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Editorial

Maternal Ophthalmic Artery Doppler in Prediction of Pre-Eclampsia

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Pre-eclampsia (PE) demonstrates a chief cause of maternal and fetal morbidity and mortality with an incidence ranges from 3% to 10%, globally [1]. According to Wright D., *et al*. traditionally, prediction of PE can be achieved in screening by a combination of a patient's anamnesis, maternal demographics and various biomarkers in the first, second or third trimester of pregnancy [2].

Recently, in a systemic review and meta-analysis, the use of maternal ophthalmic artery doppler is extensively discussed and compared with the effectiveness of uterine artery doppler in prediction of PE [3]. In 1999, Belfort MA., *et al*. observed that there is a decrease in impedance to flow and an increase in flow velocity in the ophthalmic arteries in pre eclamptic women compared to low-risk pregnancies [4]. Although, various articles thus far have shown that altered maternal ophthalmic artery doppler poses a major risk for PE, the association between ophthalmic artery doppler and PE can be linked to nonphysiologic hemodynamic adjustments during pregnancy and not to the trophoblastic invasion theory. Gurgel Alves JA., *et al*. reported that the efficiency of ophthalmic artery first diastolic peak (PD1) in the 11 to 14 weeks' gestation scan, presents an equal prognostic marker to uterine artery doppler for development of PE later in pregnancy [5]. Recently, Kusuma RA., *et al*. recommended that combining classical biomarkers for PE occurrence with ophthalmic artery doppler peak ratio (PR) might improve the accuracy of PE prediction at the nuchal scan [6].

In 2014, in a prospective cohort study, the authors suggest that a high ophthalmic artery peak mesodiastolic velocity (PMDV) in the second trimester of pregnancy presents an independent predictor of PE [7]. On the other hand, Praciano de Souza PC., *et al*. did not reveal a significant correlation between PE and measurement of maternal ophthalmic artery doppler during the second trimester scan [8].

Well of note, lately, in a large prospective observational study of 2853 pregnant women attending for a routine second trimester scan, the authors reported that ophthalmic artery peak systolic velocity (PSV) ratio with or without of additional biomarkers, is useful for prediction of PE development [9]. Moreover, in 2020, a second large observational study of 2287 cases reports that measurement of ophthalmic artery doppler at 35 - 37 weeks' gestations is of great importance to advance the performance of screening for PE at the last trimester [10].

To conclude, maternal ophthalmic artery during pregnancy presents an easily accessible vessel and its doppler measurement provides a reliable noninvasive biomarker for the prediction of PE. Being the first branch of the internal carotid artery, it provides data on the cerebral circulation and presents a technique that makes proper intervention possible and thus improves the outcome of the pregnancy. More studies are needed to incorporate the ophthalmic artery measurement into routine scan.

Conflict of Interest

None.

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