Poster 27

Evaluation of Optic Nerve Head Elevation in Idiopathic Intracranial Hypertension with 3-Dimensional Optical Coherence Tomography

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Introduction:
Optical coherence tomography (OCT) is useful in the evaluation of papilledema and resulting changes in the retinal nerve fiber layer. However, the relationship between optic nerve head (ONH) elevation or volume measured with 3-Dimensional OCT and visual field recovery is unknown. In this study, we compared the reliability of two spectral-domain OCTs in assessing ONH elevation and volume, and correlated their findings to visual field recovery in six patients with papilledema due to Idiopathic Intracranial Hypertension (IIH).

Methods:
Six patients with IIH underwent automated perimetry at diagnosis and after standard of care treatment. Mean deviation scores were calculated for the superior and inferior hemifields. Volumetric OCT cubes of the ONH and peripapillary retina were obtained with either the Cirrus (Carl Zeiss Meditech) or Spectralis (Heidelberg) OCT. Superior and inferior ONH elevation and/or volume were manually measured by two independent raters.

Results:
Inter-rater reliability between ONH elevation and volume on both spectral-domain OCTs was obtained with the Pearson r coefficient. For the Cirrus OCT, r= 0.828 and for the Spectralis OCT, r=0.991. Using data from the most reliable OCT, we compared peak ONH elevation, mean ONH elevation and ONH volume with visual field recovery in the corresponding hemifield using linear regression analysis. In both superior and inferior hemifields, an inverse relationship was observed between each ONH measurement and the percentage of visual field recovery, with R² values for the superior hemifield of 0.59, 0.51, 0.51, respectively, and for the inferior hemifield of 0.42, 0.47, 0.47, respectively.

Conclusion:
In IIH patients, ONH elevation and volume on presentation correlate with the degree of visual field recovery after treatment. OCT-determined ONH elevation and volume measurements are reliable and may have value in predicting recovery of vision in IIH and in guiding medical management in the future.

References:

Key Words: Idiopathic intracranial hypertension, Papilledema, Visual field recovery, Optical Coherence Tomography, Optic nerve head volume