

# Atomoxetine induced leukocytosis: A rare presentation

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## Dear Editor,

Leukocytosis is defined as a white blood cell count greater than  $11.000/\text{mm}^3$  (1). It can indicate an infection, a malignancy, a drug-induced reaction in the body as well as numerous other disorders (2). The purpose of this letter is to present a case of a 7-year-old child with Asperger's syndrome and Attention Deficit Hyperactivity Disorder (ADHD) who experienced leukocytosis following atomoxetine treatment.

SK, a 7-year-old boy, was brought to our clinic by his family complaining of his hyperactivity and quick temper. The anamnesis taken from the family revealed that SK had been fidgety and quick tempered recently. The family also reported that he was experiencing difficulties to focus on homework and he was easy to distract. On his mental state examination, the patient had limited eye contact, his speech was dysprosodic and his thought content was found to be poor. Regarding his past medical history, SK had been diagnosed with Asperger's Syndrome at 5 years of age by a child and adolescent psychiatrist. The patient was planned to be commenced on atomoxetine (ATX) 10 mg/day for ADHD symptoms and the dose was increased to 18 mg/d after one week. On the same day when the drug dose was increased, SK complained of flushing and excessive sweating. He continued to take the drug for ten days with the exception of separate two days. During this period, his family realized that these symptoms were appearing when he took the drug; however, the symptoms were tending to regress when ATX was not administered. After that, the family visited a pediatric outpatient clinic where blood tests were ordered. The results revealed a leukocytosis ( $14.800/\text{mm}^3$ ) but his CRP level was in normal range (0.93). The pediatric outpatient clinic couldn't detect any focus of infection and advised to stop ATX assuming that the symptoms

could be related to it. We ceased the atomoxetine therapy and observed that the leukocyte count of the patient dropped back to the normal range after one week. We prescribed methylphenidate to SK for his ADHD symptoms and scheduled a follow-up visit within two months.

Naranjo adverse drug reaction probability scale assesses the probability of a causal relationship between the drug and the untoward clinical event (3). The symptoms of our patient were analyzed by Naranjo scale and revealed a score of 9, indicating that there is a definite causality for adverse drug reactions.

To the best of the author's knowledge, no case was met reporting leukocytosis following atomoxetine treatment. However, there are studies stating that psychological stress may cause leukocytosis (4,5) and catecholamines were suggested to be responsible for this change (5). As atomoxetine is a selective norepinephrine reuptake inhibitor, the leukocytosis may have been caused by its increasing effect on catecholamine count, especially norepinephrine. In a review conducted by Oyesanmi et al., noradrenergically-active medications like venlafaxine were found to be associated with leukocytosis (6). The clinicians should keep in mind that leukocytosis can emerge during atomoxetine therapy. Consultation to related departments would be helpful in terms of early diagnosis and treatment.

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## REFERENCES

1. Rice L, Jung M. Neutrophilic leukocytosis, neutropenia, monocytosis, and monocytopenia. In: Hoffman R, Benz EJ Jr, eds. Hematology: Basic Principles and Practice. 6th edition. Philadelphia: Elsevier/Saunders; 2013;640-6.
2. Cerny J, Rosmarin AG. Why does my patient have leukocytosis? Hematol Oncol Clin North Am 2012;26:303-19.
3. Naranjo CA, Busto U, Sellers EM, et al. A method for estimating the probability of adverse drug reactions. Clin Pharmacol Ther 1981;30:239-45.
4. Heidt T, Sager HB, Courties G, et al. Chronic variable stress activates hematopoietic stem cells. Nat Med 2014;20:754-8.
5. Benschop RJ, Rodriguez-Feuerhahn M, Schedlowski M. Catecholamine-induced leukocytosis: early observations, current research, and future directions. Brain Behav Immun 1996;10:77-91.
6. Oyesanmi O, Kunkel EJ, Monti DA, et al. Hematologic side effects of psychotropics. Psychosomatics 1999;40:414-21.