Retinal Vessels Analysis: In Vivo Visualization of Systemic Microvasculature in Pre-eclampsia and Hypertension in Pregnancy

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Introduction

Lack of sympathetic innervation of both the placental and the retinal blood vessels makes the retina as an ideal tool for directly and objectively assessing microvascular changes in pregnancy that occur because of vasoactive factors.

Objectives

This study aims to find the relationship between retinal vessels caliber and Pre-eclampsia as well as pregnancy-induced hypertension (PIH).

Methods

A total of 37 patients including 14 healthy normal pregnant patients, 11 patients with diagnosis of pre-eclampsia and 12 patients with PIH were recruited in this study. All were matched by age and gestational age. 50 degree fundus photos were taken. Retinal vascular caliber was measured with a computer based program. All arterioles and venules coursing through an area one half to one disc diameter from the optic disc margin were measured and summarized as the central retinal artery equivalent (CRAE) and central retinal vein equivalent (CRVE) using formulas developed by Hubbard et al.

Results

Significant retinal arteriolar vasoconstriction was found in patients with pre-eclampsia compared with patients with PIH. This finding in absence of significant difference in mean arterial blood pressure between two groups might be due to endothelial cell dysfunction and subsequent substance alteration that may induce vasoconstriction in retinal and systemic arterioles.

Conclusion