Should We Be Prescribing More Metformin for Our Patients Who are Overweight or Obese?
by Rachel Y. Moon MD, Associate Editor, Digital Media, Pediatrics

Childhood obesity rates continue to rise, and we are all understandably concerned, not only about the increased rates of obesity, but also about the downstream health consequences for all of these children as they become adults. Lifestyle modifications are always the first treatment choice but are often inadequate, and many children will eventually require medication for type 2 diabetes mellitus, dyslipidemia, and/or other issues.

Metformin has been available for several years and has been approved in the U.S. for treatment of type 2 diabetes mellitus in children older than 10 years. Many patients experience some weight loss while taking metformin, and so it is increasingly being used off-label for this purpose. There continue to be questions about whether metformin might be useful therapy for children who are overweight/obese - and particularly younger children.

Thus, the systematic review that is being early released this week by Pediatrics is timely (10.1542/peds.2020-1610). Reem Masarwa is a pediatric pharmacoepidemiologist who, along with her colleagues at McGill University and the University of Montreal, analyzed data from 24 randomized controlled trials that compared the efficacy and safety of metformin + lifestyle interventions with placebo + lifestyle interventions for children and adolescents (ranging in age from 4 to 19 years) with obesity.

The good news is that children in the metformin + lifestyle intervention groups demonstrated:

- Small decreases in BMI and BMI z-scores
- Small improvements in insulin resistance

Because of the heterogeneity in the different studies included in this systematic review, the authors did not make any statements about whether the differences were statistically significant.

The less good news is that roughly twice as many of the children in the metformin + lifestyle intervention groups reported gastrointestinal side effects, which included nausea, diarrhea, vomiting, abdominal pain, and/or anorexia. Four of the studies reported on the risk of liver toxicity. Although 4 total cases of liver toxicity were reported, there was no significantly increased risk.

I suspect that we will be seeing more pediatric patients being prescribed metformin. Drs. Vandana Raman and Carol Foster, in an invited commentary, note that there are few pharmacologic options for children with obesity, and that metformin is being prescribed increasingly often for this purpose (10.1542/peds.2020-044982). Take a
look at this systematic review and commentary, so that you will be prepared for the questions that you may get from families who ask about metformin treatment - and so you can decide whether metformin might be a treatment option for some of your patients.

- Metformin for Obesity in Prepubertal and Pubertal Children: A Randomized Controlled Trial
- Is There a Role for Metformin in the Treatment of Childhood Obesity?
- Metformin or Oral Contraceptives for Adolescents With Polycystic Ovarian Syndrome: A Meta-analysis
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