NOVEL BIOMARKERS IN PREECLAMPSIA RISK ASSESSMENT

Tamara Antonić[1]*, Daniela Ardalić[2], Sandra Vladimirov[1], Gorica Marković[2], Petar Cabunac[2], Marija Mihajlović[1], Željko Miković[2,3], Aleksandra Stefanović[1]

[1]University of Belgrade – Faculty of Pharmacy, Department of Medical Biochemistry, Belgrade, Serbia
[2]The Obstetrics and Gynaecology Clinic „Narodni Front", Belgrade, Serbia
[3]University of Belgrade – Faculty of Medicine, Department of Gynecology and Obstetrics, Belgrade, Serbia

*tamara.antonic@pharmacy.bg.ac.rs

Despite significant progress in improving pregnancy outcomes in recent decades, predicting the risk and treatment of preeclampsia are still major challenges in clinical practice (1). The aim of this study was to examine non-routine biomarkers in preeclampsia risk assessment. The study involved 90 women with high-risk pregnancies, 20 of whom developed preeclampsia by the end of pregnancy. Biochemical parameters were determined between the 12th and 13th weeks of gestation. The results of the study showed that women who later developed preeclampsia had higher concentrations of lathosterol, cholesterol synthesis marker ($p < 0.05$), inflammatory proteins - monocyte chemoattractant protein-1 (MCP-1), and resistin ($p < 0.01$, both), as well as paraoxonase-1 (PON1) activity ($p < 0.05$). Binary logistic regression analysis showed that higher concentrations of lathosterol, MCP-1, resistin, and PON-1 were associated with preeclampsia development. To determine whether the parameters significant in univariate analysis, are independent predictors of preeclampsia, we applied multivariate regression analysis. Clinical markers commonly used in risk assessment (maternal age and body mass index, mean arterial pressure, and uterine blood flow), lathosterol, MCP-1, resistin, and PON-1 were included in the model. MCP-1 and resistin stood out as significant independent predictors of preeclampsia. The diagnostic accuracy of the investigated model was excellent (AUC=0.859). The study results indicated the importance of a multi-marker approach in risk assessment for preeclampsia development.

References
1. MacDonald TM, Walker SP, Hannan NJ, Tong S, Tu'uhevaha J. Clinical tools and biomarkers to predict preeclampsia. EbioMedicine;75:103780.

NOVI BIOMARKERI U PROCJENI RIZIKA ZA RAZVOJ PREEKLAMPSIJE

Tamara Antonić[1]*, **Daniela Ardalić[2]**, **Sandra Vladimirov[1]**, **Gorica Marković[2]**,
Petar Cabunac[2], **Marija Mihajlović[1]**, **Željko Miković[2,3]**, **Aleksandra Stefanović[1]**

[1]Univerzitet u Beogradu – Farmaceutski fakultet, Katedra za medicinsku biohemiju, Beograd, Srbija
[2]Ginekološko-akušerska klinika „Narodni Front", Beograd, Srbija
[3]Univerzitet u Beogradu – Medicinski fakultet, Katedra za ginekologiju i akušerstvo, Beograd, Srbija

*tamara.antonic@pharmacy.bg.ac.rs

Uprkos značajnom napretku u poboljšanju ishoda trudnoće poslednjih decenija, predviđanje rizika i terapija preeklampsije su još uvijek veliki izazovi u kliničkoj praksi (1). Cilj ove studije je bio ispitivanje biomarkera koji se ne koriste u rutinskoj praksi u proceni rizika za razvoj preeklampsije. U studiji je učestvovalo 90 žena sa visokorizičnim trudnoćama, od kojih je 20 razvilo preeklampsiju do kraja trudnoće. Biohemijski parametri su određivani između 12. i 13. nedelje gestacije. Rezultati studije su pokazali da su žene koje su razvile preeklampsiju imale više koncentracije latosterola, markera sinteze holesterola (p <0,05), inflamatornih proteina - monocitnog hemoatraktantnog proteina-1 (MCP-1) i rezistina (p < 0,01, oba), kao i aktivnost enzima paraoksonaze-1 (PON1) (p <0,05). Binarna logistička regresiona analiza je pokazala da su više koncentracije latosterola, MCP-1, rezistina i PON-1 povezane sa razvojem preeklampsije. Da bi se utvrdilo da su parametri koji su se u univarijantnoj analizi pokazali značajnim, nezavisni prediktori preeklampsije, primjenili smo multivarijantnu regresionu analizu. U model su ušli klinički parametri koji se uobičajeno koriste u procjeni rizika (starost i indeks tjelesne mase majke, srednji arterijski pritisak i protok krvi kroz matericu), latosterol, MCP-1, rezistin i PON-1. MCP-1 i rezistin su se istakli kao značajni nezavisni prediktori preeklampsije. Pokazana je odlična dijagnostička tačnost ispitivanog modela (AUC=0,859). Rezultati ove studije su ukazali na značaj multimarkerskog pristupa u procjeni rizika za razvoj preeklampsije.

Literatura

1. MacDonald TM, Walker SP, Hannan NJ, Tong S, Tu'uhevaha J. Clinical tools and biomarkers to predict preeclampsia. EbioMedicine;75:103780.

Zahvalnica