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Abstract

Background: As Galanin (GAL) is secreted by the human placenta, it might be involved in fetal growth; in addition, its action on glucose homeostasis suggests an association with Gestational Diabetes Mellitus (GDM).

Objectives: To examine whether maternal, fetal or amniotic þuid GAL concentrations i) are associated with birthweight and ii) differ between uncomplicated pregnancies and pregnancies complicated with GDM.

Study design: GAL concentrations were measured in maternal plasma and umbilical cord blood of 77 healthy pregnant women and 30 pregnant women with GDM at labour. GAL concentrations were also measured in amniotic þuid in both groups when possible. ELISA assay was used to determine the concentrations of the peptide.

Results: GAL concentrations in maternal circulation were higher than those in the umbilical cord and the amniotic þuid. In uncomplicated pregnancies, a positive correlation was present between GAL in umbilical cord and both neonatal birthweight (r=0.312, p=0.006) and placental weight (r=0.354, p=0.002). No such associations were present in pregnant women with GDM. Maternal, fetal or amniotic þuid GAL concentrations did not differ between uncomplicated and GDM-complicated pregnancies.

Conclusion: Fetal GAL concentrations may constitute an index of fetal growth, although this association was not sustained in pregnancies complicated by GDM. Maternal GAL concentrations cannot be used as an index of glucose intolerance.

K : Amniotic uid; Birthweight; Galanin; Diabetes; Gestational; Pregnancy

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Birthweight is an important predictor of an individual's morbidity and mortality, regarding not only short-term conseq

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embryos, GAL immune-reactive neurons were seen in the supra- and medial mammillary nucleus in human fetuses of 27-39 gestational weeks [9]. Other studies present con icting results about pregnant women and their developing foetuses regarding the origin of GAL expression [10].

According to our recent review, there is evidence for an association between GAL and fetal growth [10]. It has been demonstrated that umbilical cord blood GAL concentrations are higher compared with those in maternal plasma and positively correlated with birth weight at term [11]. GAL concentrations in fetal circulation were not associated with neonatal fat mass, neither with placental mass. Correlation was also found between GAL concentrations in maternal circulation and maternal Body Mass Index (BMI) [11]. e association between amniotic uid GAL during the second trimester and neonatal birthweight in 50 singleton of term deliveries was examined in a recent prospective, observational study, suggesting GAL as a possible predictive marker of neonatal birthweight [12]. Furthermore, neonatal plasma GAL concentrations were measured post-partum in normal pregnancies and those complicated with Gestational Diabetes Mellitus (GDM) and Intrauterine Growth Retardation (IUGR) [13]. GAL concentrations did not di er signi cantly among the three groups, a nding that is in contrast with experimental models of fetal programming [14].

ere is recent evidence that GAL, through its actions on glucose homeostasis, is involved in the pathogenesis of Gestational Diabetes Mellitus (GDM) [15,16]. Higher GAL concentrations have been reported in pregnant women with GDM, establishing its positive correlation with glucose and BMI [17,18]. Such ndings led to the proposal that GAL might serve as a novel biomarker for the prediction of GDM or add information to the current strategy for GDM screening [10].

According to the data mentioned above, a plausible hypothesis is that GAL is involved in fetal growth. However, data concerning the role of GAL in fetal growth are limited. Relevant studies include a small number of participants, while publications on GAL and GDM mainly focus on maternal concentrations of GAL [11,12,15-17].

e primary aim of the current study was to investigate whether maternal, fetal (umbilical cord) or amniotic uid GAL concentrations are associated with birthweight in normal pregnancies. As a secondary aim, we attempt to investigate whether maternal, fetal or amniotic uid GAL concentrations di er between uncomplicated pregnancies and pregnancies complicated with GDM, as well as to examine if the correlation between GAL concentrations and birthweight are di erent in GDM as compared with uncomplicated pregnancies.

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e study was conducted from March 2015 to December 2016 in the labour ward of First Department of Obstetrics and Gynaecology, Aristotle University of essaloniki, Greece.

admission, amniotic uid was not obtained in such cases. Amniotic uid samples were collected in plain tubes not containing aprotinin. Umbilical cord blood samples (10 mL, obtained from the placental part) were collected a er labour in EDTA tubes containing aprotinin. All samples were centrifuged immediately and stored at 80ºC until measurement (less than 6 months). e stored samples included the supernatant plasma from maternal and umbilical cord blood as well as the amniotic uid samples.

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as they are positively correlated with birthweight and placental weight.

is association was not sustained in pregnancies complicated by GDM. Maternal GAL concentrations cannot be used as an index of glucose intolerance, as there was no di erence between uncomplicated pregnancies and pregnancies complicated by GDM. It is obvious that additional studies of prospective design, conducted in large cohorts of women, are needed to elucidate the role of GAL in fetal growth and carbohydrate metabolism during pregnancy. Such studies could evaluate GAL in target populations, such as maternal obesity and Small (SGA) or Large for G (eg)-ivs12 (Td[(((a)9 (r)8 ((g p)a)9 (r)(L)9 (2 Td3 ()8.9 (r)8Td[(((a)9 u)-2.9 (a)s.l)-4.1 Do1BT/ (o.018 (ow 9 0 0 605.69g p 721.E)9