High Risk Pregnancy Screening with Optical Coherence Tomography

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Background

- Subclinical Changes in retinal blood vessels can inform about systemic changes in other parts of the body
- Preeclampsia is a pregnancy disorder characterized by hypertension and proteinuria. Eclampsia describes the presence of seizures in a person with preeclampsia.
- According to the CDC, the hypertensive disorder, preeclampsia/ eclampsia, accounts for 6.6% of maternal deaths in America [1].
- It is also a risk factor for fetal complications such as preterm labor, growth restriction, and stillbirth [2].
- . Optical coherence tomography angiography provides a simple, non-invasive way to potentially screen for this and other disorders in mothers.

Objective

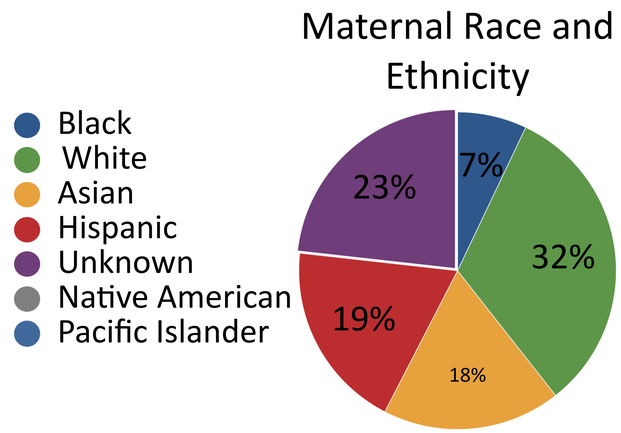
- Use optical coherence tomography angiography to develop an understanding of changes in retinal topography that may indicate the potential of developing pregnancy complications.

Methods

- Retrospective Chart Review
- Data collected from UCLA EPIC
- Inclusion criteria: all high risk pregnancy patients evaluated using OCTA in 2018
- Exclusion criteria: Infant born elsewhere, insufficient image resolution
- Data captured in REDCap
- Potential Associations between changes in retinal capillary plexus and variables such as mothers demographics, past medical history, complications of pregnancy, vitals, infants gestational age, birthweight, and comorbid conditions will be examined.

Results

Past Medical History	N (%)
Chronic Hypertension	12 (14.8)
Hematological	11 (13.6)
Pulmonary	10 (12.3)
Infection	10 (12.3)
Chronic Diabetes	4 (4.9)
Neurological	6 (7.4)
Cardiovascular	4 (4.9)
Endocrine	8 (9.9)
Other	36 (43.2)
None	25 (30.9)



Infant Data	Median	Std Dev
Gestational Weeks	39	1.94
Body Weight Percentile	37.54	25.5

Infant Complications	N (%)
SGA	9 (10.7)
Hydrocephalus	2 (2.6)
Hearing Loss	2 (2.6)
Other	7 (9.2)
None	63 (82.9)

Conclusions

- Optical Coherence Tomography Angiography could help predict the risk of developing pregnancy and fetal complications.
- A total of 82 mothers and 85 infant charts were studied.
- Mothers with pregnancy complications, high Pre-pregnancy BMI (>25), or high maximum prenatal blood pressures showed no significant differences in the deep capillary plexus when compared to healthy pregnant women.
- There were significant differences in deep capillary plexus between women with significant PMH and women without.
- A more in-depth analysis of the patients past medical history is needed before ascertaining the extent in which this data will be predictive.

References

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Acknowledgements

Thank you to Dr. Janzen and Dr. Tsui for their encouragement and support!