

Cetirizine and albendazole induced dystonia in a child

Özge Yılmaz-Topal¹, Nilden Tuygun², Halise Akça², Emine Polat¹, Can Demir Karacan²

²Division of Pediatric Emergency Medicine, ¹Department of Pediatrics, Dr. Sami Ulus Maternity and Children's Research and Training Hospital, Ankara, Turkey. E-mail: osgee_87@hotmail.com

Received: 25 September 2014, Revised: 31 October 2014, Accepted: 10 December 2014

SUMMARY: Yılmaz-Topal Ö, Tuygun N, Akça H, Polat E, Karacan CD. Cetirizine and albendazole induced dystonia in a child. *Turk J Pediatr* 2015; 57: 407-408.

Drug-induced dystonic reactions are a common presentation to the Pediatric Emergency Department frequently with antiemetics, antidepressants, dopamine-blocking agents and antipsychotics. We report a case of generalized form of dystonia after taking albendazole and cetirizine. There is only one case with albendazole induced and two cases with cetirizine induced dystonia in the literature.

Key words: albendazole, cetirizine, child, dystonia.

Dystonia is a neurologic movement disorder, which causes involuntary muscle contractions and abnormal postures¹. There are various ways of classification of dystonia. Anatomical classification of dystonia is focal, segmental, generalized, multifocal and hemidystonia. Generalized dystonia is defined involving at least one leg, the trunk, and another body area². In childhood, lots of reasons of dystonia are determined in the etiology of dystonia. The majority of the cause of dystonia is drugs³. Here, we report a case of generalized form of dystonia after taking albendazole and cetirizine. To our knowledge, only one case with albendazole induced and two cases with cetirizine induced dystonia were previously reported in the literature³⁻⁵.

Case Report

A 3-year-5-month-old boy who rapidly developed lateral flexion of neck, extension of forearms, adduction and flexion of arms and flexion of hand fingers was presented to Pediatric Emergency Department. These involuntary spells recurred every 2 to 3 minutes. According to the history, he had itching continued for two days and he received only single dose of albendazole (200 mg) and cetirizine (5 mg) 20 hours before because of a probable worm infection. There was no history of a recent infection or trauma. His body temperature, heart rate, respiratory rate, and blood pressure were in normal ranges for his age. He was

managed as dystonia due to his history and physical examination. Biperiden was given intramuscularly. The patient's symptoms started to be resolved after six hours of biperiden treatment. Initially, he was able to move his neck, then his arms and fingers. Twelfth hour of patient follow up, all the symptoms regressed completely. On follow-up visit at the 24th hour of onset, the patient had no complaint. The patient was thought to be drug-induced dystonia caused by albendazole and/or cetirizine.

Discussion

Dystonia is a movement disorder characterized by involuntary, sustained muscle contractions that result in twisting and repetitive movements or abnormal postures¹. Neurochemical cause of dystonia is not clear yet. It is speculated that dopaminergic activity abnormalities and cholinergic neurotransmitter systems in the basal ganglions lead to dystonia. Acute and chronic dystonic symptoms may occur with antidopaminergic drugs and also dystonia symptoms are seen with Parkinson's disease and some dystonia forms can be treated with L-dopa. Therefore, dystonia is considered a disorder marked dopamine depletion⁶. Classification of dystonia is in three ways; according to the age of onset, effected body area and etiology². Drugs induced dystonia is in the classification according to the etiology. Antiemetics, antidepressants, dopamine-

blocking agents and antipsychotics are the best-known cause of drug induced dystonia⁷.

Cetirizine is a high selective histamin H1 receptor antagonist which has dopamine receptor blocking properties in susceptible individuals and may cause dystonic movements⁸. In reported cases, one had dystonia after 3-day use³, the other developed dystonia after 18-day use of cetirizine. However, dystonic movements of the second case continued 8 weeks after the last dose of cetirizine. The authors postulated that in the second case long duration of the symptoms may be due to a genetic susceptibility⁴.

Albendazole is an antihelmintic drug. It effects the cell by inhibiting tubulin polymerization⁹. The only reported case using albendazole developed dystonic movements at the 4th hour of drug intake. The role of albendazole on dopaminergic activity on extrapyramidal cortex is not yet clear⁵.

The two drugs individually or together may be responsible from dystonia in our patient. Although reduced blood-brain barrier penetration of cetirizine, it is known that, it binds to H1 receptor in the cerebral cortex⁴. The metabolic effects of cetirizine are long acting, remaining in the system for a maximum of 21 hours before being excreted; the average elimination half-life is 8 hours¹⁰. Plasma elimination half-life of albendazole is 8-12 hours. The patient developed dystonia in nearly 20 hours after taking these two drugs. Therefore, we thought that in this case cetirizine led to dystonic movements because of defined dopaminergic receptor blockage and long excretion-time.

Drug-induced dystonic movements result from alteration of dopaminergic-cholinergic balance in the nigrostriatum. When dopaminergic activity was suppressed, cholinergic activity

can increase. Consequently, biperiden lactate which is a weak peripheral anticholinergic agent can be used in dystonic disorders. In our patient, dystonic movements were rapidly improved after this treatment³.

Despite reports of cetirizine or albendazole induced cases of dystonia, even if these drugs were used in therapeutic doses, one of these drugs can develop extrapyramidal side effects. Thus, appropriate indications should be selected for using these drugs.

REFERENCES

1. Fahn S, Bressman SB, Marsden CD. Classification of dystonia. *Adv Neurol* 1998; 78: 1-10.
2. Phukan J, Albanese A, Gasser T, Warner T. Primary dystonia and dystonia – plus syndromes: Clinical characteristics, diagnosis, and pathogenesis. *Lancet Neurol* 2011; 10: 1074-1085.
3. Esen I, Demirpence S, Yis U, Kurul S. Cetirizine - induced dystonic reaction in a 6 year old boy. *Pediatr Emerg Care* 2008; 24: 627-628.
4. Rajput A, Baerg K. Cetirizine-induced dystonic movements. *Neurology* 2006; 66: 143-144.
5. Incekci F, Hergüner MO, Özcan K, Altunbaşak S. Albendazole-induced dystonic reaction: a case report. *Turk J Pediatr* 2011; 53: 709-710.
6. Pisani A, Bernardi G, Ding J, Surmeier DJ. Re-emergence of striatal cholinergic interneurons in movement disorders. *Trends Neurosci* 2007; 30: 545-553.
7. Casey DE. Neuroleptic-induced acute dystonia. In: Widiger TA, France AJ, Pincus HA, et al, (eds). *Drug-Induced Movement Disorders*. MtKisco NY: Futura Publishing 1992: 21-40.
8. Curran MP, Scott LJ, Perry CM. Cetirizine: A review of its use in allergic disorders. *Drugs* 2004; 64: 523-561.
9. de Silva N, Guyatt H, Bundy D. Anthelmintics. A comparative review of their clinical pharmacology. *Drugs* 1997; 53: 769-788.
10. Anderson PO, Knoben JE, Troutman WG. *Handbook of Clinical Drug Data*. (10th ed). New York: McGraw-Hill International Press; 2002: 807-810.