

# Tic Disorders in Children: Review Questions

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## QUESTIONS

Choose the single best answer for each question.

**Questions 1 and 2 refer to the following case.**

A 6-year-old boy presents with his mother to the pediatrician. She reports that nearly every day for the past 2 years her son has displayed episodes of sudden, rapid, nonrhythmic eye blinking during times of heightened anxiety. She also states that over the past several months her son has been making frequent repetitive nonrhythmic facial grimaces. The child is not bothered by the behavior, but the mother is concerned.

**1. What is this patient's most likely diagnosis?**

- (A) Chronic motor tic disorder
- (B) Normal childhood fidgeting
- (C) Synkinesis
- (D) Tourette's disorder

**2. What is the most appropriate treatment for this patient?**

- (A) Bupropion
- (B) Haloperidol
- (C) Reassurance and clinical monitoring
- (D) Risperidone

**Questions 3 and 4 refer to the following case.**

A 13-year-old boy is referred by his pediatrician to a child and adolescent psychiatrist. The patient reports having various involuntary, repetitive, stereotyped movements of his arms and neck, which have occurred every day for the past 5 years. Additionally, for the past 2 years, the patient repetitively and frequently clears his throat or grunts. The patient's pediatrician has found

no laryngeal pathophysiology to suggest a medical etiology of the patient's throat clearing. These behaviors are increasingly interfering with the patient's ability to participate in social activities, as he feels embarrassed and ashamed by the behavior. He has no other symptoms. The patient's father purportedly exhibited similar symptoms in adolescence. An adequate therapeutic trial of clonidine has been ineffective in suppressing the patient's behaviors.

**3. What is this patient's most likely diagnosis?**

- (A) Rett's disorder
- (B) Sydenham's chorea
- (C) Tic disorder not otherwise specified
- (D) Tourette's disorder

**4. What is the most appropriate treatment for this patient?**

- (A) Benztropine mesylate
- (B) Haloperidol
- (C) Reassurance and clinical monitoring
- (D) Risperidone and behavioral interventions

**5. What is the most common comorbid neuropsychiatric disturbance seen with Tourette's disorder?**

- (A) Coprolalia
- (B) Depression
- (C) Encopresis
- (D) Obsessive-compulsive disorder (OCD)

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**Questions 6 and 7 refer to the following case.**

A 9-year-old girl presents for routine follow-up with her child psychiatrist. She has been treated for OCD with a combination of fluoxetine (40 mg/day) and risperidone (1.5 mg/day) for the past 3 years. Although she has had a moderate improvement in her OCD symptoms with this medication regimen, the patient's mother has recently observed various involuntary, repetitive movements of the patient's face, arms, and neck. The psychiatrist reasons that the patient's movements are likely an early manifestation of Tourette's disorder and increases the dose of risperidone to 3 mg per day. At follow-up 4 weeks later, the patient's mother reports that the movements have increased in frequency and severity.

**6. What is the most likely diagnosis of the patient's movement symptoms?**

- (A) Hyperkinetic movement disorder
- (B) Sydenham's chorea
- (C) Tardive tic disorder
- (D) Tourette's disorder

**7. How should this patient be managed initially?**

- (A) Discontinue risperidone
- (B) Increase the dose of risperidone
- (C) Initiate clonazepam
- (D) Reassurance and clinical monitoring

**8. Which of the following medications would most likely cause tics in a child or adolescent?**

- (A) Methylphenidate
- (B) Phenytoin
- (C) Pramipexole
- (D) Risperidone

**9. Which of the following should be included in the diagnostic evaluation of a child with a tic disorder?**

- (A) Electrocardiography
- (B) Electromyography
- (C) Evaluation of the child's self-esteem
- (D) Magnetic resonance imaging of the brain

**ANSWERS AND EXPLANATIONS**

**1. (A) Chronic motor tic disorder.** This patient most likely has chronic motor tic disorder, which is characterized by at least 1 motor tic (sudden, rapid, recurrent, nonrhythmic, stereotyped motor movements) that persists daily or intermittently for at least 1 year with onset prior to age 18 years.<sup>1</sup> The patient's eye blinking and facial grimacing are simple motor tics. Other common motor tics include shoulder

shrugging, arm jerking, rubbing, and sniffing. If the patient displayed vocal tics in addition to motor tics, the appropriate diagnosis would be Tourette's disorder. The symptoms do not appear to be significantly impairing the patient's psychosocial functioning. Most DSM-IV-TR diagnostic categories are contingent upon symptoms causing significant impairment in social or other important areas of functioning, but tic disorders do not carry this contingency.<sup>1</sup> Synkinesis is an involuntary movement that occurs specifically in conjunction with a voluntary motor action (eg, movement of the mouth when the person intends to raise the eyebrow).<sup>1</sup> Repetitive motor tics do not represent normal childhood behavior.

**2. (C) Reassurance and clinical monitoring.** When tic disorder symptoms are mild and not interfering with psychosocial functioning, it is most appropriate to educate the family about tic disorders and reassure them that tic disorders can be managed with a combination of behavioral interventions and/or medications if symptoms become more severe.<sup>2</sup> Both haloperidol and risperidone are used to treat tic disorders, whereas bupropion is not effective for these conditions.<sup>2</sup>

**3. (D) Tourette's disorder.** This patient most likely has Tourette's disorder, which is characterized by at least 1 motor and 1 vocal tic (sudden, rapid, recurrent, nonrhythmic, stereotyped motor movements) that persist daily or intermittently for at least 1 year with onset prior to age 18 years.<sup>1,2</sup> The patient's arm jerking and head tossing are motor tics, while the throat clearing and grunting are vocal tics. Other common vocal tics include sniffing, clicking, coughing, and snorting.<sup>1</sup> Complex tics, which can appear similar to the rituals observed in OCD (eg, locking a deadbolt repetitively), may develop in persons with Tourette's disorder.<sup>2</sup> The disorder is seen in approximately 1% of school-aged children and is more common in boys than in girls.<sup>2,3</sup> There is evidence that Tourette's disorder is genetic with a complex mode of transmission; however, some studies have suggested an autosomal dominant pattern.<sup>1</sup> Choreiform movements, such as Sydenham's chorea, are random, irregular, and nonstereotyped movements.<sup>1</sup> Rett's disorder is a severe pervasive developmental disorder that has only been reported in females.<sup>1</sup>

**4. (D) Risperidone and behavioral interventions.** The patient's symptoms are substantially interfering with his life, and interventions beyond reassurance and clinical monitoring are indicated. A combination

of medication and behavioral interventions should be started. Given their lower extrapyramidal side effect profile, second-generation antipsychotics, such as risperidone, are preferred over first-generation antipsychotics (eg, haloperidol) as the treatment of choice for Tourette's disorder.<sup>2,4</sup> Risperidone is the best-studied second-generation antipsychotic in children and therefore is most commonly used in this population. A common behavioral intervention for Tourette's disorder is habit reversal.<sup>2,5</sup> Habit reversal trains the patient to increase awareness of tics and helps the patient create more socially appropriate responses to tic impulses. Clonidine is often used to treat tic disorders but is generally less effective than antipsychotic agents.<sup>2</sup> Benztrapine mesylate is not used to treat tic disorders.

5. **(D) OCD.** Comorbidity is common in Tourette's disorder.<sup>1,2,4</sup> While precise prevalence rates are unavailable, it is thought that 50% to 60% of persons with Tourette's disorder have comorbid OCD. Other common comorbid conditions of Tourette's disorder include attention deficit-hyperactivity disorder (50%), oppositional defiant disorder (33%), and conduct disorder (33%).<sup>4</sup> Mood disorders also frequently complicate Tourette's disorder and are associated with the social isolation often seen in persons with Tourette's disorder. Although sometimes considered synonymous with Tourette's disorder, coprolalia (the sudden outburst of swear words) is a symptom of this condition and is seen in a minority (21%–37%) of patients with Tourette's disorder.
6. **(C) Tardive tic disorder.** The patient's presentation is consistent with tardive tic disorder (also known as tardive Tourette's disorder), which is a tic disorder induced by chronic use of antipsychotic medications that is phenomenologically indistinguishable from Tourette's disorder.<sup>3</sup> Worsening of this patient's tics with an increased dose of an antipsychotic toward a tardive etiology rather than an idiopathic tic disorder such as Tourette's disorder. Hyperkinetic movement disorder is a general term for any involuntary movement syndrome.<sup>3</sup> Choreiform movements, such as Sydenham's chorea, are random, irregular, and nonstereotyped movements.<sup>1,3</sup>
7. **(A) Discontinue risperidone.** Treatment of tardive tic disorder should (when possible) begin with cessation of the offending agent, in this case risperidone.<sup>3</sup> However, cessation of an antipsychotic will

not always lead to an attenuation of the movement disorder. Little is known about the optimal treatment of persistent tardive tic disorder; however, case reports suggest that clonazepam and clozapine may be effective.<sup>3</sup> In this case, clonazepam would only be considered if tics persisted after the cessation of risperidone.

8. **(A) Methylphenidate.** Anticonvulsants (eg, phenytoin), antipsychotics (eg, risperidone), and dopaminergic agents (eg, pramipexole) can induce tics in children and adolescents<sup>3</sup>; however, stimulants, such as amphetamines, methylphenidate, cocaine, and pemoline, induce tics at a higher frequency.
9. **(C) Evaluation of the child's self-esteem.** Children with tic disorders are frequently the victims of teasing by other children as well as social ostracism.<sup>5</sup> Therefore, a detailed evaluation of the child's self-esteem and use of coping strategies are essential.<sup>5</sup> A referral for psychotherapy may be indicated if the child is experiencing feelings of low self-worth or is having difficulty with peer relationships.<sup>5</sup> This is particularly true given the fact that tics are often exacerbated by stress.<sup>1</sup> Therefore, children with tics may find themselves in a vicious cycle where stress caused by peer teasing exacerbates tics, and the worsening of tics results in increased teasing and subsequent stress. A child's adaptation capacities, coping mechanisms, and interpersonal skills may play a significant role in outcome.<sup>5</sup> Electrocardiography, magnetic resonance imaging, and electromyography are not indicated for the evaluation of a tic disorder in the absence of other neurologic signs or symptoms.<sup>5</sup>

## REFERENCES

1. American Psychiatric Association. Diagnostic and statistical manual of mental disorders, 4th ed., text revision. Washington (DC): The Association; 2000.
2. Sadock BJ, Sadock VA. Synopsis of psychiatry. 9th ed. Philadelphia: Lippincott Williams & Wilkins; 2003:1246–53.
3. Cummings JL, Mega MS. Neuropsychiatry and behavioral neuroscience. New York: Oxford University Press; 2003.
4. Shavitt RG, Hounie AG, Rosario Campos MC, Miguel EC. Tourette's syndrome. *Psychiatr Clin North Am* 2006; 29:471–86.
5. Popper CW, Gammon GD, West SA, Bailey CE. Disorders usually first diagnosed in infancy, childhood or adolescence. In: Hales RE, Yudofsky SC, editors. The American Psychiatric Publishing textbook of clinical psychiatry. 4th ed. Washington (DC): American Psychiatric Pub.; 2003.