

Title: Parent pain catastrophizing predicts post-surgical pain outcome following intrathecal baclofen implant surgery for patients with cerebral palsy.

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Introduction: The aim of this study was to investigate psychosocial family factors related to pain outcomes following Intrathecal Baclofen (ITB) pump implant for patients with cerebral palsy (CP). ITB implant is a frequent procedure for the reduction of muscle spasticity in CP; however, little is known about outcomes specific to pain, particularly in relation to daily care burden and psychosocial variables (parenting stress, pain catastrophizing). We conducted a prospective study examining the relationships between patient and parent level factors and pain outcomes following ITB pump placement.

Method: CP patients scheduled for an initial ITB pump implant surgery at an independent specialty rehabilitation hospital were invited to participate in the study. Following informed consent, participants were 60 individuals with CP (mean age=11.32; range 4-34 years). Follow-up measures were completed by 36 participants (60% response rate) via online survey six months following ITB implant. The majority of participants had a CP diagnosis of quadriplegia (77%) or diplegia (15%) and relied on wheeled mobility (88%; GMFCS level IV-V). Parents completed the Caregiver Priorities and Child Health Index of Life with Disabilities (CPCHILD) questionnaire¹, the Parenting Stress Index (PSI)², and a modified Brief Pain Inventory (BPI; pain interference)³ before and after ITB implant. Parents completed the Pain Catastrophizing Scale for Parents (PCP-P)⁴ at the first research visit. Change in scores following ITB implant was analyzed using Wilcoxon Signed-Rank Test to account for the ordinal nature of the data and because assumptions of normality were violated. Correlational (Pearson's) and multivariate regression analysis were conducted to characterize pre-surgical relationships and pre/post-surgical outcomes in relation to measured psychosocial variables.

Results: CPOCHILD total score did not improve significantly from before (M=54.29, SD = 13.00) to after ITB implant (M=54.91, SD=14.07; p=.19); however, the domain score for personal care/activities of daily living (ADL) improved significantly from before (M=33.70, SD=16.67) to after surgery (M=39.14, SD=12.42; p=.006). Pain interference with activities of daily living (BPI total score) decreased significantly from before (scored 0-10; M=2.99, SD=2.60) to after surgery (M=2.40, SD=2.58; p=.01). Parenting stress did not change significantly following ITB implant. Before surgery, pain interference (BPI total score) significantly correlated with pain catastrophizing (PCS-R; $r=.51$, $p<.001$) and CPOCHILD total score ($r=-.55$, $p<.001$). After surgery, pain interference (BPI total score) significantly correlated with CPOCHILD total score ($r=-.70$, $p<.001$) and the domain score for personal care/activities of daily living ($r=-.55$, $p=.001$). Parent Pain Catastrophizing assessed before surgery significantly predicted CPOCHILD total score ($p=.02$), CPOCHILD domain for personal care/ADL ($p=.003$), and pain interference ($p=.01$) following ITB implant $F(18,72)=4.36$, $p<.001$.

Discussion: In terms of pre/post-surgical pain outcomes, parent ratings of the degree to which pain interfered with activities of daily living (ADL) was improved following ITB implant as were parent reports of burden related to ADL. In terms of pre/post-surgical psychosocial variables, reported levels of parenting stress did not change. Pre-surgical parent reported pain catastrophizing was a strong predictor of post-surgical pain and ADL outcomes. There has been limited investigation of psychosocial factors influencing pain outcomes in developmental disability patient populations despite their recognition as influential moderators of the pain experience. The issue is critical in the context of vulnerable populations with communication and motor impairments for whom self-report is difficult if not impossible. In this setting, parent (proxy) report is the current gold-standard for pain report. There is an urgent need to understand the variables that may influence proxy report. This is the first investigation showing that at least one dimension of surgical pain outcome in CP (pain interference) was predicted by a pre-surgically measured psychosocial variable (parent pain catastrophizing). The construct of pain catastrophizing and how it relates to parents serving as proxy pain reporters for their child with a developmental disability needs further investigation.

References:

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