

Metformin Shows Little Benefit in Obese Children

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Contributing Writer

OLD GREENWICH, CONN. — Metformin gave only a modest additional benefit to a 12-week program of nutritional counseling for obese nondiabetic children and their families, Dr. Radhika Purushothaman reported at a meeting of the Eastern Society for Pediatric Research.

Given the rising incidence of obesity, insulin resistance, and diabetes among children and adolescents, physicians and clinical researchers are trying just about everything to get a handle on these problems. Metformin and other insulin-sensitizing drugs may be helpful, but the high prevalence of gastrointestinal side effects

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and the fact that these drug therapies are more or less lifelong commitments mean that they should be used very carefully. A 2002 study of more than 3,200 obese nondiabetic adults who had impaired glucose tolerance showed that metformin could improve insulin sensitivity and delay progression to diabetes. "There's no question that insulin sensitizers can delay progression in adults, but so can lifestyle interventions if you get to the patients in the early stages of insulin resistance and impaired glucose tolerance," said Dr. Purushothaman of the Infants and Children's Hospital, Brooklyn, N.Y.

The jury is still out on the value of metformin in the pediatric population.

Dr. Purushothaman and her colleagues set out to determine if the addition of metformin would improve clinical outcomes of a 12-week diet and lifestyle intervention in a cohort of 51 obese but nondiabetic children and early adolescents.

The program comprised weekly sessions that involved parents and caregivers teaching the children the basics of nutrition, healthy diet, and exercise. This was followed by monthly maintenance sessions for another 3 months. Fifteen of the 51 subjects also took metformin, 1,000 mg, twice daily during the study period. The investigators did full endocrine, behavioral, and nutritional assessments at baseline, at the close of the 12-week program and at 6 months from baseline.

Neither the lifestyle intervention alone nor the lifestyle program plus metformin had statistically significant impact on body mass index (BMI), although both produced measurable BMI reductions. Among the 15 patients taking metformin, mean BMI went from 36 to 35; among those in the lifestyle change program alone, BMI went from 30.7 to 29.1.

The lifestyle change program did produce significant effects on triglyceride levels, which went from a baseline mean of 147 mg/dL down to 100 mg/dL at the close of the study. Fasting insulin levels also dropped, from a baseline of 20.7 μ U/mL

down to 14 μ U/mL. Somewhat surprisingly, this did not translate into a significant change in fasting blood glucose levels. High-density lipoprotein cholesterol levels were essentially unchanged in the lifestyle intervention alone group.

Among those taking metformin, triglyceride levels also dropped, from a baseline mean of 208 to 144 at 6 months. Fasting insulin levels also dropped, from a baseline of 35.3 down to 28.1. However, mean fasting glucose levels actually increased in

this group, from a baseline of 84 mg/dL to 91 mg/dL. "This was totally surprising," said Dr. Purushothaman at the meeting cosponsored by Children's Hospital of Philadelphia. Metformin did produce a statistically significant increase in HDL cholesterol levels, from 36.8 mg/dL to 40.0 mg/dL.

This study confirms that a carefully planned lifestyle change program that involves the families of obese children and teens can have measurable benefits on

overall health, although it may not substantially reduce BMI.

For metformin, the results "were definitely not as clear-cut as we had expected," she said. "Metformin can be considered as an adjunct for obese adolescents, as it has good effects on lipids and insulin, but it did not change the BMI." That said, the drug should be used only when truly necessary. "There was lots of diarrhea, bloating, and nausea among the kids taking metformin." ■

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