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TIC DISORDERS IN THE PEDIATRIC POPULATION

ТИКОВИ ВО ПЕДИЈАТРИСКАТА ПОПУЛАЦИЈА

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ABSTRACT

Tics are defined as a recurrent, non-rhythmic series of movements, of a non-voluntary nature, in one or several muscle groups. Tics are sudden twitches, movements, or sounds that people do repeatedly. They can take place anywhere on the body and be very frequent.

The lifetime prevalence of tic disorder is not known but estimates vary between 5% and 10% of the population, with estimations of 18% in child population.

No definitive cause of tics has been discovered yet. Vulnerability to tic disorders seems to be genetic or to run within families, even though no single gene has been found.

High rates of comorbid conditions are recognized in persons with tic disorders especially in patients with Tourette syndrome, like obsessive-compulsive disorder, attention-deficit/hyperactivity disorder and anxiety disorders.

Currently, there is no one effective cure for tic disorders, but there are treatments that can help manage them. The therapeutic approach should be determent individually and conducted by multidisciplinary team.

Key word: tic disorder, pediatric population

INTRODUCTION

Tics are defined as a recurrent, non-rhythmic series of movements, of a non-voluntary nature, in one or several muscle groups. Tics are sudden twitches, movements, or sounds that people do repeatedly. American Psychiatric Association in Diagnostic and Statistical Manual of Mental Disorders 5th edition, includes three tic disorders:

- **Tourette's disorder** (also called Tourette Syndrome)
  - have two or more motor tics (for example, blinking or shrugging the shoulders) ***and*** at least one vocal tic (for example, humming, clearing the throat, or yelling out a word or phrase), although they might not always happen at the same time.
  - have had tics for at least a year. The tics can occur many times a day (usually in bouts) nearly every day, or off and on.
  - have tics that begin before he or she is 18 years of age.
  - have symptoms that are not due to taking medicine or other drugs or due to having another medical condition (for example, seizures, Huntington disease, or postviral encephalitis).
- **Persistent (also called chronic) motor or vocal tic disorder**
  - have one or more motor tics (for example, blinking or shrugging the shoulders) or vocal tics (for example, humming, clearing the throat, or yelling out a word or phrase), but ***not*** both.
  - have tics that occur many times a day nearly every day or on and off throughout a period of more than a year.
  - have tics that start before he or she is 18 years of age.
  - have symptoms that are not due to taking medicine or other drugs, or due to having a medical condition that can cause tics (for example, seizures, Huntington disease, or postviral encephalitis).
  - not have been diagnosed with Tourette Syndrome.
- **Provisional tic disorder**
  - have one or more motor tics (for example, blinking or shrugging the shoulders) or vocal tics (for example, humming, clearing the throat, or yelling out a word or phrase).

- have been present for no longer than 12 months in a row.
- have tics that start before he or she is 18 years of age.
- have symptoms that are not due to taking medicine or other drugs, or due to having a medical condition that can cause tics (for example, Huntington disease or postviral encephalitis).
- not have been diagnosed with Tourette Syndrome or persistent motor or vocal tic disorder

However, simple tics should be distinguished from acts like the routines, automatisms and stereotype behaviors or from the neurological spasms. Furthermore, complex tics, should be distinguished from the compulsions in obsessive-compulsive disorder [1].

CHARACTERISTICS OF TIC DISORDER

In general, tics occur daily and cause significant distress for the child and his family. There is a difference between transitory tics, chronic tics and Gilles de la Tourette's syndrome. Transitory tics are happening during a short period, usually in early childhood and gradually disappear or enter in a spontaneous remission. In chronic tics disorder one or several simple or complex tics are present. Tourette's syndrome is characterized by multiple physical (motor) tics and at least one vocal (phonic) tic.

Tics could be simple or complex. A simple motor tic involves only one muscle group and includes blinking, head movement, cheek jerks etc. It is almost always focused on the upper body. A simple vocal tic include coughing, sniffing, growling etc. Tics can also be complex, when there is a contraction of more than one group of muscles like movements, bizarre mannerisms and can involve several limbs. Complex vocal tics involve repeating sounds, words, or phrases and in occasionally coprolalia which is usage of swear words.

Tics can take place anywhere on the body and can be frequent between one and 200 times per minute. Simple facial tics are usually most common and ordinarily have the highest frequency. The onset of simple tics can sometimes leads into complex tics and they can develop at any time in the childhood. Vocal tics mostly appear after the motor tic develops and it is very unlikely for tics to develop in the adolescence, even though adults can develop tics too, often after serious trauma or surgery [2].

Complex tics must be distinguished from stereotypies, compulsions, routines and rituals. But that is easier to say than to do. In the clinical practice, it is sometimes difficult to make a clear difference between those behaviors. In general we can say that in the routines, there may be little awareness but there is overall volitional control, stereotypes are regarded as the most cognitive component, in rituals, there may be awareness but no control, compulsive refers to an involuntary thought, action or process. In tics, there may be neither awareness nor control.

The paradox of tics is that they are affecting voluntary muscles. The muscles which are regulating heart bit, breathing or other autonomic functions are not producing tics. Therefore, we can say that tics occur in muscles used usually for voluntary control but yet they appear to be non-voluntary act and very often undetected by the person who is doing it.

Then again, there is another paradox. We can say that tics are non-voluntary and often non-conscious acts but the need to do them can be deliberately suppressed or physically held for considerable amount of time.

PREVALENCE

The incidence of Tourette's syndrome in adults is about 0.1-1%, while in children have been as high as 3%, while the prevalence is 10 to 100 per 10000 population. [3]. The lifetime prevalence of tic disorder is not known but estimates vary between 5% and 10% of the population, with estimates of 18% in child population [4]. Transitory tics in school age children ages from 5 to 12 is from 4% to 24%, chronic tics is in range from 4% to 4,5%, while vocal tics alone (without motor tics) is rare, only 5% of the patients with tics and with male/female ratio of 2:1 [5].

ETIOLOGY

Emotional factors were once considered to be the main cause for tics appearance but this explanation has been mostly abandoned. Now the focus is on biological, chemical and environmental factors. However, no definitive cause of tics has been discovered yet. Vulnerability to tic disorders seems to be genetic or to run within families, even though no single gene has been found.

Some form of tics could be triggered by the environment or everyday situations like a cough from a respiratory infection may led into an involuntary vocal tic. A tic may also start as imitations of everyday events, such as imitating a dog barking. How these can led to tic manifestation is a matter for further research.

In some cases, tics can develop after streptococcal infection. The cause of this kind of association has not yet been determined. The working hypothesis is that it could be related to the autoimmune system. Development of tics can also be a case after head trauma, viral encephalitis or stroke.

COMORBID CONDITIONS

In Tourette's syndrome there are often behavioral and attentional comorbid conditions, such as Attention Deficit Hyperactivity Disorder (ADHD) and Obsessive-Compulsive Disorder (OCD). The comorbidity of a tic disorder with OCD varies between 25 and 63%. But where OCD occurs with either Tourette's syndrome or tic disorder, the tics and obsessions develop independently [6].

Even though it seems that tic disorder do not have greater psychiatric comorbidity than the normal population, comorbid behavioral disorders are at the greatest concern. Seriousness of the tic symptoms is positively related to behavioral problems. ADHD seems to cause many of the superficial deficits in Tourette's syndrome. Furthermore, suggestions are that Tourette's syndrome may have comorbidity with bipolar disorder and even schizophrenia. In children, where Tourette's syndrome and OCD are present, there is big possibility of behavioral disturbances such as rage syndrome. The association between childhood and adult comorbidities also remains indefinite.

TREATMENT

Currently, there is no one effective cure for tic disorders and no indication that early treatment changes the prognosis. When evaluation of one child with tics is done, it is impossible to define if this specific tic will be chronic or transient, mild or severe, treatable or not.

For the treatment of tics a holistic approach is recommended. A multidisciplinary team should work together, including the child's parents and teachers.

Treatment should include the following:

- educating the patient and family about the course of the disorder
- assessment of the child's cognitive abilities and behavior
- collaboration with the parents and school personnel
- psychotherapy and if necessary medication.

The treatment of tics depends on:

- the severity of the tics
- the level of distress that tics cause
- the effects that tics have on child's school performance or everyday activities.

If the tic is mild and doesn't interfere with school or everyday life, the treatment may not be needed. The tic may improve without treatment as the child is getting older.

If the treatment is needed, there are several pharmacological and psychological treatments available. When choosing particular pharmacological treatment, we should be very aware of the following:

- the type of symptoms that are most problematic
- the severity of the symptoms
- how important treatment is to the parents and the child
- the risk of possible side effects.

Psychological treatment, like behavioral therapies, cognitive-behavioral therapy (CBT), counselling or relaxation training, are treatments that can improve the emotional wellbeing in children with tics. The aim of the psychological treatments is to teach the child how to change their behavior, like thinking about their feelings or what triggers the tic. Over time, the child will learn how to control the tic so that it's no longer a problem. The type of psychological treatment that will be conducted depends on the nature and severity of the tics.

Massed negative practice is one of the most commonly used behavioral therapy in the treatment of children with tics. The child is asked to intentionally execute the tic movement for certain amount of time combined with short periods of relaxation. Children have shown decrease in the tic occurrence but the long-term benefits of this treatment are still unclear.

Contingency management is a different behavioral treatment. It is based on positive strengthening, usually administered by parents. Children are rewarded for replacing the tic manifestation with alternative behaviors. But the limited use of this treatment outside the home, like school or other institutions, is making this treatment not as effective as it should be.

Self-monitoring is another treatment in which the patient is recording the tics by using some counters or in paper.

It is objectively effective in reducing some form of tics by increasing the child's awareness of them.

CBT is a form of psychological therapy that aims to change the behavior by changing the way we are thinking about a situation, ourselves, the world, other people and how the thoughts are affecting our feelings and behavior. In general, we can say that CBT can help in changing how we think (cognitive) and what we do (behavior), which is very helpful in treating tics. CBT cannot remove objective problems but can help in managing them in a more positive way by encouraging awareness of how actions can affect thinking and feeling. Unlike other types of psychotherapy, CBT deals with current problems, rather than focusing on issues from your past. It looks for practical ways to improve the state of mind on a daily basis. CBT works by breaking them down overwhelming problems into smaller parts. The thoughts, feelings, physical sensations and actions are interconnected, often putting the child in a negative spiral. CBT helps in stopping these negative cycles. It aims to break down factors that are provoking bad feelings, anxious or fear so that they are more manageable. It can teach the child how to change these negative patterns and improve the emotional state.

CBT is conducted once a week or once every two weeks. The number of needed sessions will depend on individual problems and objectives. Treatment usually lasts six weeks to six months.

Habit reversal therapy (HRT) is a multicomponent behavioral treatment developed to solve the repetitive behaviors. HRT aims to:

- educate about certain condition and how it could be treated
- increase the awareness of the tic occurring and identify the urges beneath it
- teach about new responses to the urges that can trigger the tic.

HRT is focused on the sensation occurring before a tic and includes replacing the tic with a more comfortable or acceptable movement or sound, when the child will feel that the urge is building.

Studies have found that HRT can improve the severity of symptoms in 64% to 100% of the cases.

Exposure with response prevention (ERP) is another treatment that involves delaying of the tic for as long as possible by suppressing the urge that can provoke the tic. In time, the need to tic should decrease, similarly to resistance to itch some part of the body resulting in the itchy feeling eventually to go away.

Tics are complex to control and prevent because they are involuntary muscle contractions. However, it might be possible to reduce the frequency and severity of some tics by:

- avoiding potentially stressful situations
- practicing relaxing activities
- taking a good rest
- avoiding over exciting activities and situations.

The treatment for each child must be determined individually and based on the symptoms of primary concern and associated difficulties.

PROGNOSIS

Majority of the children with tic disorder, as they enter the later years of adolescence or early adulthood, will achieve significant reduction in tic frequency. In a small number of them, tic disorder will continue in the adulthood too. But stressful events later in life can cause tics to appear again. Although the tics can disappear, associated problems often continue in the adult life. OCD, attention problems, learning disabilities and other behavioral difficulties can persist or even grow worse.

CONCLUSION

Tics in children are very frequent and very variable. The best possible management of patients with tics includes a thorough approach focused not only on the tics but also on comorbid conditions mostly on ADHD and OCD and present psychosocial stressors. For young children, main aim of the treatment is to help the child develop self-confidence, personal flexibility and affirmative psychosocial abilities. The definitive management usually involves a wide range of interventions that includes education of the parents and the child, cognitive-behavioral therapies, counseling and pharmacotherapy. The multidisciplinary approach, including child neurologist, pediatrician and child psychologist/psychiatrist as well as school personnel is fundamental in achieving tic remission.

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ABBREVIATIONS:

Attention Deficit Hyperactivity Disorder (ADHD)
Obsessive-Compulsive Disorder (OCD)
Cognitive-behavioral therapy (CBT)
Habit reversal therapy (HRT)
Exposure with response prevention (ERP)

ТИКОВИ ВО ПЕДИЈАТРИСКАТА ПОПУЛАЦИЈА

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АБСТРАКТ

Тиковите (според дефиниција) се повторувачки, неритмички серии на движења од неволева природа, што опфаќаат една или повеќе мускулни групи. Тие се ненадејно грчења, движења или звуци кои индивидуите ги повторуваат. Може да се појават на кој било дел од телото и да бидат многу фреквентни.

Преваленцијата на тиковите во текот на животот е непозната, но процентите вариираат помеѓу 5% и 10% од општата популација, а проценките во детската популација се искачуваат и до 18%.

Досега не е позната етиологијата за појава на тиковите. Се чини дека предиспонираноста за оваа состојба е генетска, т. е. дека во некои семејства се појавува почесто иако сè уште не е пронајден одреден, специфичен ген.

Кај лицата со тикови често се среќаваат коморбидни состојби, аова особено важи за пациентите со Туретов синдром, како опсесивно-компулсивно растројство, недостаток на внимание со или без хиперактивност и анксиозни растројства.

Во моментов не постои уникатно ефикасна терапија за тиковите. Терапевтскиот пристап треба да се прилагоди поединечно за секој пациент и да се спроведе од страна на мултидисциплинарен тим.

Клучни зборови: тикови, детска популација