Metformin does not improve glycemic control for overweight teens with type 1 diabetes

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In a randomized trial that included overweight and obese adolescents with type 1 diabetes, the addition of metformin to insulin did not improve glycemic control after 6 months, according to a study in the December 1 issue of *JAMA*.

For youth with type 1 diabetes, being overweight or obese potentially has serious metabolic consequences, especially during adolescence. Among these individuals, the high doses of insulin required to overcome the insulin resistance of obesity and puberty contribute to difficulties in glycemic control and may promote further weight gain. Metformin is an oral glucose-lowering agent commonly used in treating type 2 diabetes. Previous studies assessing the effect of metformin on glycemic control in adolescents with type 1 diabetes have produced inconclusive results, according to background information in the article.

Kellee M. Miller, Ph.D., of the Jaeb Center for Health Research, Tampa, Fla., and colleagues randomly assigned 140 adolescents (age 12 to 19 years) with type 1 diabetes (average duration, 7 years) to receive metformin (n = 71) (2,000 mg/d or less) or placebo (n = 69) for six months. The trial was conducted at 26 pediatric endocrinology clinics.

The researchers found that despite a small decrease in HbA1c (glycated hemoglobin; used to identify the average plasma glucose concentration over prolonged periods) favoring the metformin group at 13 weeks, average HbA1c levels increased by approximately 0.2 percent from baseline values of 8.8 percent in each treatment group at 26 weeks.

There also were no statistically or clinically significant differences from baseline to 26 weeks in continuous glucose monitoring between treatment groups. The authors add that it does not seem likely that different glycemic control results would have been achieved with a longer treatment period.

Metformin compared with placebo was associated with reductions in weight gain, body mass index, body fat, and total daily insulin dose, although the clinical relevance of these treatment group differences is uncertain. Metformin treatment failed to improve a number of clinical and biochemical risk factors for future cardiovascular disease, including blood pressure and plasma lipid concentrations.

Gastrointestinal adverse events were reported by more participants in the metformin group than in the placebo group.

"These results do not support prescribing metformin to adolescents to improve glycemic control," the researchers write.

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