



Association between regression and self injury among children with autism



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ABSTRACT

Self injurious behaviors (SIBs) are challenging clinical problems in individuals with autism spectrum disorders (ASDs). This study is one of the first and largest to utilize inpatient data to examine the associations between autism, developmental regression, and SIBs. Medical records of 125 neurobehavioral hospitalized patients with diagnoses of ASDs and SIBs between 4 and 17 years of age were reviewed. Data were collected from medical records on the type and frequency of SIBs and a history of language, social, or behavioral regression during development. The children with a history of any type of developmental regression (social, behavioral, or language) were more likely to have a diagnosis of autistic disorder than other ASD diagnoses. There were no significant differences in the occurrence of self injurious or other problem behaviors (such as aggression or disruption) between children with and without regression. Regression may influence the diagnostic considerations in ASDs but does not seem to influence the clinical phenotype with regard to behavioral issues. Additional data analyses explored the frequencies and subtypes of SIBs and other medical diagnoses in ASDs, with intellectual disability and disruptive behavior disorder found most commonly.

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1. Introduction

Self-injurious behaviors (SIBs) are defined as behaviors that produce physical injury to the individual's own body and are directed toward oneself and result in tissue damage, without suggestion of property destruction or aggression toward others (Tate & Baroff, 1966). SIBs are seen in some children who are typically developing as well as those with developmental disabilities. Common SIBs include self-hitting, head banging, self-biting, and skin picking/scratching. Autism spectrum disorders (ASDs) are a group of neurodevelopmental disorders including autistic disorder, Asperger's disorder, and pervasive developmental disorder not otherwise specified (PDD NOS) that manifest in early childhood, as defined by DSM IV (American Psychiatric Association, 2000). Children with an ASD typically have deficits in communication skills, impaired social interaction, and restricted interests. Studies have reported that 25% to almost 50% of children with autism and ASDs also

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undergo developmental regression in previously acquired language and social skills (Rogers, 2004). Additional symptoms concerning for behavioral regression typically occur between 18 and 24 months, but can also develop later during childhood.

SIBs have been extensively studied in typically developing children as well as children with intellectual disability and other developmental disabilities (Roane, Ringdahl, Vollmer, Whitmarsh, & Marcus, 2007; Schroeder, Rojahn, & Oldenquist, 1991; Schroeder et al., 2001). In typically developing children, harmful behaviors occurred in 46.5% of children from birth to five years according to surveys of 86 parents (Roane et al., 2007). This percentage is quite high, and the authors noted that parents were asked to “provide descriptive information on any target behavior they have observed during their child’s developmental history. . . even if it had only occurred once” (Roane et al., 2007, p. 342). However, these behaviors rarely caused long-term tissue damage and are typically called proto-injurious behaviors (PIBs), as opposed to SIBs (Schroeder et al., 2001). Typically developing children have decreased PIBs over time, with a very small prevalence by the age of 5 (Romanczyk, Kistner, & Plienis, 1982). The prevalence of SIBs in individuals with intellectual disability is estimated at 5–16%, but these persist over the lifespan, unlike PIBs (Schroeder et al., 1991). Risk factors of SIBs in children with intellectual disabilities include severe or profound intellectual disability, autism, and deficits in receptive or expressive communication (McClintock, Hall, & Oliver, 2003). The studies of self injurious behavior in the developmentally disabled population have also used varying definitions for SIBs, making comparisons between studies difficult (Matson & Turygin, 2012).

There are many theories for why SIBs persist in the developmentally disabled population as opposed to typically developing children. One theory from Kennedy (2002) suggests that a typically developing child uses stereotypes in developmental sequences and then adapts the movements to functional behaviors. In contrast, developmentally disabled children have persistence of these behaviors with social reinforcement. A functional analysis of twelve children with developmental delay showed two patterns of self injury: repetitive behavior that caused tissue damage over time or different behaviors similar to typical stereotypes but with high severity (Richman & Lindauer, 2005). In addition, studies show that genetic disorders with a high prevalence of SIBs such as Lesch Nyhan disease are associated with a loss of dopamine in the striatum (Nyhan, 2000), suggesting possible underlying neurobiology and treatment pathways for SIBs.

Children with autism and SIBs mainly have been studied with respect to prognosis, outcomes, and effects of different treatment options. Early identification and treatment of SIBs have been shown to improve behavioral outcomes, whereas chronic SIBs are more difficult to treat than emerging SIBs (Richman, 2008). One study of 222 French children with infantile autism found a 50% occurrence rate of SIBs; risk factors for the co-occurrence included an age of less than 5 years, greater severity of autism, and delayed adaptive skills (Baghdadli, Pascal, Grisi, & Aussiloux, 2003). Previous studies have not looked at the relationship between SIBs and developmental regression in children with ASDs. Regression, associated with autistic disorder as opposed to autism spectrum disorder, may be an important factor in whether or not a child with autism develops self injurious behaviors. When children revert back to younger behaviors during developmental regression, reemergence of stereotypes may lead to increased incidence of SIBs. Similar neurobiological factors may underlie both regression and SIBs. The objective of this study is to examine the associations between types of SIBs and a history of social, behavioral, or language regression in a group of hospitalized patients with neurobehavioral disorders.

2. Methods

This study was a retrospective chart review of inpatient admissions to the Kennedy Krieger Institute (KKI) Neurobehavioral Unit (NBU) in Baltimore, Maryland. The NBU is a medical inpatient unit for children with severe behavioral issues requiring hospitalization and therapy, pharmacological management and medical treatment. The medical records of 125 inpatients between the ages of 4 and 17 years with diagnoses of SIBs and ASDs were reviewed systematically by study personnel (EIL, JY) using data collection forms between 2009 and 2012.

Data collected from the charts included information on the type and frequency of SIBs or other problem behaviors, history of developmental social, behavioral, or language regression, Global Assessment Scale scores, level of cognitive dysfunction, and co-existing medical diagnoses. Data on SIBs included occurrence and frequency of hitting, head-banging, biting, skin picking and pinching, and scratching behaviors. Information on other problem behaviors included elopement, aggression, disruption, dangerous acts, dropping (flopping or sudden falling to the floor), and other (unspecified) problem behaviors. The medical chart behavioral information was originally charted by Behavioral Psychology trainees on staff at the NBU during the time of the admission. Behavioral data were only extracted from the chart by study personnel during the initial admission period, when data were being collected for baseline measures before any behavioral interventions were utilized. History of developmental regression was classified as presence or absence of social, behavioral, or language regression, never having normal development, or unknown. Regression history was obtained from the patient’s admission history on the chart; clinicians at the NBU are trained to collect extensive history about regression timing and duration, as well as additional affected developmental components. All regression information was taken from the admission note. Information about preadmission SIBs was also taken from the admission note, but more detailed frequency information about SIBs was taken from the behavioral therapy notes after admission.

Total patients reviewed include 78 patients in the social regression category, excluding an additional 47 patients with an unknown social regression history; 76 patients in the behavioral regression category, excluding an additional 49 patients with an unknown behavioral regression history; and 102 patients in the language regression category, excluding an additional 23 patients with an unknown language regression history. ASD diagnoses included were autistic disorder, ASDs,

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