Title: Parent-reported Pain Intensity Predicts Cognitive Flexibility in Paediatric Patients with Sickle Cell Disease

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Introduction

Pain is a major complication of SCD and has been demonstrated to be associated with negative effects on quality of life and executive function (EF) difficulties. Yet, little is known about whether having severe pain over time impacts EF. The current study aimed to assess whether long-term pain intensity predicts EF or cognitive flexibility, a key aspect of EF, in children living with SCD.

Methods

Caregivers of 29 children between 8-16.99 years of age demographics and the Behavioural Rating Inventory of Executive Function (BRIEF). The Global Executive Composite (GEC) was used in our analyses. Caregivers reported the pain intensity of their child over the past 6 months. Three subtests of the Delis-Kaplan Executive Function System (D-KEFS) evaluated children's cognitive flexibility: the Trail Making, Verbal Fluency, and Colour-Word Interference Test. Data on covariates (Hydroxyurea [HU] or blood transfusion) was collected from the medical record. Four linear regressions examined the relationships between pain intensity, EF, cognitive flexibility, and covariates.

Results

Parent-reported pain intensity significantly predicted Trail Making Test scores (p = .03). Pain intensity trended towards predicting category-switching in the Verbal Fluency Test (p = .06). Pain intensity did not significantly predict the Colour-Word Interference Test (p = .80). Finally, parent-reported pain intensity did not significantly predict BRIEF-GEC (p = .44); however, treatment type was a significant predictor (p = .02); patients treated with HU had worse executive function than those who received blood transfusion.

Discussion

Our results demonstrate that higher pain intensity significantly predicted worse cognitive flexibility in children with SCD. Surprisingly, children living with treated with HU had

worse EF scores than those receiving blood transfusions. These data emphasise that it may be important to investigate specific EF rather than overall cognition in future research involving children living with SCD.