OPHTHALMIC ARTERY DOPPLER IN PREGNANCIES COMPLICATED BY PLACENTAL DYSFUNCTION

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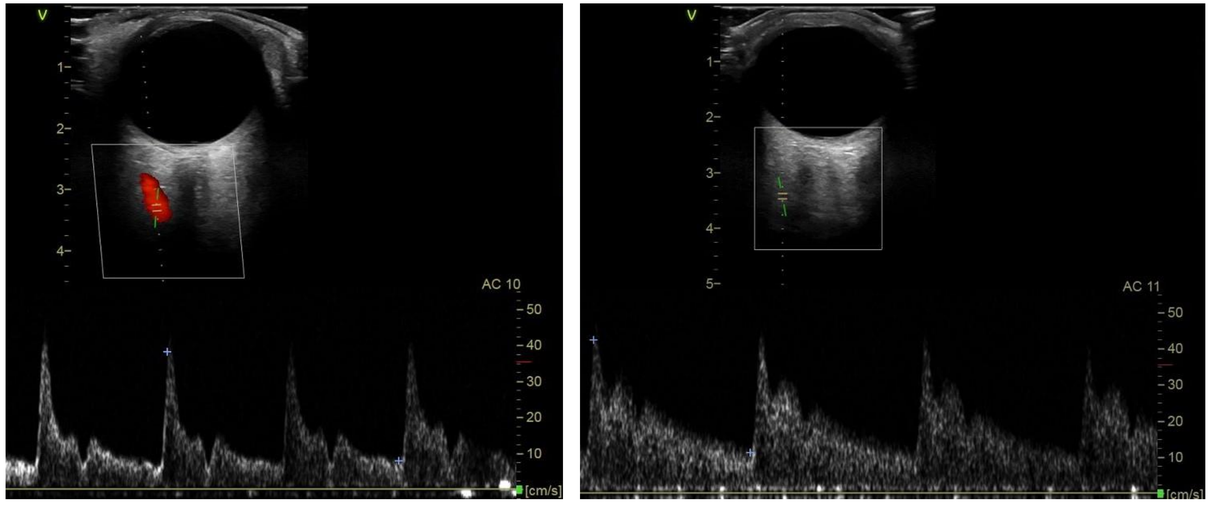
INTRODUCTION: Women with hypertensive disorders of pregnancy (HDP) show pathological modifications in the uteroplacental unit but also in other vascular beds. Ophthalmic Artery Doppler parameters have proved to be persistently different in women with HDP.

OBJECTIVE: To investigate the differences in Ophthalmic Artery Doppler parameters in women with HDP or affected by fetal growth restriction (FGR).

METHODS: Prospective cohort study at a tertiary center from December 2020 to December 2021. Patients attending St. George's Hospital with singleton pregnancies complicated by HDP or FGR from 28 to 40 weeks were recruited and compared with normotensive controls. Women with fetal abnormalities, known maternal cardiovascular disease or pregestational diabetes were excluded.
Participants underwent ophthalmic artery Doppler assessment and parameters obtained included pulsatility index, first peak systolic velocity (PSV), second peak systolic velocity (2PSV), end diastolic velocity and peak ratio (PR), calculated as the ratio of the 2PSV to PSV.



Ophthalmic Artery Doppler in a patient with placental dysfunction (right) vs a normotensive woman with normally grown fetus (left). The ratio of the second to first systolic velocity was significantly higher in women with placental dysfunction.

RESULTS: 190 patients were recruited of whom 101 (53,16%) were controls and 89 (46,84%) showed placental dysfunction.
Baseline characteristics were comparable between the groups. Women with HDP or FGR presented with higher mean arterial pressure at booking [86.36mmHg vs 92.04mmHg, p=0.001] and at time of recruitment [89.15mmHg vs 95.73mmHg, p=0.001].
Of all ophthalmic artery Doppler parameters, **only PR was significantly higher in the placental dysfunction group** [0.51cm/seg vs 0.61cm/seg, p=0.021] when compared to controls. 2PSV was slightly higher in women with HDP or FGR than in the control group, without reaching statistical significance.

CONCLUSION: In concordance with previous research, we have demonstrated that **peak ratio represents the most useful parameter to identify pregnancies affected by placental dysfunction**. More studies are needed to stablish ophthalmic artery Doppler assessment as a tool to improve clinical management of these patients.