

Metabolic Effects of Antipsychotics in Pediatric Patients

Both first generation (typical) and second generation (atypical) antipsychotics are dopamine receptor antagonists; second generation antipsychotics have a higher affinity for serotonin receptors compared to first generation.^{1,2} Second generation antipsychotics are the preferred agents for adult and pediatric patients due to their increased efficacy for negative symptoms of psychoses and decreased incidence of extrapyramidal side effects.^{2,3}

Antipsychotic adverse effects:

- Antipsychotics bind with varying selectivity to alpha, histamine, muscarinic, and serotonin receptors leading to differences in adverse effect profiles within the class.^{1,2}
- Antipsychotics can cause metabolic adverse effects in 60% of patients, including metabolic syndrome which consists of increased waist circumference, dyslipidemia, insulin resistance, and hypertension.³
 - Metabolic syndrome increases the risk of type 2 diabetes mellitus, heart disease, and stroke.³

Antipsychotic use in pediatric patients:

- The risk of metabolic effects increases with younger age, antipsychotic naïve patients, and longer duration of therapy.³
- There has been an increase in antipsychotic use in pediatrics, including off-label uses for attention deficit hyperactivity disorder and depression.^{3,4}
 - Few clinical trials evaluate the efficacy and safety of antipsychotics for off-label uses in the pediatric population and further research is needed to evaluate their role in these instances.^{3,4}

Treatment recommendations:

- Patient-centered treatment with antipsychotics should include evaluation of guideline recommendations, alternatives to antipsychotics including behavior interventions, and risk of metabolic effects versus anticipated benefit.³
- Education: Health care providers should counsel patients and their family members prior to initiating therapy on benefits and risks of treatment and lifestyle modifications to reduce risk of metabolic effects.^{3,4}
- Monitoring: Patients on antipsychotics should undergo baseline and regular monitoring of personal and familial history, modifiable risk factors, weight, body mass index, waist circumference, blood pressure, heart rate, fasting glucose, hemoglobin A1c, and fasting lipid profiles.³
 - Studies have shown that metabolic monitoring occurs less frequently during antipsychotic treatment for pediatric patients.³ Regular monitoring is vital for efficacy and safety in pediatric patients due to their increased risk of metabolic effects.³
 - **Assessing and managing weight gain:**
 - The reversibility of weight gain from antipsychotic use is unclear and further research is needed.³
 - In the event of significant weight gain, prescribers should evaluate the benefits and risks of continuing or switching agents and implement non-pharmacological and pharmacological interventions for weight management if needed.³

References:

1. Antipsychotic agents, first generation (typical). *Drug Facts and Comparisons* [Internet]. 2020. [cited 2023 Jun 20]. Available from: https://fco.factsandcomparisons.com/lco/action/doc/retrieve/docid/fc_dfc/5546134
2. Antipsychotic agents, second generation (atypical). *Drug Facts and Comparisons* [Internet]. 2023. [cited 2023 Jun 20]. Available from: https://fco.factsandcomparisons.com/lco/action/doc/retrieve/docid/fc_dfc/5546135
3. Libowitz MR, Nurmi EL. The burden of antipsychotic-induced weight gain and metabolic syndrome in children. *Front Psychiatry* [Internet]. 2021 Mar 12 [cited 2023 Jun 20];12:623681. Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7994286/>
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