emphysema, and a decreased risk of neonatal mor-

tality. Infants who receive prophylactic protein free SS have an increased risk of developing patent ductus arteriosus and pulmonary hemorrhage.

PMID: 20091513 [PubMed - in process]

#### **14. Cochrane Database Syst Rev. 2010 Jan 20;(1):CD000229.**

##### **Vitamin K prior to preterm birth for preventing neonatal periventricular haemorrhage.**

Crowther CA, Crosby DD, Henderson-Smart DJ.

ARCH: Australian Research Centre for Health of Women and Babies, Discipline of Obstetrics and Gynaecology, The University of Adelaide, Women's and Children's Hospital, 72 King William Road, Adelaide, South Australia, Australia, 5006.

**BACKGROUND:** Preterm infants are at risk of periventricular haemorrhage. This can be a sign of brain damage that might lead to neurodevelopmental abnormalities, including cerebral palsy. It has been suggested that vitamin K might improve coagulation in preterm infants and thereby decrease the risk of periventricular haemorrhage. **OBJECTIVES:** The objective of this review was to assess the effects of vitamin K administered to women at risk of imminent very preterm birth to prevent periventricular haemorrhage and associated neurological injury in the infant. **SEARCH STRATEGY:** We searched the Cochrane Pregnancy and Childbirth Group's Trials Register (31 March 2008). **SELECTION CRITERIA:** Randomised or quasi-randomised trials of vitamin K administered parenterally or orally to women at risk of imminent preterm birth. The primary outcomes were neonatal mortality, neonatal neurological morbidity, as measured by the presence of periventricular haemorrhage (PVH) on ultrasound during the first week of life, and long-term neurodevelopment. Secondary outcomes included other neonatal morbidity and any maternal side effects. **DATA COLLECTION AND ANALYSIS:** Two review authors independently assessed eligibility, trial quality and extracted data. **MAIN RESULTS:** Seven trials were included, involving 607 women. The trials were of variable quality. Antenatal vitamin K was associated with a non-significant reduction in all grades of periventricular haemorrhage (risk ratio (RR) 0.76; 95% confidence interval (CI) 0.54 to 1.06) and a significant reduction in severe PVH (grades 3 and 4) (RR 0.58; 95% CI 0.37 to 0.91) for babies receiving prenatal vitamin K compared with control babies. When the two quasi-randomised trials were excluded, antenatal vitamin K was associated with a non-significant reduction in all grades of PVH (RR 0.87; 95% CI 0.60 to 1.26) and a non-significant reduction in severe PVH (RR 0.82; 95% CI 0.49 to 1.36). There was an unfavourable effect of vitamin K on development as measured by the Bayley Mental Development Index at two years of age, however these results are derived from one trial with many participants lost to follow up. No difference was found in the incidence of other neurodevelopmental abnormalities at paediatric follow up at 18 to 24 months or seven years of age between children born to mothers given vitamin K and children not so exposed. **AUTHORS' CONCLUSIONS:** Vitamin K administered to women prior to very preterm birth has not been shown to significantly prevent periventricular haemorrhages in preterm infants or improve neurodevelopmental outcomes in childhood.

PMID: 20091505 [PubMed - in process]

#### **15. Immunol Res. 2010 Jan 20. [Epub ahead of print]**

##### **Recovery from viral encephalomyelitis: immune-mediated noncytolytic virus clearance from neurons.**

Griffin DE.

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Viral encephalomyelitis is caused by virus infections of neurons in the brain and spinal cord. Recovery is dependent on immune-mediated control and clearance of virus from these terminally differentiated essential cells. Preservation of neuronal function is essential for prevention of neurologic sequelae such as paralysis, seizures and cognitive deficits. Using the model system of Sindbis virus-induced encephalomyelitis in mice, we have shown that immune-mediated clearance of infectious virus from neurons is a noncytolytic process. The major effectors are antibody to the E2 surface glycoprotein produced by B cells, and interferon-gamma produced by T cells. These effectors work in synergy, but neuronal populations differ in their responses to each. Virus is least likely to be cleared from brain



neurons and most likely to be cleared from motor neurons in the cervical and thoracic regions of the spinal cord. Because the infected neurons are not eliminated, viral RNA persists and long-term control is needed to prevent virus reactivation. Virus-specific antibody-secreting cells residing in the nervous system after recovery from infection are likely to be important for long-term control.

PMID: 20087684 [PubMed - as supplied by publisher]

**16. Obstet Gynecol. 2010 Jan;115(1):186; author reply 186.**

**Contemporary usage of obstetric magnesium sulfate: indication, contraindication, and relevance of dose.**

Gonen R.

Comment on:

\* Obstet Gynecol. 2009 Sep;114(3):669-73.

PMID: 20027061 [PubMed - indexed for MEDLINE]