

Amenorrheic Athletes Have Higher Ghrelin Levels

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SAN FRANCISCO — Athletic teenage girls who are amenorrheic have higher ghrelin and lower leptin levels than athletic girls who are eumenorrheic or girls who are nonathletic, according to a small study.

The findings could help tease out which girls are more likely to stop menstruating, study investigator Madhusmita Misra of Harvard Medical School, and a pediatric

endocrinologist at MassGeneral Hospital for Children, Boston, reported at the annual meeting of the Endocrine Society.

She and her colleagues aimed to determine whether ghrelin, which stimulates appetite, and leptin, which suppresses appetite, might be related to amenorrhea in young women, especially those with intense energy expenditures and a heightened need for caloric intake. Ghrelin levels have been shown to be increased in people with anorexia nervosa, and higher

levels also have been linked to impaired secretion of hormones that regulate menstrual and ovarian function.

Dr. Misra and colleagues enrolled 21 girls who were amenorrheic athletes, 19 eumenorrheic athletes, and 18 nonathletic controls. All were aged 12-18 years. Fasting blood was drawn to measure ghrelin, leptin, estradiol, testosterone, and follicle-stimulating hormone levels.

The two athletic groups had similar activity levels, which were higher than that

for the control group of nonathletes. The athletes were 85% of ideal body weight for their age.

As predicted, the amenorrheic girls had lower leptin levels, and their ghrelin levels were twice those of the other two arms. The girls with the highest ghrelin levels and lowest leptin levels also had the lowest levels of estrogen, she said.

The study was funded by the National Institutes of Health. Dr. Misra reported no conflicts related to the study. ■

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References: 1. Foster RH, Keam SJ. Metformin extended release. *Am J Drug Deliv.* 2006;4(3):1-11. 2. Schwartz S, Fonseca V, Berner B, Cramer M, Chiang Y-K, Lewin A. Efficacy, tolerability, and safety of a novel once-daily extended-release metformin in patients with type 2 diabetes. *Diabetes Care.* 2006;29(4):759-764. 3. Data on file, Depomed, Inc.

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