The Influence of Oxidative Stress on Symptom Occurrence, Severity, and Distress During Childhood Leukemia Treatment

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Children with cancer experience multiple symptoms resulting from their disease and treatment. Pain, fatigue, nausea, and vomiting are among the most frequently reported symptoms during childhood cancer treatment (Kestler & LoBiondo-Wood, 2012). Any treatment-related symptom can create significant toxicity leading to complications, therapy-dose reductions, and treatment delays, which compromise long-term survival. Children with cancer report treatment-related symptoms as the worst part of treatment because they create difficulties with completing daily activities and are remembered a long time after treatment ends (Woodgate & Degner, 2003).

To date, most oncology symptom research describes single symptoms related to their occurrence, severity, and distress with limited effort aimed at analyzing factors associated with these symptoms (Henly, Kallas, Klatt, & Swenson, 2003; Van Cleeve et al., 2012). Pediatric oncology researchers are now beginning to focus on the interaction and synergy of multiple symptoms. As this work continues to develop, the combined effect of multiple symptoms will provide a more comprehensive picture of the child’s cancer treatment experience.

Limited research exists on the role oxidative stress biomarkers may play in evaluating the severity of symptoms experienced by pediatric patients with cancer (Pierce, McCabe, White, & Clancy, 2012). This study advances the understanding of childhood cancer treatment symptoms, their interactions, and changes in symptom severity over time. Even more critical to understanding symptom experiences during childhood leukemia treatment is the need for exploring why individual symptom differences occur; this will allow identification of who may be most susceptible to treatment toxicities. The purpose of this study was to explore the influence of the oxidative stress pathway on symptom severity during the first 16 months of childhood leukemia treatment.