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Serum Neudesin Levels in Gestational Diabetes Mellitus: A Potential Biomarker for Disease Prediction

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Abstract

Background: A common metabolic disorder during pregnancy is gestational diabetes mellitus (GDM). It is linked to insulin resistance and impaired glucose tolerance. The role of neudesin, a regulatory peptide hormone involved in glucose metabolism, as a potential biomarker for GDM remains unclear.

Objectives: To assess Neudesin's predictive value for GDM and evaluate its correlation with insulin resistance indices and glycemic indicators.

Patients and Methods: This case-control study was conducted in Baghdad, Iraq, from January to July 2025 at the Department of Chemistry, College of Science for Women, University of Baghdad, in collaboration with the Department of Obstetrics and Gynecology at Al-Yarmouk Teaching Hospital. Eighty healthy controls and 120 women with GDM were included. Serum Neudesin, fasting blood glucose (FBG), insulin, HOMA-IR, HbA1c, TyG index, and TyG-BMI index were evaluated.

Results: Women with GDM had significantly higher serum Neudesin levels compared to controls (2.372 ± 0.36 ng/mL vs. 0.919 ± 0.156 ng/mL, $p<0.001$). Neudesin levels were positively correlated with BMI, FBG, HbA1c, insulin, HOMA-IR, and TyG indices ($p<0.001$). Logistic regression identified neudesin as an independent predictor for GDM. ROC analysis showed high diagnostic accuracy (AUC = 0.986), with a cut-off value of 1 1185 ng/ml, which yielded 100% sensitivity and 86.7% specificity.

Conclusion: Circulating neudesin concentrations are markedly higher in individuals with GDM and show a strong correlation with the degree of insulin resistance and poor glycemic control. Neudesin may serve as a promising diagnostic biomarker and potential target for early identification and management of GDM.

Keywords: Gestational diabetes mellitus, Neudesin, Insulin resistance, Biomarker.

Introduction

GDM is defined as any degree of glucose intolerance with onset or first recognition during pregnancy, typically diagnosed between 24 and 28 weeks of gestation". The diagnostic criteria for GDM have evolved over decades, reflecting advancements in glucose testing methods and a deeper understanding of associated risks (1).Globally, GDM affects more than 16.5% of pregnancies; this figure is predicted to increase as the obesity pandemic increases. An increased risk of type 2 diabetes, maternal cardiovascular disease, macrosomia, and delivery complications is associated with GDM, having a higher chance of obesity, type 2 diabetes, and cardiovascular disease (2, 3).

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Pancreatic β-cell failure, accompanied by chronic insulin resistance, leads to glucose intolerance and subsequent hyperglycemia. Obesity, excess weight, advanced maternal age, and a family history of diabetes are all recognized risk factors for GDM (4, 5).

Given that GDM is characterized by insulin resistance and cell dysfunction, the primary focus should be on deepening our understanding of the underlying mechanisms driving these processes. By understanding how these pathways function, we can develop targeted strategies to improve pancreatic function (3-5).

Neudesin, also known as neuron-derived neurotrophic factor, is a protein broadly expressed in the brain, adipose tissue, heart, kidneys, and lungs (6). Its cytochrome b5-like heme/steroid binding domain is essential for initiating intracellular signaling cascades. In neurons, neudesin activates the phosphatidylinositol-3 kinase and mitogen-activated protein kinase pathways through Gi/Go proteins (7). Additionally, it promotes cell differentiation and proliferation by increasing cyclic AMP levels and activating the protein kinase A pathway, among others. Beyond its neurotrophic effects, neudesin supports the development and differentiation of brain precursor cells (8).

Mice lacking the neudesin gene exhibit increased energy expenditure, enhanced lipolysis in white adipose tissue, and heat production in brown adipose tissue. These findings suggest that neudesin may act as a negative regulator of energy consumption. Neudesin elevates cyclic AMP levels and promotes cell differentiation and proliferation through the protein kinase A pathway and other signaling cascades. In addition to its neurotropic activity, neudesin supports the growth and differentiation of neural precursor cells (9,10). However, current literature (10) presents conflicting evidence regarding neudesin levels in body fluids, indicating the need for further investigations. Currently, there are a few contradictory studies about the levels of neudesin in body fluids.

This study aimed to investigate whether neudesin contributes to GDM and to examine its association with insulin resistance, as well as key metabolic and anthropometric factors.

Patients and Methods

Study design: This case-control study was conducted in Baghdad, Iraq, from January to July 2025 at the Department of Chemistry, College of Science for Women, University of Baghdad, in collaboration with the Department of Obstetrics and Gynecology at Al-Yarmouk Teaching Hospital. Two hundred pregnant women between the ages of 20 and 40 participated in the study: 80 healthy pregnant women (control group), and 120 pregnant women with GDM as the case group. Participants were matched for age and gestational age to minimize confounding effects.

Inclusion criteria were pregnant women diagnosed with GDM according to standard criteria (OGTT-based diagnosis). In contrast, women with preexisting diabetes, thyroid diseases, chronic metabolic diseases, multiple pregnancies, and any disease or on medication that affects serum neudesin level were excluded from the study to ensure homogeneity.

Data collection and laboratory analysis: Every participant had five milliliters of venous blood extracted and split into two tubes. A polymer with thixotropic qualities was present in the gel separator tube, to which two milliliters of blood were transported. The serum was separated after centrifugation at 3000 rpm for five minutes. Using the Siemens Healthineers Atellica Solution analyzer, Biochemical parameters like fasting blood glucose, total cholesterol, triglycerides, high-density lipoprotein cholesterol, and blood urea were measured. Furthermore, enzyme-linked immunosorbent assay kits (Finetest) were used to evaluate the serum concentrations of neudesin and insulin.

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Blood for Glycated hemoglobin (HbA1c) was collected in an EDTA tube. The HBA1C level was measured using the turbidimetric immunoassay method. Using fasting glucose and insulin levels, the Homeostasis Model Assessment of Insulin Resistance (HOMA-IR) was computed to assess the level of insulin resistance in accordance with the following equations: (13,14)

HOMA-IR = (Fasting Insulin [µU/mL] × Fasting Glucose [mg/dL]) / 405.

While TyG and TyG-BMI were calculated by the following equations (13,14):

TyG index = ln [Triglycerides (mg/dL) × Fasting Glucose (mg/dL) / 2

TyG-BMI = TyG index × BMI

The cutoff for HOMA-IR is 2 (15)

Statistical Analysis

Data were analyzed using SPSS 26.0. The normality of data distribution in both the patient and control groups was evaluated using the Kolmogorov-Smirnov test. Variables were classified as parametric or nonparametric based on their distribution characteristics. Group comparisons were performed using the Student's t-test for normally distributed data and the Mann-Whitney U test for nonparametric data. Continuous variables were presented as mean ± standard deviation (SD), and differences between groups were assessed using Student's t-test or Mann-Whitney U test, depending on data distribution. Correlation between neudesin and insulin resistance markers was determined using Pearson's correlation or Spearman's rank correlation for non-parametric data. A logistic regression model was employed to determine independent predictors of GDM. Logistic regression was employed to identify independent predictors of group classification, and two models were constructed. Model 1 included neudesin alone. Model 2incorporated anthropometric and laboratory-related parameters. The diagnostic performance of serum neudesin in predicting GDM was evaluated using ROC curve analysis, which provides for AUC, ideal cutoff value, sensitivity, and specificity. Statistical significance was set at $p < 0.05$.

Results

Demographic and clinical characteristics of the studied population: Table 1 presents the demographic and clinical characteristics of the control and GDM groups, with comparable ages and gestational ages between groups ($p > 0.05$). Significant differences were observed in BMI, FBG, HbA1C, insulin levels, and HOMA-IR, all of which were markedly elevated in the GDM group ($p < 0.001$), indicating metabolic dysregulation.

Serum neudesin levels and insulin resistance markers: Table 2 compares serum neudesin levels and insulin resistance markers between healthy pregnant women and those with GDM. Neudesin levels were significantly higher in the GDM group ($p < 0.001$), alongside elevated HOMA-IR, TyG index, and TyG-BMI index, suggesting a strong association between neudesin and insulin resistance.

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Table 1. Comparisons of the demographic and clinical characteristics of the studied population.

	Control Group	GDM Group	p-value
Age(year)	28.65 ± 6.51	29.72 ± 5.68	0.351
Body Mass Index (kg/m^2)	31.47±	36.38 ± 3.95	0.000
FBG (mg/dL)	88.82 ± 11.34	143.38 ± 30.77	0.000
HbA1c %	4.98 ± 0.57	7.49± 1.125	0.000
Insulin(µIU/mL)	3.117 ± 0.87	7.56 ±1.23	0.000
HOMA IR	0.667 ± 0.21	2.67 ±0.74	0.000
Total Cholesterol(mg/dL)	213.21 ± 48.86	232. 99 ± 60.26	0.085
Triglycerides(mg/dL)	177.24 ± 65.36	180.45 ± 49.81	0.745
Gestational age(weeks)	30.6 ± 3.31	31.41 ± 3.36	0.260

Table 2. Comparisons of the serum level of neudesin and the markers of Insulin resistance between the control and pregnant women with GDM.

	Control	Pregnant with GDM	p-value
Serum Neudesin (ng/ml)	0.919 ± 0.061	2.372 ± 0.051	0.000
HOMA IR	0.667 ± 0.21	2.67 ±0.74	0.000
TyG-index	8.9148 ± 0. 344	9. 417 ± 0.32	0.000
TyG-BMI index	283.18 ± 27.151	342.76 ± 40.93	0.000

Serum neudesin level by body mass index in women with gestational diabetes:

Table 4 examines serum across BMI categories in women with GDM. Although BMI and HbA1c increased significantly across groups ($p< 0.001$ and $p = 0.008$, respectively), serum neudesin levels did not differ significantly ($p = 0.699$), suggesting that neudesin may be independent of BMI in this population.

Table 3. Comparison of serum neudesin levels based on gestational age in women with GDM.

	Gestational age less than 24-30 weeks	Gestational age more than 30 weeks	p-value
Number	41	79	
Serum Neudesin (ng/ml)	2.407± 0.603	2.354± 0.39	0.641

Correlation between serum neudesin and various metabolic parameters in GDM:

Table 5 shows the correlation between serum neudesin and various metabolic parameters in GDM patients. Neudesin was positively correlated with BMI, FBG, HbA1C, insulin, and HOMA-IR in both Pearson and Spearman analyses ($p < 0.05$), reinforcing its potential role in glucose metabolism and insulin resistance.

Neudesin as a predictor of GDM:

Table 6 summarizes logistic regression models predicting the development of GDM based on serum neudesin and other clinical parameters. In Model 1, neudesin was a strong independent predictor (OR = 3.83, 95% CI: 2.01–7.28, $p < 0.001$). In Model 2, which included additional covariates, neudesin remained significant (OR = 2.51, 95% CI: 0.38–16.78, $p = 0.034$).

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Table 4. Comparisons of the serum level of neudesin according to the body mass index in women with GDM.

	BMI less than 35 (kg/m2)	BMI 35-40 (kg/m2)	BMI more than 40 (kg/m2)	p-value
	N=49	N= 40	N=31	
Body Mass Index (kg/m2)	32.34± 1.706	37.14 ± 1.24	42.44 ± 3.61	0.000
Age (Years)	29.88 ± 5.87	29.6 ± 5.56	29.76 ± 6.08	0.979
FBG (mg/dL)	140.77 ± 24.21	141.01± 28.95	157.15 ± 44.59	0.208
HbA1c %	7.20 ± 1.08	7.40 ± 1.01	8.35± 1.19	0.008
Insulin(µU/mL)	7.45 ± 1.28	7.53 ± 1.34	7.89 ± 0.63	0.562
HOMA IR	2.66± 0.74	2.55± 0.64	3.05± 0.92	0.108
Total Cholesterol (mg/dL)	219.42± 64.16	234.58 ± 56.68	256.25 ± 59.51	0.109
Triglycerides (mg/dL)	183.82 ± 56.09	174.46 ± 40.57	191.91 ± 62.28	0.505
Serum Neudesin (ng/ml)	2.325 ± 0.53	2.417 ± 0.42	2.332 ± 0.46	0.699

Table 5. Correlation of the serum neudesin level with other parameters in pregnant women with gestational Diabetes.

	Pearson Correlation		Spearmen Correlation	
	R	P	R	P
Age (Years)	0.032	0.726	0.052	0.572
Body Mass Index (kg/m2)	0.474	0.000	0.473	0.000
FBG (mg/dL)	0.606	0.000	0.636	0.000
HbA1c %	0.616	0.000	0.233	0.037
Insulin (µU/mL)	0.718	0.000	0.560	0.000
HOMA- IR	0.682	0.000	0.606	0.000
TyG index	0.505	0.000	0.117	0.301
TyG- BMI index	0.542	0.000	0.045	0.691
Gestational age (weeks)	0.138	0.132	0.074	0.421

Table 6. Combined Logistic Regression Results: Model 1 versus Model 2 for predicting neudesin in GDM development.

Predictor	Model 1 OR (95% CI)	Model 1 p-value	Model 2 OR (95% CI)	Model 2 p-value
Neudesin(ng/ml)	3.83 (2.01–7.28)	<0.001	2.51 (0.38–16.78)	0.034
Age (years)	—	—	1.11 (0.92–1.35)	0.269
BMI (kg/m2)	—	—	1.07 (0.83–1.38)	0.608
FBG (mg/dL)	—	—	2.45 (0.34–17.88)	0.377
HbA1c%	—	—	0.87 (0.38–1.99)	0.740
Cholesterol (mg/dL)	—	—	0.99 (0.98–1.01)	0.418
Triglycerides (mg/dL)	—	—	1.01 (0.99–1.03)	0.241

Diagnostic performance of serum neudesin for GDM:

ROC curve analysis demonstrated excellent diagnostic performance of serum neudesin for GDM prediction (AUC = 0.986) (Figure 1). The optimal cutoff of 1.1185 ng/ml provided 1005 sensitivity and 86.7% specificity, with a Youden index of 0.867 (Table 7).

Table 7 provides the optimal cutoff value for serum neudesin in distinguishing GDM from controls. A threshold of 1,1185 ng/ml yielded 100% sensitivity and 86.7% specificity, with a Youden index of 0.867 and a 95% confidence interval ranging from 1.050 to 1,19, highlighting its strong predictive utility.

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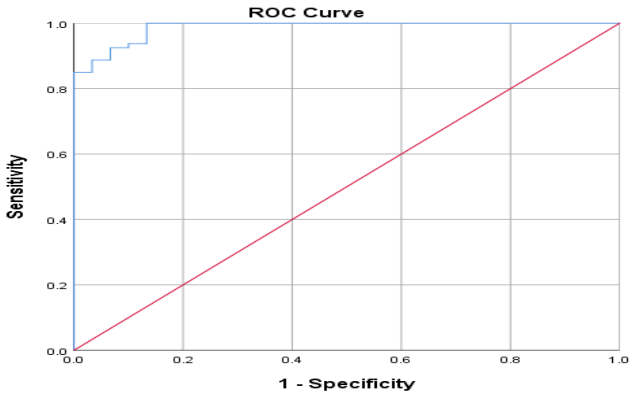

Figure 1. ROC curve analysis of neusidin for predicting GDM.

Table 7. The cut-off value of serum neusidin level that best predicts GDM versus the control.

	AUC	Cutoff value	Sensitivity	specificity	Youden Index	95% Confidence interval
Serum Neudesin (ng/ml)	0.986	1.1185 ng/ml	100 %	86.7%	0.867	1.050- 1.19

Discussion

Gestational diabetes mellitus (GDM) is a multifactorial condition characterized by glucose intolerance and insulin resistance during pregnancy. This study investigated the clinical and biochemical profiles of pregnant women with GDM with a particular focus on serum neudesin levels and their association with metabolic parameters. The findings provide compelling evidence for the role of neudesin as a potential biomarker and contributor to the pathophysiology.

As shown in Table 1, women with GDM exhibited significantly higher BMI, FBG, HbA1C, insulin levels, and HOMA-IR compared to controls ($p < 0.001$), consistent with previous studies that underscore insulin resistance as a hallmark of GDM (16,17). These alterations reflect the metabolic stress imposed by pregnancy, which is exacerbated in GDM due to impaired insulin signaling and signaling pathways. The lack of significant difference in age and gestational age between groups suggests that these metabolic changes are intrinsic to the disease process rather than confounded by demographic variables.

Table 2 revealed markedly elevated serum neudesin levels in the GDM group ($p < 0.001$), alongside increased HOMA-IR and TyG index-BMI. These findings suggest a strong association between neudesin and insulin resistance. Neudesin has been implicated in energy homeostasis and the regulation of the sympathetic system (18). Ohta et al. demonstrated that neudesin-deficient mice were resistant to diet-induced obesity and exhibited enhanced thermogenesis, suggesting that neudesin plays a role in metabolic suppression (19). The current data support a pathogenic role for neudesin in GDM, potentially through modulation of insulin sensitivity and energy expenditure.

In the current study, Table 3 showed no significant difference in neudesin levels between GDM patients below and above 30 weeks of gestation, indicating that neudesin expression remains stable across late pregnancy. This contrasts with other biomarkers such as leptin and CRP, which fluctuate with gestational age (20). The temporal stability of neudesin enhances its utility as a diagnostic marker, particularly for early screening Despite significant increases in BMI and HbA1c across BMI categories (Table 4), serum neudesin levels did not differ

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significantly. This suggests that neudesin may be independent of adiposity in GDM, unlike adipokines such as adiponectin and resistin, which are closely linked to fat mass (21). The lack of correlation with BMI implies that neudesin reflects intrinsic metabolic dysfunction rather than being a secondary consequence of obesity.

In previous studies, Karatas et al. reported elevated neudesin levels in individuals with Type 2DM and obesity, with significant associations to insulin resistance markers (22). Our study mirrors these findings in a gestational context, suggesting that neudesin 's role in metabolic dysfunction may extend across different physiological states, including pregnancy.

Table 5 demonstrates strong positive correlations between neudesin and BMI, FBG, HbA1C, insulin, and HOMA-IR in both Pearson and Spearman analyses ($p < 0.05$), reinforcing its role in glucose metabolism. Interestingly, neudesin showed weaker or non-significant correlations with TyG indices and gestational age, suggesting specificity for insulin-related pathways. These findings are consistent with prior research linking neudesin to insulin resistance in both animal and human models (11, 23).

Logistic regression analysis confirmed neudesin as a significant independent predictor of GDM. In Model 1, neudesin had an odds ratio of 3.83 ($p < 0.001$) and remained important in Model 2 after adjusting for confounders (OR 2.51, $p = 0.034$). These results highlight the robustness of neudesin as a predictor marker. The consistent significance across models supports the clinical relevance of this finding.

A pilot study by Eren et al. explored neudesin levels in pregnant women and found modest elevation in those with impaired glucose tolerance. However, their sample size was limited (24). The current study builds upon this by demonstrating robust diagnostic performance with an AUC of 0.986, as illustrated in Figure 1 and Table 7, and identifying a precise cutoff value (1.1185 ng/mL) with high sensitivity and specificity, which was not previously established.

The high odds ratio observed in this study suggests that a higher level of neudesin is a strong predictor of GDM, making it an effective marker for early risk stratification. Additionally, the excellent area under the curve further supports its diagnostic value.

If validated in larger cohorts, serum neudesin could be integrated into routine prenatal screening to identify women at high risk for GDM before onset. Adding neudesin to current tests, such as OGTT, fasting glucose, and HbA1c, may improve diagnostic precision and reduce false negatives. Incorporating this biomarker into AI-driven platforms could further enhance early prediction by analyzing complex biochemical patterns and enabling timely, personalized interventions, ultimately leading to improved maternal-fetal outcomes.

Conclusion

The findings of this study support the use of neudesin as a predictive tool for GDM. Its independent elevation in GDM, strong correlation with insulin resistance, and excellent AUC indicate it holds promise for clinical application. Moving forward, validating Neudesin through longitudinal studies, mechanistic investigations, and interventional trials will be crucial in determining its full potential, ultimately benefiting maternal and fetal health outcomes.

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Ethical clearance: The study received ethical approval from the Ethics Committee of the College of Science for Women, University of Baghdad (No. 22/8691, dated 16/12/2024). All information was used exclusively for scientific study, and participant confidentiality and data privacy were rigorously upheld. All participants provided written informed

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consent, and confidentiality of medical records was maintained in accordance with ethical guidelines.

Conflict of interest: None.

Use of Artificial Intelligence (AI): The authors state they did not use any generative AI tools for creating or editing the manuscript's language.

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References

1. Baz B, Riveline JP, Gautier JF. Endocrinology of pregnancy: gestational diabetes mellitus: definition, aetiological and clinical aspects. European journal of endocrinology. 2016 Feb;174(2):R43-51. https://doi.org/10.1530/EJE-15-0378.

2. Osmulski ME, Yu Y, Kuang A, Josefson JL, Hivert MF, Scholtens DM, Lowe Jr WL. Subtypes of gestational diabetes mellitus are differentially associated with newborn and childhood metabolic outcomes. Diabetes care. 2025 Mar 1;48(3):390-9. https://doi.org/10.2337/dc24-1735.

3. Sweeting A, Wong J, Murphy HR, Ross GP. A clinical update on gestational diabetes mellitus. Endocrine reviews. 2022 Oct 1;43(5):763-93. https://doi.org/10.1210/endrev/bnac003.

Haleem SA, Hamzah MI, Khudhair MS, Deli EQ. Assessment of Meteorin-like

Protein Serum Levels in Pre-diabetes and Newly Diagnosed Type 2 Diabetes Mellitus. AL-Kindy College Medical Journal. 2024 Apr 1;20(1):27-3. https://doi.org/10.47723/vmsq2630 .

5. Khashan IS, Majeed MJ. The Role of GABA and Insulin Regulated Aminopeptidase on Insulin Resistance and GLUT4 in Prediabetes and Type 2 Diabetes Mellitus. AL-Kindy College Medical Journal. 2024 Apr 1;20(1):65-70. https://doi.org/10.47723/6b3yqa81

6.Powe CE, Hivert MF, Udler MS. Defining heterogeneity among women with gestational diabetes mellitus. Diabetes. 2020 Oct 1;69(10):2064-74. https://doi.org/10.2337/dbi20-0004

7.Ghildayal N, Allard C, Blais K, Doyon M, Arguin M, Bouchard L, Perron P, Hivert MF. Associations of maternal insulin sensitivity during pregnancy with childhood central adiposity in the Genetics of Glucose regulation in Gestation and Growth (Gen3G) cohort. Pediatric obesity. 2023 Feb;18(2):e12982. https://doi.org/10.1111/ijpo.12982

8. Kimura I, Nakayama Y, Zhao Y, Konishi M, Itoh N. Neurotrophic effects of neudesin in the central nervous system. Frontiers in neuroscience. 2013 Jun25;7:111. https://doi.org/10.3389/fnins.2013.00111

9. Ohta H, Konishi M, Kobayashi Y, Kashio A, Mochiyama T, Matsumura S, Inoue K, Fushiki T, Nakao K, Kimura I, Itoh N. Deletion of the neurotrophic factor neudesin prevents diet-induced obesity by increased sympathetic activity. Scientific reports. 2015 May 8;5(1):10049. https://doi.org/10.1038/srep10049

10.Bozkaya G, Fenercioglu O, Demir İ, Guler A, Aslanipour B, Calan M. Neudesin: a neuropeptide hormone decreased in subjects with polycystic ovary syndrome. Gynecological Endocrinology. 2020 Oct 2;36(10):849-53. https://doi.org/10.1080/09513590.2020.1751106

11.Ohta H, Kimura I, Konishi M, Itoh N. Neudesin as a unique secreted protein with multi-functional roles in neural functions, energy metabolism, and tumorigenesis. Frontiers in molecular biosciences. 2015 May 19;2:24. https://doi.org/10.3389/fmolb.2015.00024

12.Nakayama Y, Masuda Y, Mukae T, Mikami T, Shimizu R, Kondo N, Kitagawa H, Itoh N, Konishi M. A secretory protein neudesin regulates splenic red pulp macrophages in erythrophagocytosis and iron recycling. Communications Biology. 2024 Jan 25;7(1):129. https://doi.org/10.1038/s42003-024-05802-9

ORIGINAL RESEARCH
Published: 25 October 2025
DOI: 10.26505/djm.v29i1.1585

13.Hameed EK, Al-Ameri LT, Hasan HS, Abdulqahar ZH. The cut-off values of triglycerides-glucose index for metabolic syndrome associated with type 2 diabetes mellitus. Baghdad Science Journal. 2022;19(2):7. https://doi.org/10.21123/bsj.2022.19.2.0340
14.Hameed EK. TyG index a promising biomarker for glycemic control in type 2 Diabetes Mellitus. Diabetes and Metabolic Syndrome: Clinical Research and Reviews. 2019 Jan 1;13(1):560-3. https://doi.org/10.1016/j.dsx.2018.11.030
15.Gayoso-Diz P, Otero-González A, Rodriguez-Alvarez MX, Gude F, García F, De Francisco A, Quintela AG. Insulin resistance (HOMA-IR) cut-off values and the metabolic syndrome in a general adult population: effect of gender and age: EPIRCE cross-sectional study. BMC endocrine disorders**.** 2013 Oct 16;13(1):47. https://doi.org/10.1186/1472-6823-13-47
16. Plows JF, Stanley JL, Baker PN, Reynolds CM, Vickers MH. The pathophysiology of gestational diabetes mellitus. International journal of molecular sciences. 2018 Oct 26;19(11):3342. https://doi.org/10.3390/ijms19113342
17. Hassan HJ, Mohammad TU, Hameed EK. Assessment of serum metalloendopeptidase level in patients with double diabetes. AL-Kindy College Medical Journal. 2023 Dec 30;19(3):21-5. https://doi.org/10.47723/kcmj.v19i3.999
18.Kimura I, Yoshioka M, Konishi M, Miyake A, Itoh N. Neudesin, a novel secreted protein with a unique primary structure and neurotrophic activity**.** Journal of neuroscience research. 2005 Feb 1;79(3):287-94. https://doi.org/10.1002/jnr.20356
19. Bahar S, Özgen İT, Cesur Y, Yıldız C, Özer ÖF, Kaplan EH, Sütçü ZK. Serum Neudesin Levels in Patients with Congenital Hypothyroidism. Journal of clinical research in pediatric endocrinology. 2025 Jan 24. https://doi.org/10.4274/jcrpe.galenos.2025.2024-1-14
20.Catalano PM, Hauguel-De Mouzon S. Is it time to revisit the Pedersen hypothesis in the face of the obesity epidemic?. American journal of obstetrics and gynecology. 2011 Jun 1;204(6):479-87. https://doi.org/10.1016/j.ajog.2010.11.039
21.Retnakaran R, Hanley AJ, Raif N, et al. Adiponectin and resistin in pregnancy. *J Clin Endocrinol Metab*. 2004;89(3):1174–1178.
22.Karatas O, Calan M, Yuksel A, Chousein R, Bozkaya G, Karatas M, Uslu A, Tatar E. The level of the neudesin in type-2 diabetic patients and the relationship between the metabolic parameters and carotid intima-media thickness. Minerva Endocrinology. 2021 Jan 12;48(3):288-94. https://doi.org/10.23736/s2724-6507.20.03217-4
23. Vergani E, Bruno C, Cipolla C, Currò D, Mancini A. Plasma levels of neudesin and glucose metabolism in obese and overweight children. Frontiers in Endocrinology. 2022 Jul 14;13:881524. https://doi.org/10.3389/fendo.2022.881524
24. Eren EÇ, Kaya S, Argun D. The assessment of maternal and umbilical cord neudesin levels in pregnancies with gestational diabetes mellitus. Journal of Obstetrics and Gynaecology. 2022 Oct 3;42(7):2941-5. https://doi.org/10.1080/01443615.2022.2114328

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مستوى النيوديسين في مصل الدم لدى النساء المصابات بسكري الحمل: علامة حيوية محتملة للتنبؤ بالمرض

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الملخص

الخلفية: يعد التصنيف الدقيق لخلايا الدم أمرًا بالغ الأهمية لتشخيص وإدارة اضطرابات الدم. حيث أن التقييمات اليدوية التقليدية لمسحات الدم تتطلب جهدًا كبيرًا وتخضع للتباين بين المختصين، مما قد يهدد موثوقية التشخيص.يُعد داء السكري الحملي (GDM) من الاضطرابات الأيضية الشائعة المرتبطة بالحمل، ويرتبط بمقاومة الإنسولين وضعف تحمل الجلوكوز. يُعتقد أن نيوديسين، وهو ببتيد تنظيمي يشارك في عملية أيض الجلوكوز، قد يكون علامة حيوية جديدة لداء السكري الحملي، إلا أن دوره لا يزال غير واضح.

الأهداف: تقييم القيمة التنبؤية لنيوديسين في داء السكري الحملي، ودراسة ارتباطه بمؤشرات مقاومة الإنسولين ومؤشرات التحكم في سكر الدم..

المواد والطرق: تم إجراء دراسة حالة–ضبط شملت ٢٠٠ امرأة حامل، من بينهن ١٢٠ مصابة بداء السكري الحملي و٨٠ من الأصحاء كمجموعة ضابطة. تم قياس المؤشرات الجسمانية، وسكر الدم الصائم (FBG)، والهيموغلوبين السكري (HbA1c)، والإنسولين، ومؤشر HOMA-IR، ومؤشر TyG، ومؤشر TyG-BMI. كما تم قياس مستويات نيوديسين في المصل باستخدام تقنية ELISA. أُجريت تحليلات الارتباط والانحدار اللوجستي لاستكشاف العلاقات والقيمة التنبؤية.

النتائج: أظهرت النساء المصابات بداء السكري الحملي مستويات أعلى بشكل ملحوظ من نيوديسين في الدم مقارنةً بالمجموعة الضابطة (٢,٣٧٢ ± ٠,٣٦ نانوغرام/مل مقابل ٠,٩١٩ ± ٠,١٥٦ نانوغرام/مل، $p<0.001$). كانت مستويات نيوديسين مرتبطة ارتباطًا إيجابيًا بمؤشر كتلة الجسم (BMI)، وسكر الدم الصائم، وHbA1c، والإنسولين، ومؤشر HOMA-IR، ومؤشرات TyG ($p<0.001$). أظهر تحليل الانحدار اللوجستي أن نيوديسين يُعد مؤشرًا مستقلًا للتنبؤ بـ GDM. كما أظهرت تحليلات منحنى ROC دقة تشخيصية عالية (AUC = 0.986)، مع قيمة قطع تبلغ ١,٥٣٦ بيكوغرام/مل، مما يوفر حساسية بنسبة ٩١,٣٪ وخصوصية بنسبة ٩٢,٥٪.

الاستنتاج :ترتفع تركيزات نيوديسين في الدم بشكل ملحوظ لدى المصابات بداء السكري الحملي، وترتبط ارتباطًا قويًا بدرجة مقاومة الإنسولين وضعف التحكم في سكر الدم. وقد يُعد نيوديسين علامة حيوية واعدة للتشخيص المبكر وهدفًا محتملاً لإدارة داء السكري الحملي.

الكلمات المفتاحية: سكري الحمل، نيوديسين، مقاومة الإنسولين، العلامات الحيوية.

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