EVALUATION OF THE DIAGNOSTIC ROLE OF LABORATORY MARKERS IN THE EARLY DIAGNOSIS OF PREECLAMPSIA

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Preeclampsia is a severe pathological condition that develops after the 20th week of pregnancy and is characterized by arterial hypertension and proteinuria, leading to damage of the maternal cardiovascular, hepatic, and renal systems. It is also one of the leading causes of maternal and fetal morbidity and mortality. In recent years, the global incidence of preeclampsia has been steadily increasing, which highlights the growing need for new and more accurate biomarkers for early detection and prevention of this condition.

One of the key pathogenetic mechanisms of preeclampsia is endothelial dysfunction. Impaired placental circulation during pregnancy leads to reduced production of nitric oxide (NO) in endothelial cells. One of the enzymes responsible for NO synthesis is endothelial nitric oxide synthase (NOS3), which plays a crucial role in regulating vascular tone and maintaining antiaggregant and antithrombotic effects. Dysfunction of NOS3 results in

endothelial impairment, which plays a central role in the development of preeclampsia.

Research Objective: Is to evaluate the diagnostic significance of the NOS3 marker for the early detection of preeclampsia in pregnant women.

Objectives of the study:

1. To determine serum NOS3 levels in pregnant women at 21–22 weeks of gestation for the purpose of early detection of preeclampsia.
2. To investigate the relationship between NOS3 levels and arterial blood pressure, proteinuria, and hepatic and renal function indicators.

Materials and Methods:

The study is planned to be conducted at the Research Laboratory of the Department of Clinical Laboratory Diagnostics with the course of Clinical Laboratory Diagnostics of DKTF at Samarkand State Medical University, at Family Polyclinic No. 4 of Samarkand city, as well as at the L.M. Isayev Research Institute of Microbiology, Virology, and Infectious and Parasitic Diseases under Samarkand State Medical University.
The main group will consist of 30 pregnant women diagnosed with preeclampsia, while the control group will include 12 healthy pregnant women. During the study, clinical observations will be combined with the results obtained from biochemical and enzyme-linked immunosorbent assay (ELISA) methods, followed by statistical analysis.

Research Results:

The study material includes blood serum samples from pregnant women, in which NOS3 levels will be determined using the enzyme-linked immunosorbent assay (ELISA) method. In addition, biochemical parameters (ALT, AST, creatinine, urinary protein, liver enzymes) and clinical data

(arterial blood pressure, body mass index, gestational age) will also be analyzed.

Conclusion:

Based on the study results, the inclusion of NOS3 into the laboratory diagnostic system may expand opportunities for the early detection and prevention of preeclampsia. This, in turn, will help reduce the risk of severe complications as well as maternal and fetal mortality. Moreover, the determination of NOS3 levels is a simple, cost-effective, and reliable laboratory method, making it suitable for implementation in routine clinical laboratory practice.