Journal of
Case Reports: Open Access

Research Article Open Access

Risperidone-Induced Reversible Neutropenia on Adolescent with Autism: A Case Report and Literature Review

Aabbassi B*[1], Benali A[2]

[1]Child and adolescent psychiatric departement, university hospital Mohamed VI, Marrakesh, Morocco
[2]Research team of mental health, University Cadi Ayyad, Marrakesh, Morocco

***Corresponding author:** Aabbassi B, Child and adolescent psychiatric departement, university hospital Mohamed VI, Marrakesh, Morocco. Tel: 00212691448864, Email: aabbassi40@gmail.com

Received Date: March 11, 2022 **Accepted Date:** March 12, 2022 **Published Date:** March 25, 2022

Citation: Aabbassi B, Benali A (2022) Risperidone-Induced Reversible Neutropenia on Adolescent with Autism: A Case Report and Literature Review. Case Reports: Open Access 7: 1-4.

Abstract

Neutropenia is an adverse effect of various pharmacological therapies, including antipsychotics. However, Risperidone tends to have a lower risk of hematotoxicity. We report a case of a 14 years old boy with a diagnosis of autism who developed neutropenia after administration of risperidone and was able to resolved it after discontinuation. This is a rare case report of risperidone-induced neutropenia on adolescent.

Keywords: Risperidone, Antipsychotics, Neutropenia, Blood Dyscrasias, Adolescent

Background

Neutropenia is defined as an abnormal absolute neutrophil count value, containing fewer than 1,500 cells per mm3 in the peripheral blood. It can be due to reduced production or increased peripheral destruction. Almost all the major classes of psychotropic medications have been reported to be associated with hematological side effects, including leukopenia, neutropenia, agranulocytosis, thrombocytopenia, and anemia. Clozapine requires regular monitoring of white blood cells with computed based registry. Other antipsychotics do not have the same monitoring regulatory process. Risperidone is linked mainly with metabolic adverse effects, but rarely blood dyscrasia adverse reactions have been reported. We present a case of a 14 year-old boy with a diagnosis of autism who developed and was able to resolve neutropenia after administration of risperidone and then discontinuation. This is a particular concern because this complication could be easily missed if there is no mandatory white cell-count monitoring as there is with clozapine treatment.

Case report

Yanis is a 14 years old boy with non-verbal autism spectrum disorder. He was diagnosed since he was 6 years old. His drug history is linked to a prescription of haloperidol during some periods of behavioral problems with a clear clinical improvement. Furthermore, he has no other medical or surgical history. We receive him in child psychiatric consultation for insomnia, aggressiveness and irritability that hampering his daily life and exhausting his parents. The prescription of risperidone was decided to improve Yanis' difficulties. A pre-treatment blood test is requested with no abnormalities in baseline laboratory values: white blood cell (5,800/mm3) and neutrophil (2,726/mm3) counts were normal. Patient was started on risperidone 0.5 mg po twice daily. One week later, he was discharged in stable mental condition, and followed up at the outpatient clinic regularly with risperidone 2 mg/day. Neutropenia was noted in a routine blood test at 1568/ mm3 after four weeks. Physical examination revealed no infectious signs. Also, imaging studies and culture reports were not suggestive of any infective foci. The patient scored 6 on the Naranjo Adverse Drug Reaction Probability Scale [1]. Risperidone was then suspected to be related to the hematologic side effects, and was stopped. Aripiprazole was cross-titrated to 5 mg per day for control of his symptoms. Two weeks later, neutrophil count improved: the white blood cells were 4,600 cells/mm3, and the neutrophil was 2,420 cells/mm3. One month later, the white blood cell was 8,000 cells/mm3, whereas the neutrophil was 3,000 cells/mm3. The patient is still regularly followed up at our outpatient clinic.

Discussion

Almost all the major classes of psychotropic medications have been reported to be associated with hematological side effects, including leukopenia, neutropenia, agranulocytosis, thrombocytopenia, and anemia [2,3]. The incidence rates of risperidone associated neutropenia seemed to be very low. King et.al., reviewed the antipsychotic-related hematological side effects and concluded that among 16 antipsychotics agents, clozapine and remoxipride have the highest risk of inhibiting hemopoietic production related to the aliphatic phenothiazine derivatives, and that no evidence of increased risk is noted with high-potency drugs such as haloperidol, pimozide, sulpiride, or risperidone. Risperidone may be considered as an alternative when blood dyscrasias occur with the first-generation classic antipsychotics' drugs. However, risperidone is effective and well tolerated in the medium term to correct severe behavioral disorders in autistic children. So,the case reports of risperidone induced neutropenia and leukopenia are still limited in number and all cases were about adult patients[3-11].Only one report of an african adolescent was found to develop leukopenia 10 days after receiving risperidone therapy (4 mg/day), and leucopenia was found again with rechallenge of risperidone at 2 mg/day [3,4]. The pathophysiology between risperidone and blood dyscrasias is controversial. The common hypothesis was decreased marrow production, increased peripheral destruction, or a combination of these [4,11]. Risk factors include preexisting low white blood cell and a history of drug-induced neutropenia. Evidence from literature shows that psychotropic drug-related neutropenia could be attributable to hereditary factors, commonly seen in the african american population and typically identified at an early age, higher doses of neuroleptics, male gender, and neuroleptic naivety. the major risk of this side effect is infection. In summary. neutropenia is usually reversible with dose reduction or medication discontinuation. For our young patient, aipiprazole is a safe alternative. Olanzapine was also reported as useful in patients who develop neutropenia on clozapine or risperidone [12].

Conclusion

This case report has the clinical value of reminding clinicians of the possibility of the causal relationship of risperidone

and neutropenia. Currently, there is no hematological monitoring requirement guideline for patients on risperidone treatment. We do recommend the extension of this practice to both the inpatient and outpatient service settings. Especially for individuals with past or present histories of dyscrasias.

Disclosure

The authors report no conflicts of interests in this work.

References

1. Naranjo CA, Busto U, Sellers EM, et.al., (1981) A method for estimating the probability of adverse drug reactions. Clin Pharmacol Ther. 30:239-45.

2. Oyesanmi O, Kunkel EJ, Monti DA, Field HL. (1999) Hematologic side effects of psychotropics. Psychosomatics. 40:414-21.

3. Kattalai Kailasam et al (2017) Risperidone-induced reversible neutropenia. Neuropsychiatric Disease and Treatment.13:1975-77.

4. Bondolfi G, Morena P, Dascal DR, Bertschy G. (1996) Risperidone and reversible neutropenia: a negative rechallenge. EurNeuropsychopharmacol. 6:257.

5. Godleski LS, Sernyak MJ. (1996) Agranulocytosis after addition of risperidone to clozapine treatment. Am J Psychiatry. 153:735-36.

6. Dernovsek Z, Tavcar R. (1997) Risperidone-induced leucopenia and neutropenia. Br J Psychiatry. 171:393-94.

7. Dernovsek MZ, Tavcar R. (2000) Olanzapine appears haematologically safe in patients who developed blood dyscrasia on clozapine and risperidone. Int Clin Psychopharmacol. 15:237-38.

8. Hung CH, Ya-Mei Bai, (2011) Risperidone-induced Leukopenia and Neutropenia.Taiwanese Journal of Psychiatry (Taipei) 25:2011.

9. Finkel B, Lerner AG, Oyffe I, Sigal M. (1998) Risperidone-associated agranulocytosis. Am J Psychiatry.155:855-56.

10. Sluys M, Güzelcan Y, Casteelen G, de Haan L. (2004) Risperidone-induced leucopenia and neutropenia: a case report. Eur Psychiatry. 19:117

11. Chen ML, Tsai TC, Wang LK, et.al., (2012) Risperidone modulates the cytokine and chemokine release of dendritic cells and induces TNF-α-directed cell apoptosis in neutrophils. Int Immunopharmacol. 12 :197-204.

12. Konakanchi R, Grace JJ, Szarowicz R, et.al., (2000) Olanzapine prolongation of granulocytopenia after clozapine discontinuation. JClin Psychopharmacol. 20:703-4.