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A case of severe adolescent obsessive–compulsive disorder treated with inpatient hospitalization, risperidone and sertraline

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Background: The initial treatment of obsessive–compulsive disorder (OCD) has generally been limited to serotonergic agents, cognitive-behavioral therapy (CBT), or a combination of the two. These findings were supported by the POTS study for OCD in children and adolescents. However, treatment with serotonergic agents or CBT can take several weeks before benefit is seen; severe cases of OCD may require more immediate treatment. *Case report:* The authors present a case of severe OCD in an adolescent that required immediate treatment due to her critical medical condition. The patient's symptoms included not eating or taking medications or fluids by mouth due to fears of contamination. A medical hospitalization was previously required due to dehydration. As treatment with an SSRI would not have quick enough onset and the patient was initially resistant to participating in CBT, the patient was psychiatrically hospitalized and first started on liquid risperidone. After several doses of risperidone, the patient was able to participate in CBT and start sertraline. *Discussion:* The authors discuss the differential diagnosis of such a patient, including the continuum of OCD symptoms and psychotic symptoms. The authors discuss the different treatment options, including the utilization of inpatient psychiatric hospitalization. The authors discuss the potential risks and benefits of using atypical antipsychotics in lieu of benzodiazepines for the initial treatment of severe adolescent OCD. The authors also discuss other current treatment recommendations and rationale for the treatment that was pursued. *Conclusions:* This patient received benefit of her symptoms relatively quickly with psychiatric hospitalization and an atypical antipsychotic. The diagnosis of a psychotic disorder should be considered. These treatment options must be weighed against the risks of atypical antipsychotics, including extrapyramidal symptoms, weight gain, and metabolic syndrome; benzodiazepines also have their risks and benefits. Additionally, the cost of time and finances of inpatient hospitalization must be considered. More research is needed regarding the short- and long-term efficacy and safety of antipsychotics in the treatment of OCD in the child and adolescent population.

Keywords: adolescent, OCD, antipsychotic, inpatient

INTRODUCTION

The treatment for obsessive–compulsive disorder (OCD) in the child and adolescent population has been varied. The Pediatric OCD Treatment Study (POTS, 2004) suggests effectiveness for Cognitive Behavior Therapy (CBT) whereas four medications have received FDA approval for the treatment of OCD: fluoxetine for ages 7 and above, fluvoxamine for ages 8 and above, sertraline for ages 6 and above and clomipramine for ages 10 and above (POTS, 2004). These treatments are usually applied in the outpatient setting, with an adequate trial consisting of 8–12 weeks (POTS, 2004). However, these treatments usually take several weeks to achieve full effect (Bloch et al., 2006). In some extremely severe cases it may be necessary to achieve benefit sooner.

CASE STUDY

One such case was "Amy", a 14-year-old Caucasian girl with a three-year history of fear of contamination with pinworms from holding her hands too close to her mouth. She was also concerned about contamination from contact with her mother and the family dogs and concerned that she would contaminate her mother with physical contact. She constantly washed her hands to avoid contamination. Amy's fears of contamination had progressed to the point she would avoid opening her mouth to speak, and she had gone 10 months with her essentially not talking. Her diet was reduced to chocolate milk and wheat thin crackers. She developed elaborate rituals for opening containers, which involved her spilling some amount of food/liquid onto the floor to avoid consuming particles that had been exposed to air. If the ritual was not exact, she would discard the entire container. She began to have a very rapid decline and "stopped eating" for a period of 4 weeks, which led to an inpatient psychiatric admission. This hospitalization proved fruitless, and Amy was eventually presented to the emergency department due to dehydration. She was initially admitted to the pediatric service for medical stabilization with IV fluids and was subsequently transferred to Child Psychiatry.

On the first day of psychiatric hospitalization, Amy woke up with debilitating anxiety and refused to eat or even open her mouth. She initially refused oral medications, but her anxiety spurred her to take an initial dose of risperidone

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0.13 mg in liquid form. An additional 0.13 mg of liquid risperidone PO was ordered, which she took, but she still refused to drink water or eat food, stating she would "rather die". A behavioral plan was discussed, but Amy resisted any level of exposure therapy during the first day. She was cooperative with risperidone 0.13 mg liquid TID. Within four hours of the second dose on hospital day 2 (fourth dose total), she drank Gatorade with staff assistance and began accepting heightened levels of exposure therapy. Later that day, she was able to eat a small yogurt with staff assistance. On hospital day 3, Amy was able to eat without assistance and ate granola bars. She was started on sertraline 12.5 mg daily, and she was still eating in a ritualistic fashion in order to keep her hands as far from her mouth as possible. During this time, she was not performing activities of daily living such as basic personal hygiene. Each day, Amy was exposed to greater levels of exposure therapy. By the end of her 10-day hospitalization, Amy was taking risperidone 0.13 mg TID and sertraline 50 mg daily. At the time of discharge, she was talking in an appropriate fashion, eating more appropriate foods using her hands, and her contamination fears significantly diminished.

DISCUSSION

Amy presented an extraordinary case of OCD. The patient was initially resistant to participating in CBT, and an SSRI would have taken weeks to have effect. Due to the potential for medical danger and the severity of symptoms, the patient was admitted to an inpatient Child and Adolescent Psychiatric facility. An antipsychotic was used initially, and an SSRI was then added; the patient was eventually able to participate in CBT with improvement, and the patient was discharged with improvement in symptoms and functioning. We will address each of these treatment modalities.

Inpatient hospitalization

There is sparse quality research regarding the utility of inpatient psychiatric hospitalization in treating obsessive–compulsive disorder in the child and adolescent population. A literature search suggests that inpatient hospitalization is rarely used as a treatment modality for OCD (Shoval, Zalsman, Sher, Apter & Weizman, 2006), and is usually reserved for severe co-morbid conditions such as suicidality, self-injury, violence or aggression, and severe eating disorders such as anorexia nervosa (Shoval et al., 2006). However, some studies have shown a beneficial effect of a highly structured environment offered by a milieu setting in treating adolescent OCD (Scahill, Walker, Lechner & Tynan, 1993). There are several advantages of treating adolescent OCD in a residential or inpatient setting, including a constant support system, greater time devoted to treatment, and the presence of staff to minimize ritualistic and compulsive behaviors (Björgvinsson et al., 2008). Constant staff supervision provides both added emotional support and dutiful roadblocks to preventing ritualistic or compulsive behaviors (Björgvinsson et al., 2008). Milieu treatment may also provide the opportunity to uncover maladaptive family accommodation of OCD symptoms and temporarily remove the patient from these circumstances (Björgvinsson et al., 2008). The inpatient setting also provides patients with a setting where they can model after peers, which may increase willingness to perform exposures (Björgvinsson et al., 2008). However, a potential drawback to milieu treatment may be the lack of being able to generalize treatment gains to other setting, as treatment gains may prove transient when the patient is discharged and parents are unable to provide the same level of supervision in absence of milieu environment (Scahill et al., 1993). Undoubtedly, the milieu environment we provided and staff assistance, were crucial, in aiding Amy in her treatment, as staff encouraged her to eat and drink and to avoid her normal ritualistic behaviors. Additionally, there was the tangible benefit of discharge from the facility pending her ability to conquer her cognitive distortions and change her behavior, whereas she likely had less motivation in her home environment, which may have been compromised by family accommodations. Most studies indicate that inpatient hospitalization for OCD hinges on co-morbid conditions such as aggression or suicidality (Scahill et al., 1993), but more research is indicated to determine the utilization of the inpatient setting for treating severe adolescent OCD in the absence of such other indicators for hospitalization.

Risperidone

We feel the use of risperidone in the initial treatment of severe adolescent OCD is one of the more unique aspects of this case. Currently no antipsychotic is approved for the treatment of OCD. Risperidone has previously been shown to be successful as an augmenting agent in cases of refractory OCD in adults (McDougle, Epperson, Pelton, Wasylink & Price, 2000) and adolescents (Thomsen, 2004). However, it is not often considered for use as initial treatment, either as a monotherapeutic or adjunct agent. The use of an antipsychotic as an anxiolytic is not a novel idea, as first generation antipsychotics have been referred to as "major tranquilizers" for their calming and sedating effects (Lorenz, Jackson & Saitz, 2010). Subsequent to a randomized, double-blind, placebo-controlled trial in 1986, the first-generation antipsychotic trifluoperazine was given FDA approval for short-term treatment of generalized non-psychotic anxiety (Gao, Muzina, Gajwani & Calabrese, 2006).

Specifically, antipsychotics may be beneficial in OCD, which many have noted shares some features of a psychotic or delusional process (Bellino, Patria, Ziero & Bogetto, 2005; Kozak & Foa, 1994; Rodowski, Cagande & Riddle, 2008). Patients with OCD have classically had insight into the illogical nature of their thoughts or behaviors; the criteria for OCD in the current version of the Diagnostic and Statistical Manual of Mental Disorders includes that the patient recognizes the obsessions or compulsions are excessive or unreasonable, although this does not apply to children (*DSM-IV-TR;* APA, 2000). However, even with adult patients, clinical evidence suggests that not all patients with OCD regard their symptoms as unreasonable or excessive. The question, then, is if these fixed, false beliefs qualify merely as obsessive thoughts, over-valued ideas, or are in fact, delusion (Kozak & Foa, 1994). Studies of these "atypical obsessive–compulsives" indicate that these patients are qualitatively different from patients with classical, insightful OCD, with increased symptom severity, earlier onset of symptoms, and greater likelihood to be refractory to treatment (Bellino et al., 2005; Kozak & Foa, 1994). Since Amy is a child, the DSM qualifier of requiring insight does not apply to making the diagnosis of OCD, yet the comparisons to

a psychotic process remain. Studies have suggested OCD patients bordering on the psychotic may be the group most responsive to antipsychotic augmentation (Rodowski et al., 2008). Furthermore, there is some evidence to suggest that some early cases of schizophrenia–spectrum disorders may initially present with obsessive–compulsive symptoms, and vice versa (Niendam, Berzak, Cannon & Bearden, 2009; Rodowski et al., 2008; Tumkaya et al., 2009). Therefore, this extreme case of OCD may be the precursor to a future psychotic disorder, which may also account for the responsiveness to risperidone.

Benzodiazepines were historically the treatment of choice for anxiety disorders, but with the advent of SSRIs, their use has been limited to short-term periods of 2–4 weeks due to risk of sedation, behavioral disinhibition, and potential for abuse, dependence, and tolerance (Nash & Nutt, 2005). Benzodiazepines carry the advantage of a rapid onset of action, which may be beneficial in patients first starting an SSRI or who cannot tolerate high doses of SSRIs (Hollander, Kaplan & Stahl, 2003). Benzodiazepines also do not carry the significant long-term side effects associated with antipsychotics including weight gain, dystonia, extrapyramidal symptoms and metabolic syndrome. Although several anecdotal and open-label studies have demonstrated benzodiazepines to be useful in treating obsessive–compulsive disorder (Bodkin & White, 1989; Tesar & Jenike, 1984) or anxiety disorders in children and adolescents (Biederman, 1990; Simeon & Ferguson, 1987), these findings have not been consistently replicated when more structured studies have been performed (Witek, Rojas, Alonso, Minami & Silva, 2005). Two double-blind, placebo-controlled studies failed to show that clonazepam was beneficial in treating symptoms of OCD either as monotherapy (Hollander et al., 2003) or in conjunction with sertraline (Crockett, Churchill & Davidson, 2004). The use of benzodiazepines in the adolescent population is also limited by sedation, the potential for disinhibition and the potential for abuse or the development of dependence (Reinblatt & Walkup, 2005). A Cochrane review of pharmacotherapy for anxiety disorders in children and adolescents did not recommend the use of benzodiazepines due to lack of efficacy evidence, concerns of dependency and treatment-emergent adverse events (Ipser, Stein, Hawkridge & Hoppe, 2009). A review by Grados and Riddle (2001) on the pharmacotherapy of childhood OCD recommended typical and atypical neuroleptics as the first and second preferences, respectively, for augmentation of treatment-refractory OCD; benzodiazepines were the fifth preference.

Antipsychotics may be a useful alternative as they appear as effective as benzodiazepines in the treatment of anxiety disorders; atypical antipsychotics significantly reduced anxiety and were shown to be efficacious in treating refractory OCD and PTSD (Gao et al., 2006). In addition, the action of atypical antipsychotics at the serotonergic receptors may also prove protective of co-morbid mood disorders, as it has long been felt that the serotonergic activity of the atypical antipsychotics may have some antidepressant properties as well. However, antipsychotics do pose the risk of potentially serious side effects of weight gain, diabetes, metabolic syndrome and extrapyramidal symptoms. Ideally, both antipsychotics and benzodiazepines would serve a short-term role in the treatment of OCD until the benefits of CBT and SSRIs can take hold. There is some evidence that treatment gains made through CBT while patients are on antipsychotics still hold after the antipsychotic has been tapered off (Goldstein et al., 2009). On the contrary, there are concerns that patients receiving both CBT and benzodiazepines for anxiety disorders experience a loss of efficacy after the benzodiazepine treatment is discontinued (Otto, Bruce & Deckersbach, 2005; Westra, Stewart & Conrad, 2002). The treatment team felt that Amy's anxiety and "panic" were a by-product of OCD, rather than actual panic disorder. Therefore an antipsychotic was chosen rather than a benzodiazepine due to the limited evidence of benzodiazepine proving effective for OCD and the likelihood that benefits from CBT would hold after the medication was tapered off.

It is commonly held that the onset of anxiolytic effect from SSRIs may take 4 to 6 weeks (Nash & Nutt, 2005). In our case, we felt such a wait was not feasible due to the medical acuity; her anxiety was preventing her from achieving adequate nutrition. The action of atypical antipsychotics on 5-HT_{2A} receptors would not explain the rapid anxiolytic properties, nor would it explain the study and subsequent FDA approval of a first-generation antipsychotic trifluoperazine for the short-term treatment of anxiety (Mendels et al., 1986). Although serotonin has long been thought to be the key neurotransmitter involved in OCD, there are ample sources citing the role of dopamine in the disorder (Denys, Zohar & Westenberg, 2004; Westernberg, Fineberg & Denys, 2007). Using animal models, Denys et al. (2004) showed that potentiation of dopaminergic activity at D1 receptors produces obsessive–compulsive like behavior, while D1 receptor antagonists reduce compulsive behaviors. As dopamine is felt to be an important modulator in the conditioned fear response (Pezze & Feldon, 2004), the antidopaminergic activity of typical and atypical antipsychotics may also decrease this fear response, which may be particularly relevant in OCD (Pezze & Feldon, 2004). Specifically, one study found that D1 dopamine receptors are involved in danger recognition, and D2 receptors are involved in setting up adaptive responses to cope with potentially threatening stimuli (Perez de la Mora, Gallegos-Cari, Arizmendi-Garcia, Marcellino & Fuxe, 2010). One extrapolation from this information is that D1 receptors may modulate the "obsession" component of OCD, and D2 receptors may modulate the "compulsion" component. Thus, administration of a potent D2-antagonist such as risperidone might understandably lead to a reduction in compensatory compulsions in OCD. This may help to explain the finding that dopamine antagonists play a more significant role in OCD compared with other anxiety disorders (Decloedt & Stein, 2010). However, there remain inconsistencies in the literature regarding the efficacy of antidopaminergic agents in treating OCD, specifically the fact that substantial treatment benefits are enhanced when antipsychotics augment SSRI treatment compared to antipsychotic monotherapy (Westernberg et al., 2007). Although it may not be entirely clear, there seems to be an important role of the dopaminergic system in the pathophysiology and treatment of OCD (Denys et al., 2004; Westenberg et al., 2007).

In our case, Amy was able to start drinking and eating, resisting her compulsive behaviors, after only a few doses of risperidone. It also appears that D2-antagonism has a quicker onset of action than the 5-HT_{2A} antagonism/5-HT_{1A} agonism in providing relief of anxiety. In the initial trifluoperazine study, trifluoperazine separated from placebo in efficacy and statistical significance within the first week, and continued through the full 4 weeks of the study (Mendels et al., 1986). This timeframe is similar to that for using antipsychotics in treating delirium, a condition in

which antipsychotics are considered the mainstay, as successful treatment can be achieved between 7 and 28 days (Attard, Ranjith & Taylor, 2008). A known advantage of augmentation with an antipsychotic rather than initiating a trial of another monotherapeutic agent such as an SSRI is that only a 4-week trial is needed for augmentation, whereas another 10- to 12-week trial would be necessary for the trial of the monotherapeutic agent (Dougherty, Rauch & Jenike, 2004).

There is little research discussing the efficacy of antipsychotics used as initial therapy or monotherapy for OCD in general, let alone in children and adolescents. Most studies herald the usefulness of antipsychotics as an augmenting agent to SSRIs (Masi et al., 2009). One study showed that over half of children who received an atypical antipsychotic as an augmenting strategy for OCD showed improvement (Masi et al., 2009). In adults with treatment-refractory OCD, antipsychotics have the largest body of evidence supporting their use as augmenting agents (Decloedt & Stein, 2010).

Sertraline

Sertraline is approved by the FDA for treating OCD in adults and children ages 6 and older (POTS, 2004). It is well known that SSRIs work rather slowly and can take as much as 6–12 weeks to exert their therapeutic benefit for OCD (Dougherty et al., 2004; Ravindran, Jung & Ravindran, 2010; Thomsen, 1998), a timespan that is considered longer than that for the treatment of depression (Dougherty et al., 2004; Thomsen, 1998). Therefore, it is unlikely this medication had a significant effect in such a short timeframe. Although a study by Bergeron et al. showed that sertraline had an earlier onset of therapeutic effect than fluoxetine in treating OCD, the "earlier onset" was first evident at 12 weeks of treatment (Bergeron et al., 2002), and may be due to the much longer half-life of fluoxetine (Bergeron et al., 2002). However, as SSRIs are considered the first line pharmacologic agent for acute and maintenance OCD treatment, sertraline was started at a low dose and titrated to 50 mg early in Amy's hospitalization, per recommendation to target a high therapeutic dose with titration limited by side effect profile (Dougherty et al., 2004). However, more research is indicated to determine how soon therapeutic treatment effects can be evident with SSRIs in the treatment of childhood and adolescent OCD.

SUMMARY

We presented a case of extreme OCD in an adolescent that required immediate treatment due to her critical medical condition. As an SSRI would not have quick enough onset and the patient was initially resistant to participating in CBT, the patient was hospitalized and first started on liquid risperidone. The inpatient hospitalization itself was likely to be significant in producing a reduction in symptoms and improvement in functioning, with the drawback ensuring that treatment gains hold after discharge. Secondary to their serotonergic and possibly anti-dopaminergic properties, atypical antipsychotics may be useful for severe cases of OCD which require a quicker onset of action than SSRIs would allow for. Furthermore, antipsychotics may be an alternative to benzodiazepines when a quicker anxiolytic effect is needed but issues of dependence, disinhibition or sedation are of concern. Atypical antipsychotics may also be more protective of co-morbid mood disorders than benzodiazepines.

The potential benefits of antipsychotics in treating anxiety disorders must be balanced with their well-known potential side effects, including akathisia, extrapyramidal symptoms, weight gain, metabolic syndrome, and the fact that very little is known regarding the effects of antipsychotics on the developing brain (Gao et al., 2006). More research is needed to determine the efficacy, safety, and tolerability of atypical antipsychotics as an initial treatment choice for OCD and other anxiety disorders in children and adolescents. Sertraline is an FDA-approved treatment for childhood and adolescent OCD, but most data indicate that 6–12 weeks are needed to see benefit.

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