Tic disorders in the differential diagnosis of chronic cough in children in relation to four cases

Işık Karakaya, Şahika Gülen Şişmanlar

Department of Child and Adolescent Psychiatry, Kocaeli University Faculty of Medicine, Kocaeli, Turkey

Abstract

Chronic cough is a frequent reason for medical referrals in childhood. In patients who do not have signs or symptoms of an underlying respiratory system disease and who do not respond to experimental treatment, psychogenic cough should be considered. In this paper, four patients who were referred to our department with a prediagnosis of psychogenic cough, found to have tic disorder as a result of the assessments performed and improved with antipsychotic medication are presented. The differential diagnosis of chronic cough in children should include tic disorders as well as psychogenic cough. Tic disorders can be diagnosed easily with detailed history and their response to medical treatment is rather satisfactory. Recognition of these disorders by pediatricians will minimize erroneous diagnoses and inappropriate therapies in children with a complaint of chronic cough. (Turk Pediatri Ars 2015; 50: 176-9)

Keywords: Differential diagnosis, chronic cough, tic

Introduction

Chronic cough which is one of the frequent reasons for medical referral is defined as resistant cough lasting for longer than three weeks (1). While infections, coryza, gastroesophageal reflux and asthma are reported to be common causes of chronic cough, conditions which can not be associated with the respiratory system or another systemic disease may also cause to chronic cough (1, 2).

Children with a complaint of chronic cough are generally evaluated by pediatricians repeatedly and chest x-ray, computerized tomography and blood tests are performed and treatment with antibiotics, bronchodilators and antiinflammatory drugs is administered (3). In cases where the signs and symptoms of an underlying lung disease can not be found and in cases where there is no response to empirical treatment, psychogenic cough is considered frequently (4, 5).

In this article, the diagnostic and therapeutic process of four patients who presented to different pediatrics clinics with a complaint of cough lasting for longer than one month, whose physical examinations, radiological examinations, lung function tests and blood and allergy tests revealed no pathology, who did not respond to drug treatment and were referred to our clinic with a prediagnosis of psychogenic cough and were diagnosed with "tic disorder" as a result of assessments is reported.

Case 1

A nine-year old male patient presented with involuntary mild cough which occurred in the form of attacks during the day time which had been lasting for the last six months. It was learned that cough completely disappeared during sleep and its frequency was reduced when he concentrated in any activity. In the detailed history taken from the family, it was found that the

Address for Correspondence: Işık Karakaya, Kocaeli Üniversitesi Tıp Fakültesi, Çocuk ve Ergen Psikiyatrisi Anabilim Dalı, Kocaeli, Türkiye.
E-mail: karakaya73@yahoo.com

Received: 06.05.2013 **Accepted:** 04.10.2013

©Copyright 2015 by Turkish Pediatric Association - Available online at www.turkpediatriarsivi.com

DOI: 10.5152/TurkPediatriArs.2015.1215

Table 1. Sociodemographic and clinical properties of the patients

	Age	Gender	Complaint at presentation	Previous diagnoses	Previous treatment	Response to treatment	Psychiatric codiagnosis	Familial history
Case 1	9 years	Male	Cough which had been lasting for the last 6 months	Nonspecific diagnoses	Empirical treatment	No response	ADHD	No pathology found
Case 2	6 years	Female	Cough and clearing throat which started following URTI and had been lasting for the last 4 months	URTI, bronchial hyperreactivity	Empirical treatment	No response	None	Chronic motor tic in the father (+) OCD in the mother (+)
Case 3	13 years	Male	Cough and roaring which had been lasting for the last 1.5 years	Asthma	Empirical treatment	No response	Anxiety disorder NOS and ADHD	Tourette syndorme in the uncle (+) Pervasive anxiety disorder in the father (+)
Case 4	8 years	Male	Cough which had been lasting for the last one year	Allergic rhinitis Allergic asthma	Empirical treatment	No response	None	Transient tic disorder in the sibling (+)

NOS: not otherwise specified; ADHD: attention deficit hyperactivity disorder; OCD: obsessive compulsive disorder; URTI: upper respiratory tract infection.

patient had motor tics including blinking, sniffing and twisting the neck which occasionally occurred and disappeared since the age of six years and carried the symptoms of attention deficit hyperactivity disorder (ADHD). No motor tic was observed at the time of presentation at our clinic. The cough was evaluated to be vocal tic considering the patient's history, cough features and course and accompanying motor tics. A diagnosis of Tourette syndrome was made according to the DSM-IV diagnostic criteria and haloperidol treatment was initiated (6). Cough which was decreased in frequency in the second week of treatment disappeared completely in the fifth week (Table 1).

Case 2

A six-year old female patient was followed up with a complaint of cough which started following upper respiratory tract infection she had four months before she presented to our clinic and treated. She was referred to our clinic, because her complaint persisted. A complaint of cough which resembled breathing in and out loudly and which was occasionally accompanied by throat clearing was found. It was reported that the severity of the symptoms varied throughout the day time, the symptoms were absent on some days and could be stopped albeit for a short time when the patient was stimulated. While the patient had no past history of motor or vocal tic, motor tics in the form of elevating the shoulder and blinking were noted in the father. It was learned

that the mother was being treated with a diagnosis of obsessive compulsive disorder (OCD). Because her complaints started within a time period shorter than one year, haloperidol treatment was initiated with a diagnosis of "transient tic disorder" according to the DSM-IV diagnostic criteria (6). It was observed that her complaints decreased to an ignorable level in the follow-up visit in the third week (Table 1).

Case 3

A thirteen-year old male patient presented with a complaint of cough which had been lasting for 1.5 years. He was being treated with a diagnosis of asthma. He was irresponsive to all treatments. In the history, it was learned that he was evaluated at a young age because of motor and vocal tics, but the family did not pursue follow-up and treatment. It was learned that the motor tics continued by changing their forms until presentation at our clinic, he was referred to a pediatrician because of cough and making a roaring sound which were added in the last 1.5 years and started to be followed up with a diagnosis of asthma. It was learned that the patient's uncle also had motor and vocal tics predominantly in the childhood and mild vocal tics continued in the adulthood. As a result of detailed history and assessment, it was decided that the patient met the criteria of Tourette syndrome according to the DSM-IV (6). Haloperidol treatment was initiated. When no response could be obtained even after the dose of

haloperidol was increased, the patient's medication was changed and treatment with pimozide which is another antipsychotic drug was initiated. In the fourth week of pimozide treatment, the complaint of cough and motor tics disappeared completely, but the complaint of making sound persisted partially (Table 1).

Case 4

An eight-year old male patient presented with a complaint of cough which had been lasting for the last one year with a frequency disrupting the class at school. The family referred to a pediatrician, when the teachers complained, treatments were administered with different prediagnoses, but no response could be obtained. According to the information obtained from the family, the patient's cough persisted the whole day and became more severe when his anxiety increased. The mother reported that he also had cough during sleep, but did not wake up. It was learned that he had motor tics in the form of blinking and elevating the eyebrows which accompanied cough and occasionally increased and decreased. It was found that the patient's brother had tics in the form of blinking and smacking lips for the last three months. The patient's cough was evaluated to be vocal tic. Risperidone treatment was started with a diagnosis of Tourette syndrome according to DSM-IV (6). In the follow-up visit after one month, it was learned that his complaints decreased at school and cough was noted rarely by the family members at home.

Discussion

Although it is difficult to differentiate psychogenic cough and vocal tic from each other, the characteristic features of both pictures helped in the differential diagnosis in our cases (7, 8).

Psychogenic cough usually occurs after the age of five years and completely disappears during sleep and activity. Cough is substantially notable with its barking-like, noisy and explosive and severe features. Increase in cough when focused on cough and decrease in cough in the absence of the parents or other caregivers are typical for psychogenic cough. Psychogenic cough is directly related with the anxiety of the child. Anxiety triggers and exacerbates cough. It is known that this condition is resistant to drugs (4, 7-9).

Tics are defined as rapid and repetitive muscle contractions manifested by involuntary movements or sounds. Tic disorders are included in the class of neuropsychiatric disorders. Typical vocal tics which are observed

in tic disorders characterized with motor and vocal tics include clearing the throat, grunting, snuffling from the nose and cough. Individuals with tic disorder can suppress their tics for a few minutes or hours. However, especially young children are not aware of their tics or consider them irresistible. Tics decrease in sleep and during relaxation or when the individual concentrates in any activity. Vocal tics generally occur after motor tics or accompany them. They are instant, rapid and may start following respiratory tract diseases. Tics are expected to initiate between the ages of two years and 15 years. Presence of similar complaints in family members and accompaniment with psychiatric disorders including ADHD, OCD, other anxiety disorders, anger control problems and trichotillomania are frequent. The frequency and severity of tics are related with the child's anxiety level and response to drugs is substantially well (10-14). The most commonly used drugs in clinical practice is dopamin receptor antagonists (antipsychotic agents) (10).

When the features of cough were questioned in assessment of our cases, it was found that cough occurred as attacks in the day time, its frequency and severity showed variance in days and even hours and marked motor tics accompanied in these cases. When the patients were questioned in terms of accompanying disorders and familial characteristics, two patients were codiagnosed with ADHD and anxiety disorder as expected and three patients had a familial history of tic disorder. The most commonly used dopamin receptor antagonists (antipsychotics) in treatment of tic disorders were initiated in all cases and a marked improvement was obtained in a short time.

In presence of extraordinary, stereotypical, chronic dry cough which can not be explained with any underlying physical disease, tic disorder should also be considered in addition to psychogenic cough. Remembering tic disorders which can be diagnosed easily with detailed history and which respond substantially satisfactorily to drug treatment in the differential diagnosis will minimize the risk of unnecessary investigations and treatments in children.

Informed Consent: Written informed consent was not obtained from patients due to the retrospective nature of this study.

Peer-review: Externally peer-reviewed.

Author Contributions: Concept - I.K., Ş.G.Ş.; Design - I.K., Ş.G.Ş.; Supervision - I.K., Ş.G.Ş.; Funding - I.K., Ş.G.Ş.; Materials - I.K., Ş.G.Ş.; Data Collection and/or Processing - I.K., Ş.G.Ş.; Analysis and/or Interpretation - I.K., Ş.G.Ş.; Literature

Review - I.K., Ş.G.Ş.; Writer - I.K.; Critical Review - I.K., Ş.G.Ş.; Other - I.K., Ş.G.Ş.

Conflict of Interest: No conflict of interest was declared by the authors.

Financial Disclosure: The authors declared that this study has received no financial support.

References

- de Jongste JC, Shields MD. Cough. 2: Chronic cough in children. Thorax 2003; 58: 998-1003. [\[CrossRef\]](#)
- Palombini BC, Villanova CAC, Araujo E, et al. A pathogenic triad in chronic cough. Asthma, postnasal drip syndrome, and gastroesophageal reflux disease. Chest 1999; 116: 279-84. [\[CrossRef\]](#)
- Chang AB, Glomb WB. Guidelines for evaluating chronic cough in pediatrics: ACCP evidence-based clinical practice guidelines. Chest 2006; 129: 260S-83S. [\[CrossRef\]](#)
- Grüber C, Lehmann C, Weiss C, Niggemann B. Soma-toform respiratory disorders in children and adolescents-proposals for a practical approach to definition and classification. Pediatr Pulmonol 2012; 47: 199-205. [\[CrossRef\]](#)
- Velasco-Zúñiga R, Benito-Pastor H, Del Villar-Guerra P, et al. Psychogenic cough: a diagnosis of exclusion. Pediatr Emerg Care 2012; 28: 1218-9. [\[CrossRef\]](#)
- Köroğlu E, (çev ed). Amerikan Psikiyatri Birliği Mental Bozuklukların Tanısal ve Sayımsal El Kitabı, Gözden geçirilmiş dördüncü baskı (DSM-IV-TR). Hekimler Yayın Birliği, Ankara, 2007.
- Erenberg G. Psychogenic cough. Pediatrics 2001; 108: 819-20.
- Ojoo JC, Kastelik JA, Morice AH. A boy with a disabling cough. Lancet 2003; 361: 674. [\[CrossRef\]](#)
- Ishizaki Y, Kobayashi Y, Kino M. Chronic and persistent cough related to vulnerability to psychological stress: tic or psychogenic? Pediatr Int 2008; 50: 392-4. [\[CrossRef\]](#)
- Párraga HC, Harris KM, Párraga KL, Balen GM, Cruz C. An overview of the treatment of Tourette's disorder and tics. J Child Adolesc Psychopharmacol 2010; 20: 249-62. [\[CrossRef\]](#)
- Conelea CA, Woods DW. The influence of contextual factors on tic expression in Tourette's syndrome: a review. J Psychosom Res 2008; 65: 487-96. [\[CrossRef\]](#)
- Du JC, Chiu TF, Lee KM, et al. Tourette syndrome in children: an updated review. Pediatr Neonatol 2010; 51: 255-64. [\[CrossRef\]](#)
- Duncan KL, Faust RA. Tourette syndrome manifest as chronic cough. Int J Pediatr Otorhinolaryngol 2002; 65: 65-8. [\[CrossRef\]](#)
- Tan H, Büyükavci M, Arik A. Tourette's syndrome manifests as chronic persistent cough. Yonsei Med J 2004; 45: 145-9. [\[CrossRef\]](#)