# Genetic predisposition of metabolic disorders in pregnant women with pathological weight gain

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**Objective.** The pathological gestational weight gain (GWG) is a trigger of postpartum weight retention that leads to overweight and obesity. A rapid increase in body weight due to fat component is associated with the action of metabolically active proteins-adipokines, one of them is leptin. During pregnancy, leptin is additionally produced by the placenta and rapidly rises throughout gestation. It was hypothesized that the leptin receptor gene polymorphism (Gln233Arg LEPR) is related to metabolic changes in pregnancy and the risk of excessive GWG.

**Materials and Methods.** A total of 97 singleton pregnant women with normal weight were enrolled. Genetic variants of LEPR were analysed by real-time polymerase chain reaction, leptin, lipid, and carbohydrate profile were performed in the first, and third trimesters of pregnancy. The recommended GWG was diagnosed in 33 (34.0%), insufficient in 19 (19.6%), and excessive in 45 (46.4%) patients.

**Results.** 20 (20.6%) patients were with AA genotype, 49 (50.5%) – AG genotype, and 28 (28.9%) –GG genotype. The frequency of GG-alleles carriers of the LEPR Gln233Arg gene in a group of excessive GWG in 3 times was higher compared to recommended GWG patients. The inheritance of pathological G-homozygotes increases the risk of excessive GWG in 7 times. LEPR GG polymorphism was significantly associated with hyperlipidaemia, leptin resistance with high leptin serum levels, increased insulin resistance, which was especially manifested in excessive GWG.

**Conclusions.** Thus, excessive GWG can be seen as a marker of the mother's genotype and genetic predisposition to the development of metabolic diseases after delivery.