ESR1 gene and insulin resistance remission are associated with serum uric acid decline for severely obese patients undergoing bariatric surgery.

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Abstract

BACKGROUND:

Hyperuricemia is associated with obesity. Few studies have reported the effects of different types of bariatric surgery on uric acid metabolism. The aim of our study was to determine the relationships between serum uric acid reduction and estrogen receptor-α (ESR1) gene polymorphism, as well as the type of bariatric surgery received. The potential physiological pathways involved in postsurgery serum uric acid reduction were also discussed.

METHODS:

A total of 508 severely obese Han Chinese patients, aged 20 to 50 years, with a body mass index (BMI) ≥ 35 kg/m(2) were selected. Patients received either laparoscopic adjustable gastric banding (LAGB; n = 164) or laparoscopic mini-gastric bypass (LMGB; n = 344). A 12-month follow-up was performed to explore the effects of the type of bariatric surgery and ESR1 polymorphism on serum uric acid reduction.

RESULTS:

The rs712221 polymorphism of ESR1 affects serum uric acid reduction after bariatric surgery. The LMGB group exhibited a greater reduction in serum uric acid level compared with the LAGB counterpart after adjusting for sex, age, and metabolic confounders (-2.3 ± 2.1 mg/dL versus -1.2 ± 1.1 mg/dL; P = .002). Patients with the rs712221 genotype exhibited better glycemic control and a greater serum uric acid reduction at 12 months after surgery. The effects of the rs712221 polymorphism in LMGB patients resulted in the greatest serum uric acid reduction (-2.7 ± 1.4 mg/dL).

CONCLUSIONS:

For severely obese Han Chinese patients, bariatric surgery appears to reduce serum uric acid levels, potentially mediated by synergic effects of surgery type, BMI reduction, rs712221 locus, insulin sensitivity, and changed dietary factors via an unknown mechanism.

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