

**CALIFORNIA DEPARTMENT OF EDUCATION  
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**Tourette Syndrome**

(Chronic Multiple Tic Disorder, Gilles de la Tourette Syndrome)

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Tourette Syndrome (TS) is a disorder characterized by uncontrolled movements and noises. It is commonly viewed in terms of the difficulties it creates. Yet individuals with TS can succeed in life, not only in spite of their TS, but because of some features associated with the syndrome. Samuel Johnson, the British writer was known for his spontaneity, antics and quick wit, features often associated with TS.

**DIAGNOSIS**

Tourette syndrome is a chronic movement disorder diagnosed by the presence of frequent motor and vocal tics. It begins between 2 and 15 years of age, and is marked by a fluctuating course. Typically, symptoms change slowly, with old tics disappearing and new tics replacing, or being added to preexisting tics. The tics commonly decrease during concentration or sleep, and increase with anxiety or tension. Tics can be suppressed, making it difficult at times for physicians to make the diagnosis. A child who only has tics when he takes medication, like Ritalin or Dexedrine, is not given the diagnosis of Tourette Syndrome. Some children have only one or two motor tics, or one vocal tic. These children may have other problems similar to children with Tourette Syndrome, but are given a diagnosis of Chronic Motor Tic Disorder, or Chronic Vocal Tic Disorder.

**DESCRIPTION OF TICS**

Tics are *involuntary* movements or vocalizations that are brief, sudden, frequent, unexpected, repetitive, purposeless, inappropriate, often irresistible and of variable intensity. Motor and vocal tics may be simple or complex.

- **Simple Motor Tics** are rapid, darting, "meaningless" movements such as eye-blinking, facial grimacing, head or nose-twitching, shoulder shrugging, abdominal tensing, frowning or rapid jerking of any body part.
- **Complex Motor Tics** are slower, more "purposeful" appearing movements that are never-the-less involuntary and typically nonproductive. These include hopping, clapping, touching objects, touching one's self or others, throwing motions, arranging, gyrating, bending, self-biting, rolling the eyes to the ceiling, holding funny expressions, sticking out the tongue, kissing, pinching, hitting, writing the same word over and over, or tearing paper or books. Echopraxia (repeating the actions of another) and copropraxia (obscene gestures) are additional examples of complex motor tics.
- **Simple Vocal Tics** are fast "meaningless" sounds such as whistling, sniffing, coughing, throat-clearing, barking, grunting, screeching, gurgling, hissing, sucking, and innumerable sounds such as uh-uh, ee-ee, and ah.

- **Complex Vocal Tics** are more recognizable, although inappropriate words, phrases or statements that are typically used repeatedly. Examples include “Shut-up”, “Stop that”, “I’m going to do better, right?” “Now you’ve seen it all right, oh boy.” Counting rituals or repeating a phrase until it is “just right” are additional examples. The most well known complex vocal tic is coprolalia, an outburst of obscene language. It probably occurs in less than one third of individuals with Tourette syndrome, with a peak during adolescence. An outburst of obscene language must be inappropriate to the situation and impulsive to qualify as a tic. It will typically have a “driven” quality as well.
- **Sensory Tics** have also been described. These can be sensations of pressure, tickle, warmth, cold or other abnormal sensations in the skin, bones, muscles or joints. Sometimes odd sensations are the cause of motor tics.

### **COURSE OF TICS**

Tics most commonly appear for the first time during the early elementary years, although they may make their appearance at almost any time during childhood. The severity of tics fluctuates. Increases in tic frequency or intensity may occur before the onset of puberty, with an increase or decrease during adolescence, achieving a stable pattern in adulthood.

### **FAMILIAL PATTERN AND ETIOLOGY**

Tourette syndrome is an organic brain disorder that tends to run in families. Boys are much more likely to be affected than girls. Family members may have different sets of symptoms. The symptoms are thought to arise from differences in brain chemistry. Although CT or MRI scans in individuals with TS are usually normal, research has demonstrated differences in the size of several brain structures in individuals with TS. Some of the areas are the basal ganglia, frontal lobes, and limbic system. The neurochemicals that appear to be involved are dopamine, serotonin, and norepinephrine. There are reports that certain infections may precipitate or aggravate the symptoms of the disorder.

### **RELATED FEATURES**

- **Sensory Issues**  
Children with TS often process sensory information differently. Low sensitivity to sensory input may result in the need for increased sensory stimulation, and seeking sensory experiences. Over sensitivity to sensory stimuli may result in the avoidance of activities which are over stimulating. Some of the behavior problems children with TS exhibit can be tied to seeking or avoiding sensory input. Some common sensory issues are hypersensitivity to certain kinds of sound (noisy areas) and/or touch (people, clothing tags), seeking of pressure (pushing, throwing, wrestling), or maintaining symmetry or balance (getting socks even, touching both sides of the body in a mirror fashion). A child who exhibits symptoms of atypical sensory functioning, or who has unexplained behavior problems, should have an assessment of sensory responses, and receive appropriate accommodations and interventions.

## ■ **Educational Problems**

Children with Tourette Syndrome may have learning disabilities. Problems with spelling, written language and math are common. In addition, there are often difficulties with processing spatial information and time concepts. There may also be difficulty with visual motor integration, fine motor coordination and tremors. Handwriting is a common problem, and even when handwriting is adequate; there are often difficulties producing long written assignments and performing on timed tests. Problems with social interaction are also common.

## ■ **Echolalia and Echopraxia**

Children with TS may involuntarily echo both speech (echolalia) and behavior (echopraxia). Echoing of speech may consist of repeating things others say, repeating ones own words or phrases, e.g. the end of a sentence, or unusual repetitions of specific words and phrases. Echopraxia often creates additional social difficulties for a child when the mimicry is misunderstood by others.

## ■ **Psychiatric Problems**

While individuals with Tourette syndrome may be well-adjusted and do well in school, many experience mental health difficulties. Many of these are neurologically based, but the stress of living with a chronic socially disabling condition also takes a toll. Attention Deficit Hyperactivity Disorder (ADHD), difficulty understanding social cues, Obsessive Compulsive Disorder (OCD), mania, and depression have all been tied to the differences in brain structure or brain chemistry found in TS. These may be aggravated by life experiences, and lead to further difficulties with self-esteem, peer relationships and academic functioning.

The most common psychiatric problems seen in children with Tourette syndrome are Attention Deficit Hyperactivity Disorder (ADHD) and symptoms of Obsessive Compulsive Disorder (OCD). It is common for ADHD to be the first diagnosis made during childhood, with the diagnosis of TS being made several years later when the tics appear.

**ADHD** is characterized by a short attention span, motor hyperactivity, distractibility and impulsivity; it is seen in 50% to 75% of children with Tourette syndrome. It is more often seen in boys and there appears to be a relationship between the severity of the ADHD and the severity of the Tourette syndrome. Children with TS may be more hyperactive than other children with ADHD because of the additive effects of tics, ADHD and seeking sensory balance. The treatment of ADHD in TS is complicated by the adverse effect of some medications on the severity of tics. Even when medication is effective, classroom accommodations for sensory input, activity level, and attention span are often necessary.

**Obsessive-Compulsive Disorder (OCD)** is characterized by the presence of obsessions, compulsive behavior, perfectionistic tendencies, excessive orderliness and ritualistic behaviors. These compulsions and rituals may be very time consuming, and can interfere with academic achievement and domestic harmony. Other related problems include excessive fears, panic attacks, multiple phobias and

severe test anxiety. A number of medications are now available for the treatment of OCD. Psychotherapy specifically targeted at OCD symptoms is also useful in some cases.

The most common behavioral complaints are of the child having a "short-temper" and "everything being a confrontation." The child's understandable frustration over his inability to control body movements, as well as ridicule by peers, teachers and parents, plays a role in the anger and irritability that often triggers behavior problems. There is, however, evidence that anger and irritability are an intrinsic part of the disorder, at least partially due to the neurochemical makeup of the individual.

An increase in sexual interest and sexual behaviors has also been reported, and is seen in a small group of children with TS. Behaviors may be verbal or physical. Children may touch themselves or others inappropriately, expose themselves, or have sexual language, either as a tic or a compulsive habit. Many times the sexual behaviors are really more infantile than strictly sexual, and can be dealt with using behavior modification techniques. Compulsive sexual speech or touching may respond to medication for tics or OCD. Children who are exhibiting complex or adult type sexual behaviors should be evaluated for the possibility of being a victim of sexual abuse.

### **Autistic Spectrum Disorder (ASD)**

Up to 25% of children with Tourette Syndrome have some symptoms in common with children with an ASD. Some children will just have a few overlapping symptoms, others will have enough symptoms to receive an additional diagnosis of one of the Autistic Spectrum Disorders. Many of the problems fall in the social realm. There is often a desire for friends, but difficulty getting along with peers and following someone else's wishes. Sensory problems are also similar to children with ASD.

## **TREATMENT**

### ■ **General Interventions**

Everyone dealing with TS will benefit from education about TS and support services. Information, support, and an extensive bibliography are available through the Tourette Syndrome Association. Children need to have a growing understanding of the disorder for their own well being, and to advocate for themselves with peers, teachers, and strangers. Many will also benefit from specific social skills training. Children with TS may benefit from direct mental health services, either privately or through a school based mental health program. Parents may also benefit from mental health services for emotional support and problem solving. Appropriate educational interventions for all of the child's learning and behavior problems are essential.

### ■ **Medication**

Medication has been the main intervention available for the management of tics, and also plays a major role in the management of ADHD, OCD, and irritable and explosive behavior. Other features accompanying TS, like learning disorders, and

coordination problems, typically do not benefit from medication. Because children with TS may have symptoms of several different conditions, more than one medication is often required. Children with TS have occasionally required three or more medications to help control their symptoms. This can be done safely, but care must be taken to avoid harmful drug interactions.

### ***TICS***

Medication is indicated for treatment of tics if the symptoms are severe enough to cause psychosocial problems, difficulties with peers, teachers or family, or if they adversely affect the child's development. Medication is not a cure for TS, but it can reduce many of the distressing symptoms.

### ***ADHD***

Standard medications for ADHD can usually be used. These include methylphenidate products like Ritalin and Concerta, or other stimulants like Adderall. There are some children with Tourette Syndrome who have more tics when they take these medicines, but most do not. Wellbutrin is an antidepressant medication that is used to suppress the hyperactivity associated with ADHD. It may also increase tics. Many of the antidepressant medications have a positive effect on ADHD. Catapres (clonidine) or Tenex (guanfacine) may be used by themselves or in addition to other medications to calm hyperactivity.

### ***OBSESSIVE-COMPULSIVE DISORDER (OCD)***

Medication may be very helpful in reducing compulsive behavior. It may be used alone or in addition to cognitive behavior therapy (CBT). There are many similar effective medications in the SRI class (serotonin reuptake inhibitors). They may also be used to treat anxiety, depression, or ADHD symptoms. The FDA has issued a warning regarding suicidal ideation in children who take these medications. This problem occurs in a very small percentage of children between the 6<sup>th</sup> and 12<sup>th</sup> week of the medication trial. If your child might benefit from medication for OCD, his doctor will discuss the risks with you. Catapres (clonidine) and Tenex (guanfacine) may also have a beneficial effect on OCD, and are not in the SRI class.

### ***EXPLOSIVE BEHAVIOR AND IRRITABLE MOOD***

Low doses of major tranquilizers have been very helpful in calming the irritable, explosive behavior of many children with Tourette Syndrome, without sedating them. Although there are no medications specifically approved for Tourette Syndrome, Risperdal has been approved for the same purpose in children with Autistic Spectrum Disorders. There are a variety of similar medications that have not yet been specifically approved for children that may also be used if Risperdal causes too much weight gain.