Early Prediction of Preeclampsia

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Preeclampsia is a common obstetric complication that causes both maternal and fetal morbidity and fatality rate [1]. It too increases the long-term risk of cardiovascular and cerebrovascular disease [2]. The incidence of preeclampsia is 3-5% [3]. Early detection of preeclampsia can reduce the severity of complications and better clinical outcomes [4,5].

The exact cause of preeclampsia is still unknown. The two stage theory and angiogenic imbalance are two notable postulates of the disease [6]. The first stage is impaired trophoblastic invasion into spiral arteries, which can result in a little linen and high can be evaluated by uterine artery Doppler assessment [7]. Many uterine artery Doppler studies have found that preeclamptic patients have more abnormal uterine artery Doppler results than normal patients [8,9].

Another model proposes angiogenic imbalance. The resistance. This model process of placental development, the coordination of vascular alterations, and the regulation of trophoblast growth are mediated by several locally acting angiogenic and antiangiogenic factors and their receptors [10]. When these processes are suboptimal, the results may be placental dysfunction, which can cause preeclampsia. This can be assessed by measuring angiogenic factors [11].

Angiogenic factors such as histidine-rich glycoprotein (HRG) is an angiogenic agent that can be detected throughout pregnancy, but lower serum HRG levels are observed in preeclampsia [12,13]. HRG affects the balance of angiogenesis and is associated with preeclampsia [14-16]. The mechanism is the binding between HRG and anti-angiogenic thrombospondin (TSP1). The binding between HRG and TSP-1 can inhibit the interaction between TSP-1 and CD36. HRG also has effects on fibrinogen and platelet levels, and coagulation, which may affect preeclampsia [13,17,18].

Although, circulating levels of angiogenic factors are proposed to be useful for prediction of preeclampsia, [19] as changes in the layers of these biomarkers are discovered long before the clinical manifestations of preeclampsia, and their systemic concentrations may act as marks of disease severity [20]. In spite of this, the combination of uterine artery Doppler and serum angiogenic factor level at 11-13 weeks of gestation was not effective as a first-trimester screening for the prediction of preeclampsia [21]. Thus, we are still awaiting for an effective early predictor for preeclampsia during the first trimester.

References


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