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Obsessive Compulsive and Tic Related Disorders

Martin E. Franklin, Ph.D.^{*}, Julie Harrison, B.A., and Kristin Benavides, B.A.

University of Pennsylvania School of Medicine

Martin E. Franklin: marty@upenn.edu; Julie Harrison: julha@upenn.edu; Kristin Benavides: kben@upenn.edu

Abstract

Synopsis—Youth affected by obsessive compulsive disorder (OCD) and by chronic tic disorders (CTDs) often experience significant distress, functional impairment, and psychiatric comorbidity which collectively compromise quality of life and achievement of developmental milestones. We review the extant literature on the phenomenology and treatment of these conditions in youth, and summarize the state of the treatment literature, focusing particularly on the application of psychosocial interventions that have yielded substantial symptom improvements. Comorbidity of OCD and CTDs is common, and we provide clinical recommendations for managing patients when both disorders are present. We conclude with a brief discussion of clinical controversies, particularly the central role ascribed to habituation as the mechanism by which these treatments' effects are realized.

Keywords

Obsessive Compulsive Disorder; OCD; Tic Disorders; TDs; Chronic Tic Disorders; CTDs; Tourette Disorder; TS; Comorbidity; Exposure Response Prevention; ERP; Cognitive Behavioral Therapy; CBT; Habit Reversal Training; HRT; Competing Response

Introduction

Obsessive Compulsive Disorder (OCD) and Tic Disorders (TDs) affect many children and adolescents worldwide, and are associated with substantial functional impairment in afflicted youth. Fortunately, both conditions have been the focus of clinical research in the last decade that has clarified key phenomenological issues and provided empirical support for treatments including disorder-specific cognitive-behavioral interventions [e.g. 1, 2, 3, 4, 5, 6]. The co-occurrence of these disorders, which appears to be common, poses a particular challenge to clinicians with respect to making treatment recommendations to families and to implementing the chosen interventions.

Our review provides information regarding the psychopathology of each of these conditions separately and when comorbid, as well as an outline of the empirically grounded and clinically informed approach to treatment of OCD and TDs. Moderator analyses of treatment response in the Pediatric OCD Treatment Study I (Pediatric OCD Treatment Study [POTS] Team) [7] indicated that secondary comorbid tic symptoms predicted poorer response to pharmacotherapy alone but not to cognitive-behavioral therapy (CBT) alone or to combined

^{*}Author for Correspondence: Martin E. Franklin, Ph.D., Department of Psychiatry, University of Pennsylvania School of Medicine, 3535 Market Street, 6th floor, Philadelphia, PA19104 Phone: 215 746 3327, Fax: 215 746 3311.

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treatment in a trial in which OCD was classified as the primary disorder [8]. However, the mediating variable that produced this result has yet to be fully uncovered. As yet, the converse (moderator analyses of the effect of OCD on treatment response in primary TDs) has not been explored in the context of a randomized treatment trial, and thus clinicians need to exercise their empirically informed judgment when considering treatment of primary TD when OCD is also present.

First we provide a focused review of psychopathology for each of these conditions, describe the core CBT protocols for treating each condition separately, and then take into consideration what is known about psychopathology and treatment when they are both present (see Table 1 for a comparison of OCD, tics, and OCD with comorbid tics). Our view is that there is much reason for optimism that children who have comorbid OCD and TDs can be successfully treated, but that treating clinicians have several factors to keep in mind as they attempt to do so. Reduction of core symptoms in both OCD and TDs is important in improving the quality of life for affected youth and their families, but the judgment of which of the two conditions is driving current functional impairment and which disorder influences the symptoms of the other one directly must guide the initial treatment plan.

Obsessive Compulsive Disorder

Prevalence

OCD's prevalence rate in youth has been estimated at 1% to 3% [e.g.9, 10] with variability occurring perhaps as a result of research method variance [11]. OCD is evident across development [12], and is associated with substantial dysfunction and psychiatric comorbidity [13, 14]. The National Comorbidity Survey Replication Study involving over 9,000 adult participants in the U.S. estimated that the 12-month prevalence rate of OCD was 1.0% [15]; epidemiological studies with children and adolescents suggest similar lifetime prevalence rates in these samples [e.g. 9, 10]. Data concerning younger children suggest that approximately 1 in 200 young people has OCD which, in many cases, severely disrupts academic, social, and vocational functioning [9].

Phenomenology

According to the DSM-IV Text Revision [16] OCD is characterized as the presence of recurrent obsessions and/or compulsions that interfere substantially with daily functioning. Obsessions are “persistent ideas, thoughts, impulses, or images that are experienced as intrusive and inappropriate and cause marked anxiety or distress” (p. 457). Compulsions are “repetitive behaviors or mental acts, the goal of which is to prevent or reduce anxiety or distress” (p. 457).

There is typically a functional link between obsessions and compulsions in OCD, such that obsessions cause marked anxiety and distress and compulsions are performed in an attempt to reduce the distress or, in the case of patients with specific feared consequences, reducing the likelihood of a feared outcome (e.g., catching a deadly disease, injuring someone as a result of an act of omission or commission). In the DSM-IV field trial on OCD, over 90% of participants reported that their compulsions aim to either prevent harm associated with their obsessions or to reduce obsessional distress [17]. If the patient cannot describe a clear relationship between the obsession and the compulsion (obsessions are distressing and compulsions aim at reducing this distress), another diagnosis (e.g., stereotypic movement disorder) should be considered. Furthermore, in order to distinguish diagnosable OCD from the occasional phenomena of unwanted thoughts and repetitive behaviors reported by the vast majority of individuals without OCD [18, 19], obsessions and/or compulsions must be found to be of sufficient severity to cause marked distress, be time consuming, and interfere with daily functioning. Youth and their parents do not always agree on the degree of

impairment, thus it is important to gather information about functioning from multiple sources to determine if this criterion has been met and, by extension, if treatment is indeed warranted.

There are a number of typical symptoms found in the presentation of OCD. The Children's Yale-Brown Obsessive Compulsive Scale [CY-BOCS; 20] checklist assesses for a wide variety of obsessions and compulsions, including obsessions characterized as pertaining to contamination, aggressive, sexual, hoarding/saving, magical thoughts/superstitious, somatic, and religious/scrupulosity.

The categories of compulsions on the CY-BOCS checklist include washing/cleaning, checking, repeating, counting, ordering, arranging, hoarding/saving, excessive games/superstitious behavior, and rituals involving others. The compulsions are often performed according to rigid rules that need to be followed in order to provide relief from the intrusive thought or feeling [21]. Compulsions can be both cognitive (e.g., mental reviewing, praying) or behavioral (e.g., physical checking, hand washing), and can include content that might be considered unusual or illogical (e.g., repeatedly tapping on desk at school in order to prevent a parent from dying in a motor vehicle accident).

Onset of OCD often occurs in childhood or during adolescence, although adult onset is also seen [22, 23]. Among adults with OCD, one third to one half developed the disorder during childhood or adolescence [24]. Development of OCD is typically gradual, but more rapid onset has been reported in some cases. The course of OCD is most often chronic with some waxing and waning of symptoms, with patients reporting some responsiveness to external stressors as well [25]. In rare pediatric cases, however, onset is very sudden (e.g., overnight) and associated with strep infection; treatment of the infection is then associated with substantial reduction of symptoms, but recurrence of infection is associated with symptom exacerbation [Pediatric Autoimmune Neuropsychiatric Disorders Associated with Strep, PANDAS; 26].

Treatment

Among adults, OCD is ranked tenth among the leading causes of disability worldwide including heart disease, diabetes, and cancer [27]. Since it has been established that OCD symptoms tend to persist over time [e.g., 28], it is prudent for clinicians who evaluate OCD in their practices to share this information with families, and to be prepared to provide the CBT protocols of established efficacy for this condition [e.g., 1]. A version of cognitive behavior therapy, known as exposure plus response prevention (ERP) [1], is considered as a first line intervention for OCD, either alone or in combination with pharmacotherapy. Pharmacotherapy with selective serotonin reuptake inhibitors (SSRIs) has been consistently found efficacious compared with pill placebo. Notably, however, medication trials in pediatric and adult OCD indicate that residual impairment is the norm even after adequate treatment [e.g., 3], and thus, ERP either alone or in combination with SSRIs should also be considered whenever ERP is available.

ERP has been studied around the world for the last 40 years and has proven to be both effective and durable for patients with OCD across the developmental spectrum from childhood to adulthood [e.g., 1, 3, 7, 29, 30, 31, 32, 33, 34, 35, 36, 37]. The course of ERP for youth typically includes 12 to 20 sessions delivered weekly, although more intensive formats have also proven effective and efficient [e.g., 39, 40, 41]. The main components of ERP include: [42].

- Psychoeducation
- Externalization of OCD

- Mapping a hierarchy for necessary exposures
- Graded exposure and response prevention
- Relapse prevention

Exposures are often done in real-life settings and involve prolonged contact with the feared external (e.g. contaminated surfaces) or internal (e.g. images of harming a family member) stimuli that the patient reports as distressing.

For patients who fear specific consequences if they refrain from performing rituals, these fears can be addressed through “imaginal exposure”: creating very detailed scripts of the feared consequence and listening to or reading these scripts repeatedly until they are perceived as less anxiety-provoking. According to Foa and Kozak's [43] information processing theory, in vivo and imaginal exposures are designed specifically to prompt obsessional distress. It is believed that repeated, prolonged exposure to feared thoughts and situations serves to disconfirm mistaken associations and evaluations held by the patient, thereby promoting habituation [43].

Exposures are typically done gradually, with situations provoking moderate distress confronted before more upsetting ones. Exposure “homework” is routinely assigned between sessions, and patients are asked to refrain from rituals during exposures but also, to the extent possible, throughout the day more generally speaking. The stated goal is complete abstinence from rituals, yet therapists must be cognizant of the need to encourage patients to achieve this goal over time rather than simply insisting upon it immediately. Patients are reminded throughout treatment that ritualizing maintains fear or “feeds the beast,” whereas refraining from rituals promotes its dissipation; accordingly, they are given recommendations as to how best to refrain from rituals, such as externalizing the obsessive thoughts and “bossing back” OCD,.

Tic Disorders (TD) and Tourette Syndrome (TS)

Prevalence

In a large community sample of 4,475 youth, it was determined that 0.8% had chronic motor tics, 0.5% had chronic vocal tics, and 0.6% had TS [44]. Worldwide, TDs and TS are reported to affect 1% of youth [45]. Notably, after the age of 20, fewer than 20% of individuals with TS continue to bear moderate to severe impairment [46], and 20 to 90% of individuals with TS reported experiencing at least slight to moderate impairment into their adult years [46, 47, 48]. Unfortunately, efforts to predict which children with tic disorders including TS will continue to exhibit tic symptoms and experience significant functional impairment into adulthood have not yielded consistent findings. Accordingly, the decision about whether to treat or not to treat current symptoms in youth must be based exclusively on current symptom levels, associated impairment, and ability and willingness to engage in treatment rather than by an empirically informed decision tree that takes likely future course into account.

Phenomenology

Tic Disorders (TDs) and Tourette Syndrome (TS) are neuropsychiatric disorders whose symptoms tend to mimic fragments of typical behavior (e.g., eye blinking, throat clearing). According to the American Psychiatric Association, tics are defined as “sudden, rapid, recurrent, non-rhythmic, stereotyped motor movements or vocalizations” [16]. Diagnostic criteria for a Chronic Motor or Vocal TD state that tics must occur numerous times each day, either most days or intermittently for at least one year, and surface before the age of 18. Depending on the presentation of the tics, Chronic TDs are classified as either motor or

phonic, and the tics themselves can be simple or complex in nature. The classification of simple motor tic is assigned when muscle spasms are brief and only affect one muscle group, as seen in eye blinking or head jerking. The classification of complex tic would be assigned to longer or sequenced movements, as seen in squatting, jumping, or touching motions. Vocal tics can also be classified as simple or complex with simple phonic tics occurring as short, meaningless utterances, such as grunting, sniffing, humming, or throat clearing. In contrast, complex vocal tics tend to be longer, more meaningful and appear more purposeful. Complex vocal tics might present as echoing the words or phrases of others or repeating one's own utterances [16]. An important clarification to note is that a diagnosis of a tic disorder is given only when either a motor or a vocal tic is present; when an individual exhibits both motor and vocal tics, the diagnosis of Tourette Syndrome is assigned. Individuals with TS tend to present with numerous motor tics and at least one vocal tic, where the motor and vocal tics occur simultaneously or at separate times throughout the course of illness [16].

Those naïve to TDs and TS might assume the impairment that arises from these disorders is due to the outward expression of the tics. However, for individuals with tic disorders, the enacting of tics themselves causes only a portion of the distress; much of the suffering associated with tics is actually due to the unpleasant urges that precede, and induce, the tic. The comparison of tics and hyperkinetic movement disorders (e.g., Parkinson's disease and Huntington's chorea) helps to elucidate this concept. On the surface, TDs can be difficult to distinguish from symptoms of hyperkinetic movement disorders since both disorder types display convulsive, sporadic motions. The core distinguishing feature resides in the fact that in TDs, the nature of the tics is volitional, whereas the movements produced by hyperkinetic movement disorders are involuntary [49].

Accordingly, tics have been described as “semi-volitional” in the literature because most individuals, if they extend much effort and concentration, do have the ability to suppress the outward expression of tics. Typically, tics are produced voluntarily in response to unpleasant, involuntary sensations, or phenomenological experiences that have come to be referred to as premonitory urges. These premonitory urges are frequently described as a building up of tension that is relieved by the performance of a tic; something similar to the uncomfortable sensation that precedes the scratching of an itch [50, 51]. Clinical investigations have shown that a variety of premonitory sensory phenomena (PSP) exist in patients with TS and TDs. These phenomena consist of uncomfortable physical and cognitive sensations such as warmth, coldness, pressure, tension, tickling, or as a generalized inner tension or anxiety that is relieved through motor discharge [50]. For many, the struggle to control these urges can be very distressing: for example, in a study performed by Cohen and Leckman [52], 57% of their sample revealed the premonitory urges to be more bothersome than the tics themselves.

Prevalence rates for these premonitory urges are apparently quite high. One study reported that 93% of their 135 participants reported the existence of these premonitory urges [53]. Another study revealed that 82% of the 28 child and adult participants reported the presence of premonitory urges immediately preceding their tics [52]. Researchers who have examined this facet of TDs have noted that awareness of these urges and their functional relationship to tics occurs mostly in older children and adults, but not young children. Perception of these premonitory sensations is more reliably reported upon by children who are at least 10 years old [53]. Children under the age of ten, who often display simple tics, may be insufficiently unaware of the premonitory urges, or at least unable to link the presence of the urge with the tic itself [54].

Interestingly, not only does the awareness of the entire cycle of tics increase around the age of 10, but this is also typically the age in which the symptoms of TDs are at their most severe [47,55, 56]. The typical pattern of tic disorders is that onset will occur between the range of 5.6 -7.6 years [47,57, 58, 59, 60] will peak in severity around age 10 [47], and will likely decline in severity around the age of 20.

Not only do the symptoms of tic disorders appear and disappear at intermittent times throughout the illness, but the severity and frequency of the tics themselves also exhibit a waxing and waning pattern. Reasoning for why tic severity and frequency display such a cyclic pattern is due, in part, to the heightened sensitivity of tics to factors that are common and often unavoidable [61]. Triggering situations could range from an array of daily environmental occurrences (e.g., watching television, fatigue, heightened emotions, social settings, or isolation) to anxiety-provoking situations [62, 63, 64]. Given how sensitive tics are to an array of common triggers, impairment caused by TDs and TS can be severe and far-reaching. The negative effects of these disorders can impede numerous facets of a child or adolescent's life including social, family, academic, and occupational domains.

In terms of associated impairment, one study reporting that, in a sample of 59 youth, those with tics indicated an overall lower quality of life than their healthy counterparts [65]. Since motor and vocal tics frequently occur at inappropriate times, where utterances or sporadic movements would be deemed strange or distracting, a main negative effect of these disorders is extreme social discomfort. Individuals with TDs commonly report heightened feelings of sadness, shame and self-consciousness [16]. In addition, individuals with TDs have reported social difficulties with creating and maintaining friendships, hardships in dating, rejection from peers, social withdrawal, teasing, aggression, low popularity, negative social perceptions, and lower social acceptability [35, 66, 67, 68, 69, 70, 71, 72].

Impairment in the academic realm also appears to be common in individuals with TS. Research indicates that tics contribute to declines in academic functioning, with one survey reporting that 50% of their sample (71 guardians of children with TS) insisted tics produced moderate interference in their children's reading and writing abilities [69]. Another study reported that of 59 children with TS, 36% claimed that their tics hampered their class preparedness, ability to write, complete homework, and their concentration levels [35].

Mental health disorders rarely only affect the afflicted individual, and TS is no exception. Studies report that families with at least one member with TS incur a heightened burden on caregivers, a diminished family cohesion, trouble with solving family issues, and increased interference in the daily functioning of family members [35, 73, 74, 75]. These effects should be evaluated and acknowledged in the evaluation context, and may well become targets for clinical intervention in and of themselves.

Treatment

Habit reversal training (HRT) has been shown to be a promising treatment option for adults and youth with TDs including TS. Although the neurological basis of tics is explicitly acknowledged in HRT protocols [e.g., 5], HRT is implemented under the assumption that situational and environmental factors, including the perception of premonitory urges, contribute to the performance or suppression of tics. A detailed review of pharmacotherapy strategies for TDs and TS is beyond the scope of our review, but HRT has been found efficacious in both youth and adults [e.g., 76, 4, 77], and appears to yield effect sizes that are comparable to those reported in pharmacotherapy trials but with many fewer untoward side effects [4]. Unfortunately, head to head comparisons of HRT versus monotherapy with medications known to be effective for TS or randomized, controlled comparisons of those monotherapies against combined treatment approaches have yet to be conducted.

According to Piacentini and colleagues [4], the two core components of HRT are training in tic-awareness and competing-response. When planning the course of treatment, the patient's developmental level should be a main factor of consideration. Clinical observations have indicated younger children exhibit greater success with tic reduction when treatment has placed greater emphasis on implementing competing responses and focused less on awareness training [78]. Since the awareness of premonitory urges and their functional relationship to tics tend to increase with age, adolescents and adults can typically implement both awareness training and competing response training with little difficulty. Therefore, depending on the base awareness level the patient has of premonitory urges, HRT either develops or simply increases the perception of these urges in order to prevent the performance of tics. To foster greater awareness, patients are typically taught how to self-monitor the premonitory urges and other warning signs (e.g., situations that consistently predict tic onset) that frequently accompany tic occurrences. Competing-response training is geared around disrupting the negative reinforcement cycle that is produced by the performance of tics, i.e., the performance of the tic reduces the unwanted premonitory urge sensations and provides temporary relief. One of the goals of the intervention, therefore, is achieved by training patients to complete a physical behavior that is incompatible with the expression of their tic. Ideally, this competing response is exercised when the patient feels the presence of a premonitory urge or notices the warning signs of a tic. Optimally, the competing responses are designed to be more socially acceptable than the tic expression, which hopefully allow the patient to continue to function unobtrusively while tolerating the uncomfortable sensation of the premonitory urge.

Typically, during the first few sessions of treatment, the therapist and patient create a tic hierarchy based on level of distress each tic causes. With this hierarchy as a guide, the therapist and patient collaborate to structure the awareness and competing response training to first tackle the most distressing tics before gearing treatment toward eliminating the more residual ones. This model differs from traditional OCD and anxiety hierarchy building in that it is more typical in treating OCD to begin with less distressing and impairing exposures and gradually work up towards more and more distress-evoking situations. HRT sessions typically occur once a week for about an hour, and include features of psychoeducation, awareness training, competing response training, and problem solving around treatment barriers. Additionally, depending on the situation, sessions might also include family education and training, including efforts to create a “tic-neutral” environment at home in order to reduce any reinforcement provided for tics that may serve to maintain the cycle, such as receiving additional attention from parents or being allowed to discontinue difficult tasks (e.g., schoolwork) whenever tics occur.

OCD and Tic Disorders: Phenomenological Overlap, Distinctions, and Comorbidity

Although classified as separate disorders, the overlap between the symptoms of complex motor tic disorders and the compulsions associated with OCD is considerable, which makes the task of distinguishing the two phenomena challenging. Common clinical correlates that characterize these two disorders include typical childhood onset, a chronic waxing and waning course, and familial occurrence [79]. TDs and OCD can also share similar clinical presentations including repetitive behaviors, intrusive sensations, and impairment in behavioral inhibition [80].

Phenomenological differences between these two disorders do exist, however, and the key to their division resides in the distinguishing feature of the functional relationship between the repetitive movements and any preceding thoughts. These differences can be categorized into cognitive processes and physical sensations. Although the end goal of both compulsions and

complex motor tics is the same—to produce relief—compulsions carry a cognitive component to the behavior that tics typically do not [81]. For accurate diagnosis, it is critical to understand the function of the repetitive behavior. Although some complex tics appear to be purposeful, such as certain grooming movements (i.e., brushing hair behind one's ear), there is no specific fear that precedes tics which demands the stereotyped movement to be performed (e.g., “My mom will get hurt if I don't fix my hair repeatedly”). However, if an individual repeatedly brushed hair behind his or her ear to neutralize some superstitious fear, then the behavior would fall into the classification of a compulsion since its function in such a case would be to reduce the likelihood of a feared outcome. When assessing an individual with comorbidity, the diagnostician must be adept at making and then teaching the patient these kinds of fine-tuned distinctions, since different treatment strategies could be implemented at different times in treatment depending on whether the behavior was conceptualized as a compulsion or a tic.

In short, our current nosology labels the same repetitive behavior differently based on the nature of the subjective experience that precedes it. To elaborate, specific cognitions are associated with OCD, and these cognitive phenomena, known as obsessions, give rise to urges to perform compulsions that serve to alleviate the associated obsessional distress; elaborated thoughts and fears do not typically precede the performance of tics, as they function as the physical response to reduce sensory urges and somatic tension [82, 83, 84, 85, 86]. Although no conventional techniques exist to differentiate “pure” compulsions from tics, the incisive diagnostician should know that OCD with “pure” compulsions is exceptionally rare [17].

To further complicate the task of differentiating these conditions, high comorbidity rates of OCD and tics exist, with studies indicating that 22%-44% of individuals with TS also have OCD [87, 88, 89]. Studies measuring the inverse have found that 20% to 30% of individuals with OCD also carry a current or past history of tics [90]. Additionally, in the recently completed POTS II OCD study, the comorbidity rate for TDs was approximately 22% [3].

When comorbidity does occur, the clinical presentation may be somewhat different from either OCD or TS symptoms alone, with symptoms often seeming to fall right in the middle of a theoretical continuum between the two. Individuals exhibiting the comorbidity pattern of OCD + TDs tend to report higher rates of the physical sensations typically only seen in TS preceding or accompanying the cognitive processes surrounding OCD compulsions [84, 91]. Mental sensations, such as “just-right” feelings, and energy release (described as mental energy that builds up and calls for release) are sensory phenomena which tend to be more frequent in OCD and TS patients than in patients with OCD alone [21]. Individuals with OCD plus tics have shown higher frequencies of repetitive behaviors that are preceded by both cognitive and sensory phenomena. This population has higher rates of compulsions that look like complex motor tics, such as tapping, rubbing and touching [92, 93]. Higher frequencies of certain OCD symptoms, such as hoarding, counting rituals, intrusive violent and sexual thoughts or images, somatic obsessions, and repetitive movement compulsions are seen in the comorbidity between TS and OCD [92, 94, 95, 96]. Additionally, research has shown that patients with tics and OCD incur symptom onset at an earlier age [83, 93, 97] and are more likely to be males [92].

Impairment caused by the comorbidity of TDs and OCD depends on the presentation, severity, and frequency of the symptoms. Results obtained from studies that focus on this topic are mixed. Thibert and colleagues [98] revealed that individuals with TS and obsessive-compulsive symptoms had higher levels of anxiety and lower self-concepts than individuals with TS alone. Lewin and colleagues [80] reported that having a diagnosis of both TDs and OCD did not increase the level of impairment caused by either disorder in

children when examining severity levels, comorbidity burden, emotional and behavioral problems, or global functioning. However, research in adults with both TDs and OCD indicates that having comorbid TDs and OCD is associated with higher levels of symptom severity when compared to individuals with only TDs or OCD [79]. These varied outcomes could be reflective of the developmental differences in the study populations, but more research is needed to examine whether sampling strategies and method variance are responsible for the inconsistent findings. Clinically it is important to examine patterns of onset (e.g., OCD first vs. tics first), patient and family evaluation of which condition is currently more impairing, patient interest and confidence to tackle the symptoms of one disorder first as opposed to the other, and the degree to which symptoms of one condition exacerbate those of the other (e.g., increased tic urges when triggered by OCD stimuli).

Implications for Clinical Practice with Comorbid OCD and TDs

Unfortunately, little has been done empirically to examine the treatment for comorbid OCD and TDs in children and adolescents. In their review of the literature, Ferrao et al. [21] suggest that ERP alone is probably not effective in treating TDs as it is for treating OCD, but that more research is needed; however, an adult study indicated that ERP was quite effective in treating TS and was actually more effective on some outcome measures than HRT [99]. Other research concerning the influence of tics on OCD treatment has suggested similar treatment outcomes for adolescents with OCD with or without tics [100]. However, when both OCD and TDs are present in a child or adolescent, there is some support for the possibility that exposure treatment, which has been found efficacious for OCD across the developmental spectrum, may also have positive effects on tics and tic urges [99]. However, it is important to note that the methods and perhaps even the function of exposure may differ when being used to combat urges to do compulsions as opposed to tics. For example, an emphasis on imaginal exposure to obsessional content would be prominent in treating an individual who engages in repetitive tapping behavior to prevent a specific dreaded outcome (e.g., death of a parent in an accident); whereas, an individual who reports engaging in a nearly identical tapping behavior in order to reduce discomfort associated with premonitory urges would be unlikely to benefit from imaginal exposure [5]. Thus, the degree to which the OCD and tic symptoms are formally similar may well assist the clinician in devising approaches that can be used for both phenomena.

There are several potentially reasonable options to consider when treating a child or adolescent with both conditions. Several options may be weighed in this clinical circumstance: [101].

1. Continue the focus on the disorder classified as primary regardless of the presence of other symptoms
2. Attempt to incorporate some clinical procedures and session time to manage the symptoms of the co-occurring disorder but continue to focus most session time and effort on the primary disorder
3. Shift the focus of treatment to address the symptoms of the secondary disorder because their presence makes it difficult to treat the primary disorder successfully, but move back to the primary disorder as soon as possible
4. Treat the primary disorder only after the symptoms of the secondary disorder are under better control

Considering the high likelihood that OCD drives the functional impairment when both disorders are present, Option 1 is usually our default decision, unless the OCD symptoms are very mild and are not of particular relevance to the child. The conceptual overlap between the disorders and the procedural similarity between some of the core interventions

for OCD and TDs also probably renders Option 4 perhaps the least preferable choice for this particular comorbidity pattern, since differentiating so clearly between the two phenomena is difficult and in some cases may not even be necessary.

Thus, when we proceed with treatment of children and adolescents with OCD plus a comorbid tic disorder, we are most likely to either incorporate procedures for both conditions into one treatment or, given the likelihood that OCD will drive the majority of the functional impairment, address the OCD first while carefully examining the effects of the OCD treatment procedures on tic symptoms. It may be optimal to blend both treatment approaches, have the patient engage in exposures but incorporate habit reversal techniques to help the patient remain focused on the exposure tasks at hand without being distracted by tic urges. What is important clinically is that patients are taught to use the proper techniques to address those symptoms that are clearly emanating from one disorder or the other, and that they become comfortable experimenting with different techniques for those symptoms that could be classified as either one.

Implications for Research

There is much still to be determined regarding the optimal strategy or sequence of strategies for addressing comorbid OCD and TDs. The lack of empirical evidence on this topic currently hampers clinical decision-making with respect to providing empirically informed treatment recommendations for OCD and TDs in youth. Data from multiple clinical trials already support the efficacy of ERP and HRT, respectively, for these conditions, but more work is needed to determine whether a sequenced or a transdiagnostic approach would be best in handling disorder-specific symptoms that, while certainly sharing overlap, also have distinguishing features that could be more or less responsive to particular interventions available in the ERP or HRT protocols. Ultimately, it is important to determine whether and how best to modify and combine these approaches for patients who have both diagnoses.

Clinical Controversies

Perhaps the most interesting development in the field with implications for the treatment of OCD and disorders involving impulse control has to do with underlying assumptions related to the centrality of habituation. ERP and HRT theorists have consistently acknowledged the neurobiological nature of obsessions and premonitory urges that give rise to compulsions and tics, respectively. However, each treatment is predicated on the notion that, if the individual can refrain from acting on the urge, the result will be a temporary increase in discomfort that will be followed by habituation of the urge, at least to some extent [102]. The degree of emphasis on habituation has varied within treatment protocols – some have suggested that the frequency and intensity of the associated emotion will substantially diminish with repeated practice [8], whereas others have emphasized that employing behavioral methods to deal with these phenomena will provide the patient a way to manage urges more successfully in situations in which it matters to them [5]. The emergence of Acceptance and Commitment Therapy as an efficacious treatment for OCD [103] raises questions about whether a habituation model needs to be emphasized, and our own clinical observations across patients with OCD and tic disorders actually suggests a range of responses in that some patients do report great reduction of urge strength whereas others report that the use of ERP or HRT simply allows them to manage urges more effectively even when the urge intensity does not diminish substantially. These observations need to be followed up upon in laboratory work as we seek to better elucidate the mechanisms by which these treatments' effects are realized.

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Key Points

Significant distress, functional impairment, and psychiatric comorbidity, collectively, compromise quality of life and achievement of developmental milestones for youth affected by obsessive compulsive disorder and chronic tic disorders.

The DSM-IV Text Revision characterizes OCD as the presence of recurrent obsessions and/or compulsions that interfere substantially with daily functioning.

A diagnosis of a tic disorder is given only when either a motor or a vocal tic is present; when an both motor and vocal tics are present, the diagnosis of Tourette Syndrome is assigned.

A version of cognitive behavior therapy, known as exposure plus response prevention, is considered as a first line intervention for OCD, either alone or in combination with pharmacotherapy.

Habit reversal training has been shown to be a promising treatment option for adults and youth with tic disorders, including Tourette Syndrome.

Table 1
Features of OCD, Tics, and their Comorbidity

	OCD	Tics	OCD with Comorbid Tics
Prevalence	1-3% of youth in the general population	1% of youth in the general population	<ul style="list-style-type: none"> No prevalence rates have been empirically determined for the general population 20-30% of individuals with OCD have Tics. 22-44% of individuals with Tics have OCD.
Etiology	<ul style="list-style-type: none"> Childhood onset 	<ul style="list-style-type: none"> Childhood onset 	<ul style="list-style-type: none"> Childhood onset, typically at earlier age than OCD or Tics alone Males have higher rates of comorbidity
Phenomenology	<ul style="list-style-type: none"> Persistent, intrusive, and inappropriate ideas, thoughts, impulses, or images that cause anxiety or distress Repetitive behaviors or mental acts that serve to prevent or reduce anxiety or distress 	<ul style="list-style-type: none"> Sudden, rapid, recurrent, non-rhythmic, stereotyped motor movements or vocalizations Classifications include simple versus complex tics and vocal versus motor tics Performed to relieve aversive physical sensation Presence of premonitory urge 	<ul style="list-style-type: none"> Chronic waxing and waning course of symptoms Repetitive behaviors Intrusive sensations Impairment in behavioral inhibition Higher rates of the physical sensations typically only seen in TS preceding or accompanying the cognitive processes surrounding OCD compulsions Increased mental sensations such as “just right” feelings and energy release Higher frequencies of repetitive behaviors preceded by both cognitive and sensory phenomena. Higher rates of compulsions that look like complex motor tics Higher frequencies of hoarding, counting rituals, intrusive violent and sexual thoughts or images, somatic obsessions, and repetitive movement compulsions
Treatment	<ul style="list-style-type: none"> Exposure and response prevention Psychoeducation Hierarchy development Exposure Relapse prevention Pharmacotherapy may augment treatment response 	<ul style="list-style-type: none"> Habit reversal training Psychoeducation Awareness Training Hierarchy development Competing response strategies Relapse prevention 	<ul style="list-style-type: none"> Little empirical evidence for standardized treatment protocol Psychoeducation Awareness Training Hierarchy development Exposure Competing response strategies Relapse prevention

	OCD	Tics	OCD with Comorbid Tics
		<ul style="list-style-type: none">Pharmacotherapy may augment treatment response	<ul style="list-style-type: none">Pharmacotherapy may augment treatment response