# CLINICAL PERSPECTIVES:

## Clinical Case Rounds in Child and Adolescent Psychiatry

### Improved Functioning in Children Diagnosed with Reactive Attachment Disorder after SSRI Therapy

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The process of secure attachment between child and parent during early childhood is requisite for laying the foundation for later normative psychosocial and emotional development. Failure to establish a nurturing and reciprocal attachment between the young child and caretaker can have profound and sometimes irreversible effects on the child's later social emotional development, and may result in the development of Reactive Attachment Disorder (RAD). Moreover, there is literature that describes the potential neurobiological deficits that can occur to the developing brain if a child is exposed to early maltreatment (Schore, 2001). The absence of responsive and consistent caretaking can subject the developing brain to an inordinate amount of physiological stress, leading to increased cortisol production and consequential inefficiencies in the serotonin and the growth-hormone releasing systems. Although neurotransmitter deficiencies are a possible result of early childhood maltreatment, treatment of these children is usually limited to psychosocial interventions that focus on remediating the core attachment deficits and other comorbid conditions. Pharmacological interventions may have efficacy in treating comorbid conditions (e.g., depression, ADHD, PTSD), but there is no literature supporting the use of pharmacological treatment to address the core attachment deficit. This deficit reflects the child's inability to form a secure and enduring relationship with their primary caregiver, which consequently impairs their future social adaptation in the areas of affect regulation, stress modulation and behavioural organization.

The following two case studies will illustrate the use of SSRI therapy in children with RAD who have other comorbid conditions, and discuss these outcomes in the context of early neurobiological and social development.

**Case One**

M.L. is a 12 y.o. female whose clinical presentation and psychosocial history met the DSM-IV-TR criteria for RAD- disinhibited type, Oppositional Defiant Disorder and Learning Disorder NOS. From birth to age 4 years, she was raised by her single mother whose lack of caretaking led to extreme and prolonged emotional and physical neglect. The mother actively abused drugs; moved with the child long distances several times; demonstrated inconsistent, permissive and punitive parenting; and exposed the child to domestic violence, explicit adult sexual activity and frequent marginal caretakers. At age 4, she began placement in 7 different foster homes, all of which had difficulty managing her aggressive and disorganized behavior. At age 5, she was placed with her current adoptive family where she continued to demonstrate significant behavior problems, including recurrent rage episodes, controlling behavior and frequent emotional dysregulation. Over time, she showed no spontaneous affection towards her adoptive parents, and seemed indifferent and uncomfortable about their displays of affection towards her. She indiscriminately sought attention and affection from adult strangers, sometimes touching them inappropriately. She was socially immature, disinterested in interactive play and often engaged in isolative sexualized behavior. Over the next 6 years, she was provided a stable and nurturing home environment, but she remained emotionally distant and lacked interest in forming close relationships with family members and others. Her oppositional behavior remained problematic, and she showed no guilt about her transgressions. Basic deficits in social reasoning and judgment were also evident. During this time, she also received a broad range of mental health services, including pharmacological trials on methylphenidate, clonidine, guanfacine and risperidone. Neither pharmacologic nor psychosocial interventions provided appreciable benefit. At age 11, her medications were discontinued, and there was no remarkable regression in her functioning. She remained extremely oppositional and aggressive. Her emotional attachment to family was negligible, while her affective range was highly constricted and predominately angry.

At age 12, she underwent psychoeducational testing and was found to have average intelligence, but also was diagnosed with a nonverbal learning disability. Although she was not outwardly depressed, a therapeutic trial of sertraline 50mg/day was initiated in an effort to mitigate her moodiness and irritability. There was slight benefit

after two months, and then the dose was advanced to 100mg/day which lead to a dramatic improvement in her mood, affective range and general behavior. Her mood became more outwardly euthymic and normative, and her pervasive anger diminished. Her oppositional and aggressive behavior was greatly reduced, but episodic difficulties in the area of social reasoning and judgment remained evident. More significantly, she demonstrated genuine interest in social activities with her parents and siblings, along with increased respect for their feelings and personal boundaries, all of which had not been observed previously. Although she was not seeking increased affection from her parents, she was more genuinely responsive and appreciative when affection was shown to her. She no longer displayed indiscriminate sociability. There were no signs of relapse after 8 months of treatment.

**Case Two**

R.W. is a 6 y.o. boy whose clinical presentation and psychosocial history met the DSM-IV-TR criteria for RAD-disinhibited type, Oppositional Defiant Disorder and Mood Disorder NOS. From birth to age 3 years, he was raised by various caretakers, including his biological parents and other relatives. All of these households were characteristically chaotic and disorganized, and his level care was quite marginal. He was exposed to frequent emotional and physical neglect, graphic domestic violence and parental alcohol and substance abuse. At age 3.5, he was placed in foster care where he was highly oppositional, and also displayed frequent rage episodes, destructive behavior and aggression. He seemed indifferent and remorseless about his misbehavior. He was extremely clingy and his need for attention from his foster parents appeared insatiable. Although his foster parents consistently showed him genuine warmth and affection, he seemed indifferent about their overtures, unless he could manipulate them for privileges or rewards. He was superficially charming and precocious with strangers, often becoming quite dramatic and would impulsively seek their attention inappropriately. Although he sought opportunities to play with other children, he was typically controlling, manipulative and intrusive. On other occasions, he appeared anxious about possible separation from his foster parents. His outward mood was not classically depressed, but he frequently appeared dysphoric, irritable and angry. There were frequent crying episodes. Over the next few years, the foster parents continued to provide him with a stable and nurturing household, but genuine emotional attachment remained absent.

At age 6, he was started on sertraline 25mg daily to treat his mood issues. Over the next several months his dose of sertraline was gradually increased to 150mg daily. He was also given a provisional diagnosis of ADHD and underwent a trial of mixed amphetamine and dextroamphetamine XR 10mg daily. During this medication trial, he showed no obvious improvement and there was increased irritability and disruptive behavior, which led to the discontinuation of the medication after 2 months. He remained on sertaline which led to remarkable improvement in his mood and behavior. He showed significantly less oppositional behaviors at home and at school; his affect was brighter and his mood more normative; and his anger diminished, along with his irritability and crying episodes. His impulsive attention seeking towards strangers was noticeably decreased. He seemed more genuinely interested in social activities with his parents and other family members, and would spontaneously seek their affection, in contrast to past affection seeking which typically occurred to avoid discipline or gain privileges. His socialization with peers greatly improved, and he was generally respectful, cooperative and appropriate during play activities. Improvement remained evident after 9 months.

**Discussion**

The above cases of pharmacological treatment of RAD reflect an unexpected and relatively prolonged improvement in not only mood and behavior, but in certain aspects of attachment behavior. A closer examination of the neurobiological and neuropsychological effects of early childhood maltreatment offers possible explanations.

It has been established that children who have been subjected to severe and prolonged emotional and physical neglect during the first 2 years of life, while there is rapid and critical brain development, may sustain significant deficits in later brain functioning. Schore (2001) describes the cascade of neurobiological events that can impede normal brain development in the maltreated young child which can result in impaired right brain and corticolimbic functioning, along with inefficiencies in the serotonin and growth hormone-releasing systems. These events can create “relational trauma” which later affects the child’s social emotional functioning in the areas of affect regulation, stress modulation and interpersonal adaptation.

Animal analogue research (primate and rodent studies) has demonstrated how significant bonding deficits can lead to increased cortisol production and consequential deficits in corticolimbic functioning in the developing brain (Sanchez, 2001). Another rodent study showed how early maternal separation resulted in reduced growth hormone production and deficient serotonergic functioning, but this was remedied by providing fluoxetine to the maternally-deprived rodents (Katz et al., 1996). More recent research has shown that that macaque monkeys who have been exposed to deficient early rearing will develop inefficiencies in varied neurotransmitter systems, including serotonergic functioning (Stevens et al., 2009). Other human studies have found hyposecretion of growth hormone in maltreated infants (Frasier and Rallison, 1972).

Some studies have highlighted how severely maltreated children have different and aberrant neurophysiological responses to normal social emotional events. Oxytocin and vasopressin are neuropeptides that are highly associated with complex social affiliative behavior, including attachment, regulation of stress and emotional reactivity. Normal social sensory experiences, such as a parent touching and holding the child during caregiving, will increase levels of these neuropeptides and activate the reward circuitry found in the nucleus accumbens. Children with an early history of severe maltreatment have shown reduced levels of vasopressin during an experimental social physical interaction study with their adoptive mothers, when these levels are expected to rise (Wismer et al., 2005).

Other literature has established how maltreated children can interpret and process anger differently than normal children. When maltreated children are presented experimental facial emotion tasks, they demonstrate increased neurophysiological arousal, cognitive attention and sensitivity to angry faces in comparison to normal controls. Maltreated children also have increased difficulty differentiating normal emotions (e.g., sad, happy, fearful), but show increased arousal and vigilance towards perceived threat (Wismer and Pollack, 2004). In the cases reviewed, both children demonstrated severe oppositionality, angry mood and aggression, in addition to core attachment issues.

The above discussion highlights how early childhood maltreatment can significantly impair developing corticolimbic circuits and serotonenergic functioning. The referenced cases demonstrated significant mood improvement from SSRI therapy, even for the child without depression. This child was also diagnosed with a nonverbal learning disability which implies right hemisphere dysfunction (Rourke, 1995) and corresponds with the prevailing theory that early childhood maltreatment can impair right hemisphere development and serotonergic functioning. More significantly, an unexpected benefit in the areas of attachment and behavior was also evident in both children. Although serotonergic enhancement may have contributed to this improvement, it is unlikely that unitary SSRI therapy would fully remediate the complex developmental problems found in RAD children. In fact, the use of antidepressants in prepubertal children is a controversial issue and current research findings have not supported consistent efficacy (Garland et al., 2009). Therefore, any conclusions about the relationship between SSRI use and the improvements found in the above children must be made with caution until further empirical evidence is established. Moreover, if some degree of efficacy is found, one would speculate that a subset of RAD children, especially those with features of mood dysregulation, would benefit most from SSRI therapy.

**Acknowledgements/Conflict of Interest**

The authors have no financial relationships or conflicts to disclose.

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