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## Interventions and Management

### 1. Does well-functioning hand constraint induce stress in forced-use therapy for children with unilateral cerebral palsy?

Ko EJ, Sung IY, Yuk JS.

Medicine (Baltimore). 2020 Mar;99(11):e19016. doi: 10.1097/MD.00000000000019016.

This study investigated the stress induced by well-functioning hand constraint in forced-use therapy (FUT) for children with unilateral spastic cerebral palsy (CP). Seventeen children with unilateral spastic CP (mean age 5.8 years) received FUT: 4-week unaffected upper limb immobilization with a short-arm Scotchcast and were encouraged to incorporate it to their daily routines and plays. They were evaluated at pretreatment, immediate post-treatment, and 6 months post-treatment. The Korea-Child Behavior Checklist (K-CBCL) was used to assess the stress degree; box and block test (BBT), Erhardt Developmental Prehension Assessment (EDPA), Quality of Upper Extremity Skill Test (QUEST), and Pediatric Motor Activity Log (PMAL), upper limb function; and Pediatric Evaluation of Disability Inventory (PEDI), daily living activities. In the preschoolers, most scores of K-CBCL tended to increase after FUT; however, there was no significant change in all scale findings after FUT. In the school-aged children, most scores of K-CBCL tended to decrease after FUT; however, there was no significant change in all scale findings after FUT. The findings of the BBT, QUEST, PMAL how often and well subscales significantly improved post-treatment ( $P < .05$ ). The 4-week FUT with well-functioning hand constraint significantly improved the UL function and did not induce emotional and behavioral problems in children with unilateral spastic CP.

PMID: [32176030](#)

### 2. Feasibility of using acceleration-derived jerk to quantify bimanual arm use.

Pan YP, Goodwin B, Sabelhaus E, Peters KM, Bjornson KF, Pham KLD, Walker W, Steele KM.

J Neuroeng Rehabil. 2020 Mar 16;17(1):44. doi: 10.1186/s12984-020-0653-2.

**BACKGROUND:** Accelerometers have become common for evaluating the efficacy of rehabilitation for patients with neurologic disorders. For example, metrics like use ratio (UR) and magnitude ratio (MR) have been shown to differentiate movement patterns of children with cerebral palsy (CP) compared to typically-developing (TD) peers. However, these metrics are calculated from "activity counts" - a measure based on proprietary algorithms that approximate movement duration and intensity from raw accelerometer data. Algorithms used to calculate activity counts vary between devices, limiting comparisons of clinical and research results. The goal of this research was to develop complementary metrics based on raw accelerometer data to analyze arm movement after neurologic injury. **METHOD:** We calculated jerk, the derivative of acceleration, to evaluate arm movement from accelerometer data. To complement current measures, we calculated jerk ratio (JR) as the relative jerk magnitude of the dominant (non-paretic) and non-dominant (paretic) arms. We evaluated the JR distribution between arms and calculated the 50th percentile of the JR distribution (JR50). To evaluate these metrics, we

analyzed bimanual accelerometry data for five children with hemiplegic CP who underwent Constraint-Induced Movement Therapy (CIMT) and five typically developing (TD) children. We compared JR between the CP and TD cohorts, and to activity count metrics. RESULTS: The JR50 differentiated between the CP and TD cohorts (CP =  $0.578 \pm 0.041$  before CIMT, TD =  $0.506 \pm 0.026$ ), demonstrating increased reliance on the dominant arm for the CP cohort. Jerk metrics also quantified changes in arm use during and after therapy (e.g., JR50 =  $0.378 \pm 0.125$  during CIMT,  $0.591 \pm 0.057$  after CIMT). The JR was strongly correlated with UR and MR ( $r = -0.92, 0.89$ ) for the CP cohort. For the TD cohort, JR50 was repeatable across three data collection periods with an average similarity of  $0.945 \pm 0.015$ . CONCLUSIONS: Acceleration-derived jerk captured differences in motion between TD and CP cohorts and correlated with activity count metrics. The code for calculating and plotting JR is open-source and available for others to use and build upon. By identifying device-independent metrics that can quantify arm movement in daily life, we hope to facilitate collaboration for rehabilitation research using wearable technologies.

PMID: [32178695](#)

### 3. Feasibility of a Home-Based Action Observation Training for Children with Unilateral Cerebral Palsy: An Explorative Study.

Beani E, Menici V, Ferrari A, Cioni G, Sgandurra GI.

Front Neurol. 2020 Feb 28;11:16. doi: 10.3389/fneur.2020.00016. eCollection 2020.

Unilateral Cerebral Palsy (UCP), the most frequent form of Cerebral Palsy, usually affects more the upper limb (UL) than the lower limb. Rehabilitation programs are addressed to improve manual abilities and UL use. In recent years, Information and Communication Technology (ICT) has been introduced in rehabilitation to increase treatment opportunities for patients, and also in home-based intervention. Moreover, the discovery of the Mirror Neuron System allowed to insert a new paradigm of treatment that is the Action Observation Training (AOT). The aim of the present study was to investigate the feasibility of a new rehabilitative home-based approach, called Tele-UPCAT (Tele-monitored UPPER Limb Children Action Observation Training), based on the principles of AOT, in a group of Italian children and adolescents with UCP. This investigation was to provide information about the possibility of introducing ICT in telerehabilitation field. Twenty-nine children aged  $11.73 \pm 3.65$  years (range 6.00-18.75) with a diagnosis of UCP participated in the study. They carried out 15 days of training based on the AOT paradigm with Tele-UPCAT system while wearing Actigraphs on both wrists. The feasibility of both training and study design and procedures was assessed through nine criteria taken from existent literature and from a questionnaire designed and realized ad hoc for the purpose, based on standard items of usability and acceptability. All feasibility criteria were met: 80% of training sessions were completed in the planned time and no significant technical issues were found. From the questionnaire, total scores were all above 82.15%, while the four sections obtained the following scores: (i) customization of exercises 80.00%; (ii) acceptability at home, 77.50%; (iii) required effort 80.00%; and (iv) suitability of manual and software 95.00%. No differences were found for age and sex. Tele-UPCAT demonstrated to be feasible as a home-based AOT for children and adolescents with UCP. Trial registration NCT03094455.

PMID: [32180754](#)

### 4. Effects of Selective Dorsal Rhizotomy on Ankle Joint Function in Patients with Cerebral Palsy.

Ates F, Brandenburg JE, Kaufman KR.

Front Pediatr. 2020 Feb 28;8:75. doi: 10.3389/fped.2020.00075. eCollection 2020.

Selective dorsal rhizotomy (SDR) is a neurosurgical technique performed to reduce muscle spasticity and improve motor functions in children with cerebral palsy (CP). In long term, muscle contractures were observed even after SDR. To better understand what is contributing to contracture formation, it is necessary to assess the effects of SDR on joint stiffness. We hypothesized that ankle passive range of motion (ROM) increases and the quasi-stiffness of the ankle joint decreases after SDR in children with CP. This retrospective study included 10 children with diplegic CP (median age 6 years 2 months) who had undergone SDR and for whom gait analysis data were collected 3 months before (Pre-SDR) and 13 months after (Post-SDR) surgery. Additional to clinical measures, ankle quasi-stiffness (the slope of the ankle moment vs. ankle angle plot) was analyzed from gait data. Passive ankle ROM at  $0^\circ$  ( $p < 0.0001$ ) and  $90^\circ$  knee angles ( $p < 0.0001$ ) increased after SDR. Dynamic EMG analysis showed improved phasic gastrocnemius activity ( $p < 0.0001$ ). Equinus gait was improved with the reduction of peak plantar flexion ( $p < 0.0001$ ), as well as an increase in peak dorsiflexion ( $p = 0.006$ ) during walking was observed. Ankle joint quasi-stiffness (Pre- and post-SDR median =  $0.056 \text{ Nm/kg}^\circ$  and  $0.051 \text{ Nm/kg}^\circ$ , and interquartile range:  $0.031 \text{ Nm/kg}^\circ$  and  $0.019 \text{ Nm/kg}^\circ$ , respectively) decreased significantly ( $p = 0.0017$ ) after SDR. Moreover, even though the total time of the gait cycle did not change ( $p = 0.99$ ), the time interval from maximum dorsiflexion to maximum plantar flexion

(Pre- and post-SDR median = 0.125 s and 0.156 s, and interquartile range: 0.153 and 0.253 s, respectively) increased significantly ( $p = 0.0068$ ) after SDR. In conclusion, the decreased ankle quasi-stiffness and the enhanced time interval in the gait cycle due to SDR indicate better motor control and joint stability. Our findings suggest that the long-term contracture formation occurring even after surgical interventions may be related to the stiffening of non-contractile structures.

PMID: [32185154](#)

### **5. An Observational Tool to Assess Activity Limitation in Ambulatory People with Cerebral Palsy When Performing Motor Skills.**

Roldan A, Sarabia JM, Gómez-Marcos G, Reina R.

Int J Environ Res Public Health. 2020 Mar 14;17(6). pii: E1896. doi: 10.3390/ijerph17061896.

Ratios of physical activity and sports participation in people with cerebral palsy (CP) are still low compared with people without a disability. For an adequate and useful practice, physical activity professionals should understand how different types of CP profiles constrain the performance of motor skills that are required during sports practice. This study aims to develop an observation-based assessment tool to evaluate activity limitations in individuals with a moderate level of CP when performing skills requiring jumping, sprinting, change of direction, coordination, and balance. Nineteen observers with different backgrounds from five world regions were recruited for this study, with accredited experience classifying/observing para-athletes with CP. All observers watched videos of 20 international para-athletes with different CP profiles (bilateral spasticity, athetosis/ataxia, unilateral spasticity; all Gross Motor Function Classification System level I) performing 16 motor tasks, and their observations were recorded throughout an ad-hoc data collection instrument. A total of 6080 units of qualitative information were recorded for data analysis. An observation-based tool with qualitative descriptors is derived from data analyses, describing how coordination and balance affected mainly in those with dyskinesia/ataxia, range of movement in those with diplegia, and asymmetries in those with hemiplegia. This tool would help sports practitioners and physical educators to better understand how different CP profiles constrain the performance of motor skills.

PMID: [32183325](#)

### **6. Investigation of the effect of sensorimotor exercises on proprioceptive perceptions among children with spastic hemiplegic cerebral palsy.**

Barati AA, Rajabi R, Shahrbanian S, Sedighi M.

J Hand Ther. 2020 Mar 10. pii: S0894-1130(20)30002-8. doi: 10.1016/j.jht.2019.12.003. [Epub ahead of print]

**STUDY DESIGN:** This is a blinded randomized clinical trial. **INTRODUCTION:** Sensorimotor exercises may be an effective, noninvasive treatment modality for treating patients with pediatric spastic hemiplegic cerebral palsy (CP). **PURPOSE OF THE STUDY:** We aim to evaluate the effect of sensorimotor exercises on the proprioceptive capability among children with spastic hemiplegic CP. **METHODS:** This randomized clinical trial was performed on children with spastic hemiplegic CP. Thirty children aged 8 to 12 years old, with spastic hemiplegic CP, were randomly selected and equally divided into experimental and control groups ( $N = 15$  for each). A joint positioning test was used to measure the patients' baseline proprioceptive ability. The exercise program included sensory and motor exercises which lasted for 8 weeks (three 60-min sessions per week). The data were analyzed by using Welch and paired-sample t-test at the significance level of  $P < .05$ . **RESULTS:** The results indicated that the proprioceptive capability of the upper limb could significantly improve ( $P = .001$ , effect size = 0.41, observed power = 0.99) by using simultaneous exercising of the sensorimotor complex. The mean increased from  $8.53 \pm 1.6$  to  $10.53 \pm 1.19$  in the experimental group, whereas it changed from  $6.66 \pm 3.44$  to  $6.73 \pm 3.15$  in the control group. **DISCUSSION:** In consistent with other studies, the exercises used in the present study enhanced the proprioceptive capability but not sensory performance of the hands of children with hemiplegic. Synchronous sensory and motor training in children with hemiplegic CP may improve the function and organization of the somatosensory cortex and reduce sensory disturbances. Although parents were subjectively satisfied with the outcome of the exercises, such as independency and life style, however these recordings were not measured in this study. **CONCLUSION:** Implementing simultaneous sensorimotor exercises can improve the proprioceptive capability of the hand. Therefore, these exercises can be used in the rehabilitation programs to meet the children's needs with hemiplegic CP.

PMID: [32169259](#)

### 7. The Impact of Gross Motor Function on the Oral Health-Related Quality of Life in Young Adults with Cerebral Palsy in Saudi Arabia.

Chandra Pani S, AlEidan SF, AlMutairi RN, AlAbsi AA, Nasser AlMuhaidib D, Faisal AlSulaiman H, Waleed AlFraih N.

Int J Dent. 2020 Feb 28;2020:4590509. doi: 10.1155/2020/4590509. eCollection 2020.

**BACKGROUND:** There is evidence that gross motor function impacts the health-related quality of life of young adults with cerebral palsy. This study aimed to assess gross motor function, oral health and oral health-related quality of life (OHRQoL), and the relationship between them in young adults with cerebral palsy. **METHODS:** The sample comprised 46 individuals aged between 13 and 17 years with Gross Motor Function Classification Scores (GMFCS) ranging from level I to level III. The individuals and their parents were administered an Arabic version of the child perception questionnaire for adolescents. Parental and child perception scores, DMFT, and gingival index were compared across GMFCS levels using the one-way ANOVA and Scheffe's post hoc test. **RESULTS:** Children with level III GMFCS had a significantly higher child perception score (CPQ) and parental perception score (PPQ) than those with level I or level II scores. There was a significant association between function (GMFCS) and the CPQ score in children ( $p = 0.016$ ). No significant associations were found between the CPQ score and either dental caries (DMFT) or gingival bleeding (GI) scores. Children with GMFCS level III had a significantly higher DMFT ( $p = 0.016$ ). No significant associations were found between the CPQ score and either dental caries (DMFT) or gingival bleeding (GI) scores. Children with GMFCS level III had a significantly higher DMFT ( $p = 0.016$ ). No significant associations were found between the CPQ score and either dental caries (DMFT) or gingival bleeding (GI) scores. Children with GMFCS level III had a significantly higher DMFT. **CONCLUSION:** Motor function has a significant impact on both the oral health and the OHRQoL of adolescents and young adults with spastic cerebral palsy.

PMID: [32190052](#)

### 8. The lived experience of chronic pain and dyskinesia in children and adolescents with cerebral palsy.

McKinnon CT, White JH, Morgan PE, Antolovich GC, Clancy CH, Fahey MC, Harvey AR.

BMC Pediatr. 2020 Mar 17;20(1):125. doi: 10.1186/s12887-020-2011-8.

**BACKGROUND:** To explore the lived experience of chronic pain and dyskinesia in children and adolescents with cerebral palsy. **METHODS:** A convergent parallel mixed methods design was undertaken. First, a quantitative cross-sectional study of participants able to self-report their quality of life was undertaken. This study characterised pain chronicity, intensity, body locations, and quality of life. Second, semi-structured interviews were undertaken with a subset of children and adolescents experiencing chronic pain. **RESULTS:** Twenty-five children and adolescents took part in the cross-sectional study, 23 of whom experienced chronic pain and 13 of moderate intensity. Pain was often located in multiple bodily regions (6/21), with no trends in quality of life outcomes detected. Eight participated in semi-structured interviews, which identified three key themes including 'lives embedded with dyskinesia', 'real world challenges of chronic pain', and 'still learning strategies to manage their pain and dyskinesia'. **CONCLUSIONS:** A high proportion of children and adolescents with cerebral palsy and dyskinesia who were able to self-report experienced chronic pain. The physical and emotional impacts of living with chronic pain and dyskinesia existed along a spectrum, from those with lesser to greater extent of their impacts. Children and adolescents may benefit from targeted chronic pain education and management within bio-psychosocial models.

PMID: [32183802](#)

### 9. An Avulsed Tooth Detected Prior to Insertion of a Laryngeal Mask Airway.

Asahi Y, Hyodo M, Ikai S, Deki I, Aono A, Takasaki Y, Omichi S, Uzawa N, Niwa H.

Anesth Prog. 2020 Spring;67(1):35-38. doi: 10.2344/anpr-66-04-01.

This case report describes the importance of inspecting the hypopharynx via direct laryngoscopy prior to laryngeal mask airway (LMA) insertion during induction of general anesthesia for dental patients with special needs. A 51-year-old man with

cerebral palsy underwent induction of general anesthesia for dental extractions and subsequently was noted to be missing a tooth. Prompt inspection of the airway via direct laryngoscopy revealed the tooth resting within the pharynx, which was subsequently retrieved, prior to insertion of the LMA. Visual inspection of the oropharynx and hypopharynx by laryngoscopy prior to LMA insertion can be useful in preventing accidental aspiration and ingestion of foreign bodies, particularly with certain high-risk patients. Use of laryngoscopy should also be considered if an object is lost or possibly impinging upon the airway.

PMID: [32191503](#)

**10. [Paying attention to the application of imaging examination in strabismus]. [Article in Chinese; Abstract available in Chinese from the publisher]**

Zhang W, Hao R.

Zhonghua Yan Ke Za Zhi. 2020 Mar 11;56(3):166-170. doi: 10.3760/cma.j.issn.0412-4081.2020.03.002.

There are many pathogenic factors of strabismus. In addition to the changes of alignment and ocular movement, there may be abnormal pathways and development of extraocular muscles, abnormalities of orbital and intraorbital connective tissue, paralysis of cranial nerves (oculomotor nerve, trochlear nerve, and abductor nerve), and nuclear and supranuclear lesions, accompanied by other cerebral dysplasia sometimes. In recent years, advances in imaging technology and its application in the professional field of strabismus have made it possible to clearly observe the eye, orbital, intracranial, and innervation changes, which is helpful to clarify the etiology of strabismus and extraocular muscle-related diseases, and to provide a basis for the diagnosis and treatment of strabismus. Strabismus specialists should learn and pay attention to the application of imaging examination, so as to achieve in-depth understanding and accurate treatment. (Chin J Ophthalmol, 2020, 56: 166-170).

PMID: [32187944](#)

**11. The relationship between neuroimaging and motor outcome in children with cerebral palsy: A systematic review - Part A. Structural imaging.**

Franki I, Maillieux L, Emsell L, Peedima ML, Fehrenbach A, Feys H, Ortibus E.

Res Dev Disabil. 2020 Mar 16;100:103606. doi: 10.1016/j.ridd.2020.103606. [Epub ahead of print]

**BACKGROUND:** Conventional Structural Magnetic Resonance Imaging (sMRI) is a mainstay in Cerebral Palsy (CP) diagnosis. **AIMS:** A systematic literature review was performed with the aim to investigate the relationship between structural brain lesions identified by sMRI and motor outcomes in children with CP. **METHODS:** Fifty-eight studies were included. The results were analysed in terms of population characteristics, sMRI (classified according to Krägeloh-Mann & Horber, 2007), gross and fine motor function and their interrelation. **OUTCOMES:** White matter lesions were the most common brain lesion types and were present in 57.8 % of all children with uCP, in 67.0 % of all children with bCP and in 33 % of the group of mixed subtypes. Grey matter lesions were most frequently registered in children with dyskinesia (n = 42.2 %). No structural anomalies visualized by sMRI were reported in 5.7 % of all cases. In all lesion types, an equal distribution over the different gross motor function classification system categories was present. The included studies did not report sufficient information about fine motor function to relate these results to structural imaging. **CONCLUSIONS AND IMPLICATIONS:** The relationship between brain structure and motor outcome needs to be further elucidated in a representative cohort of children with CP, using a more standardized MRI classification system.

PMID: [32192951](#)

**12. Pattern of Cerebral Palsy Among Sudanese Children Less Than 15 Years of Age.**

Salih K.

Cureus. 2020 Mar 10;12(3):e7232. doi: 10.7759/cureus.7232.



**BACKGROUND:** Cerebral palsy (CP) is a non-progressive, everlasting neurological disorder of movement, posture, and physical activities, with a prevalence of 2.2-3.3/1,000. CP is a condition that occurs globally, with a similar prevalence in both developed and undeveloped countries. However, the etiology differs according to the socioeconomic status of the countries. The objective is to determine the pattern and the contributing factors of CP among Sudanese children. **METHODS:** This was a retrospective hospital-based study conducted over a period of three years in a pediatric referral hospital in Khartoum, Sudan. One hundred and eight patients of CP were enrolled, of whom 59 (54.6%) were males and 49 (45.4%) were females. **RESULTS:** Spastic quadriplegic CP was the most common type. Most cases were from lower social classes. Prenatal, antenatal, and unclassified CP were found in 45 (41.7%), 31 (28.7%), 23 (21.3%), and 9 (8.3%) cases, respectively. Birth asphyxia, neonatal jaundice, *Toxoplasma gondii*, rubella virus, cytomegalovirus, herpes simplex virus infections (TORCH), and sepsis (acquired) were the main causative factors. **CONCLUSION:** Spastic quadriplegia is the most common type of CP. Most of the cases had a direct positive relationship with socioeconomic status. The prenatal period was the most common period for the development of CP.

PMID: [32190529](#)

### 13. Self-versus Proxy-Reported Pain in Children with Cerebral Palsy: A Population-Based Registry Study of 3783 Children.

Hägglund G, Burman-Rimstedt A, Czuba T, Alriksson-Schmidt AI.

J Prim Care Community Health. 2020 Jan-Dec;11:2150132720911523. doi: 10.1177/2150132720911523.

**Objective:** To assess how the prevalence of pain in a population-based sample of children and adolescents with cerebral palsy (CP) differ based on self- or proxy reporting. **Methods:** This cross-sectional registry study included 3783 children (58% boys), 1 to 18 years old, enrolled in the Swedish follow-up program for CP. Logistic regression was used to regress source of reporting (self or proxy) on the presence of general pain adjusted for age, sex, Gross Motor Function Classification System (GMFCS), and Communication Function Classification System (CFCS) levels, including marginal effects between source of reporting and adjusted covariates. **Results:** The pain item was self-reported in 45%, proxy-reported in 51%, and information was missing in 3%. Pain was reported in 44% of those who self-reported and in 41% of those who proxy-reported ( $P = .04$ ). The logistic regression showed that the average marginal effects of proxy versus self-reported pain were lower among children at GMFCS level IV (-0.14, 95% CI -0.17 to -0.03) and CFCS level I (-0.09, CI -0.16 to -0.01) and higher at CFCS level III (0.11, CI 0.00-0.22). There were no statistically significant differences in average marginal effects related to age, sex, or the other GMFCS and CFCS levels between proxy and self-reporting. **Conclusions:** Pain was more often reported by those who self-reported. However, after adjusting for age, sex, CFCS level, and GMFCS level, the proportion of reported pain was almost equal between self and proxy-reporting. Assuming that the self- and proxy-reported groups were not significantly different on relevant factors not controlled for the results indicate that presence of pain is equally reported by children and parents.

PMID: [32172660](#)

### 14. Use of health services by preschool-aged children who are developmentally vulnerable and socioeconomically disadvantaged: testing the inverse care law.

Woolfenden S, Galea C, Badland H, Smithers Sheedy H, Williams K, Kavanagh AM, Reddihough D, Goldfeld S, Lingam R, Badawi N, O'Connor M.

J Epidemiol Community Health. 2020 Mar 13. pii: jech-2019-213384. doi: 10.1136/jech-2019-213384. [Epub ahead of print]

**AIM:** The inverse care law suggests that those with the greatest need for services are least likely to receive them. Our aim of this study was to test the inverse care law in relation to the use of health services by children aged 4-5 years in Australia who were developmentally vulnerable and socioeconomically disadvantaged. **METHOD:** Cross-sectional data were collected from the Longitudinal Study of Australian Children birth cohort when the children were aged 4-5 years. Children were grouped according to the combination of developmental vulnerability (yes, no) and socioeconomic disadvantage (lower, higher), resulting in four groups (reference group: developmentally vulnerable and disadvantaged). Multivariate regression was used to examine the impact of the combination of developmental vulnerability and disadvantage on health service use, adjusting for other sociodemographic characteristics. **RESULTS:** 3967 (90%) of children had data on developmental vulnerability at 4-5 years. A third of children (32.6%) were classified as developmentally vulnerable, and 10%-25% of these children had used health services. Non-disadvantaged children who were developmentally vulnerable (middle need) had 1.4-2.0 times greater odds of using primary healthcare, specialist and hospital services; and non-disadvantaged children who were not

developmentally vulnerable (lowest need) had 1.6-1.8 times greater odds of using primary healthcare services, compared with children who were developmentally vulnerable and disadvantaged (highest need). **CONCLUSION:** We found some evidence of the inverse care law. Equity in service delivery remains a challenge that is critically important to tackle in ensuring a healthy start for children.

PMID: [32169955](#)

### **15. Investigation of the relationship between disease severity, caregiver burden and emotional expression in caregivers of children with cerebral palsy.**

Yığman F, Aykın Yığman Z, Ünlü Akyüz E.

Ir J Med Sci. 2020 Mar 17. doi: 10.1007/s11845-020-02214-6. [Epub ahead of print]

**PURPOSE:** The aim of this study was to investigate the relation between the physical problems of children with CP and caregiving burden and the emotional expression characteristics of caregivers. **METHODS:** The study included 144 caregivers of child with cerebral palsy and Zarit Burden Interview (ZBI) and Expressed Emotion Scale (EES) will be applied to the caregivers who will participate in the study. Disease severity of children with cerebral palsy will be evaluated by the Gross Motor Function Classification System (GMFCS) and Manual Ability Classification System (MACS) in children with cerebral palsy. Communication Function Classification System (CFCS) will be used to examine the communication of children with their families. **RESULTS:** Accordingly, a positive, statistically significant, moderate correlation was found between the GMFCS, MACS, and CFCS scores and ZBI scores in patients with cerebral palsy ( $r \sim 0.50$ ;  $p < 0.01$ ). In this study, a positive, statistically significant but weak correlation was found between GMFCS, MACS, and CFCS scores and EES scores in patients with cerebral palsy ( $r \sim 0.30$ ;  $p < 0.01$ ). A statistically significant, moderate correlation was found between ZBI and EES ( $r \sim 0.50$ ;  $p < 0.01$ ). **CONCLUSION:** According to the results of our study, as motor skills and communication skills decrease, especially the burden of caregivers increases and the family's emotional expression processes are related to these variables. We think that in the long-term follow-up of children with CP, it may be useful to provide appropriate psychiatric support by evaluating caregivers appropriately.

PMID: [32185751](#)

### **16. Vesicocutaneous fistula: continent vesicostomy, an easier route for comfortable clean intermittent catheterization.**

Ting CS, Chang PY.

J Pediatr Urol. 2020 Feb 11. pii: S1477-5131(20)30026-7. doi: 10.1016/j.jpuro.2020.02.004. [Epub ahead of print]

**INTRODUCTION:** Clean intermittent catheterization (CIC) through the urethra is the treatment of choice for patients with neurogenic bladder (NGB) or other etiologies that lead to incomplete bladder emptying. However, urethral catheterization can be problematic. Vesicocutaneous fistula (VCF) is a continent catheterizable channel with a low rate of complications. The aim of the study was to evaluate the safety and effectiveness of VCF as a route for CIC. **MATERIAL AND METHODS:** The authors retrospectively reviewed patients who underwent creation of the VCF for bladder drainage from November 2001 to December 2017. Demographics, indication for VCF, pre-operative and postoperative laboratory/radiologic studies, incidence of febrile urinary tract infection (UTI), and adherence to CIC through VCF were examined. **RESULTS:** Vesicocutaneous fistula was created in a total of 20 patients (nine males and 11 females; median age, 13.2 years [range: 3.8 months-22.8 years]). The median follow-up time was 30.5 months (range: 5.9 months-16.9 years). The underlying etiologies that resulted in NGB included spina bifida ( $n = 10$ ), cerebral palsy ( $n = 2$ ), caudal regression syndrome ( $n = 2$ ), and others ( $n = 6$ ). Before creation of the VCF, 13 patients (65%) had either grade  $\geq 3$  unilateral or bilateral hydronephrosis as per the Society for Fetal Urology grading system. Thirteen patients (65%) had experienced at least one febrile UTI the year before the creation of the VCF. At the last follow-up, renal function was improved or stabilized in 14 patients (70%). Fifteen patients (75%) had experienced no febrile UTI in the last 1 year. Upper urinary tract dilatation resolved or improved in 10 patients (77%). The VCF continence rate was 88%. In this study, bladder augmentation or the Mitrofanoff procedure was not performed. During maturation, nine patients (45%) had granuloma; five of those cases subsided within 2 years without any intervention. Five patients had VCF stricture, and only one required revision surgery (5%). **DISCUSSION:** The VCF continence rate was comparable with that of the Mitrofanoff procedure. Adherence to CIC through VCF lowered the rate of UTI and preserved the upper urinary tract. Bladder emptying by CIC through VCF provided the same benefits as those of the Mitrofanoff procedure: extra privacy, social independence, and reduction of parental burden. Although a long maturation stage of 6 months was required, the rate of major complications was low. Most complications were conservatively manageable and seldom required revision surgery.

CONCLUSIONS: Vesicocutaneous fistula is a continent catheterizable conduit, an alternative option for bladder management in patients with NGB who cannot undergo urethral CIC smoothly.

PMID: [32171665](#)

## Prevention and Cure

### **17. Downregulation of transcription factor TCTP elevates microRNA-200a expression to restrain Myt1L expression, thereby improving neurobehavior and oxidative stress injury in cerebral palsy rats.**

He X, Liu Z, Pang Y, Xu W, Zhao L, Li H.

Cell Cycle. 2020 Mar 15:1-15. doi: 10.1080/15384101.2020.1717044. [Epub ahead of print]

Transcription factors have already been proposed to work on some human diseases. Yet the role of translationally controlled tumor protein (TCTP) in cerebral palsy (CP) remains elusive. This study intends to examine the mechanism of TCTP on CP by regulating microRNA-200a (miR-200a). CP models of rats were established referring to the internationally recognized improved hypoxic ischemic encephalopathy modeling method. The neuroethology of rats, ultrastructure and pathological condition in brain tissues of rats were observed through several assays. The expression of TCTP, miR-200a, myelin transcription factor 1-like (Myt1L), tyrosine hydroxylase (TH) and inducible nitric oxide synthase (iNOS) along with apoptosis in brain tissues of rats was detected. The levels of reactive oxygen species (ROS), malondialdehyde (MDA), glutathione (GSH), glutathione peroxidase (GSH-Px), superoxide dismutase (SOD), tumor necrosis factor- $\alpha$  (TNF- $\alpha$ ) and interleukin-6 (IL-6) in brain tissues of rats were determined. The binding site between miR-200a and Myt1L was analyzed. TCTP and Myt1L were overexpressed and miR-200a was under-expressed in CP rats. Elevated miR-200a ameliorated neurobehavior of CP rats and pathological injury in brain tissues. Elevated miR-200a up-regulated TH, GSH, GSH-Px, and SOD levels, down-regulated iNOS, ROS, MDA, TNF- $\alpha$ , and IL-6 levels, and attenuated neuronal apoptosis in brain tissues of CP rats. Myt1L was a target gene of miR-200a. Altogether, our study suggested that diminution of transcription factor TCTP up-regulates miR-200a to limit Myt1L expression, thereby improving neurobehavior and oxidative stress injury in CP rats.

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