Detection of Choroidal Neovascularization using Optical Coherence Tomography Angiography compared to Traditional Angiography in Exudative Age-Related Macular Degeneration

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PURPOSE

To determine the sensitivity and specificity of optical coherence tomography angiography (OCTA) in detecting choroidal neovascularization (CNV) compared to fluorescein angiography (FA) considered as the first choice technique.

MATERIALS AND METHODS

Study: retrospective observational study.

Methods: In the period between June and October 2015, 45 patients underwent same-day fluorescein angiography (FA) with or without indocyanine green angiography (ICGA), for suspected neovascular AMD; all participants were also evaluated with OCT Angiography, AngioVue system (Optovue, Inc) the same day.

Two masked ophthalmologists evaluated separately all images obtained from FA, ICGA and OCTA: the first retinal specialist evaluated FA and ICGA images and the second one evaluated OCTA images independently.

FA used for the detection of CNV was considered as the reference standard.

RESULTS

Statistical analysis was performed using inter-rater agreement k-analysis (Cohen's kappa coefficient) to examine the concordance between traditional imaging techniques, FA, or FA and ICGA, and the new OCTA in assessing CNV.

Table 1. Reliability Statistics for Diagnostic Test in all CNV types

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<th>Reliability Statistic (95% Exact Confidence Interval)</th>
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<tbody>
<tr>
<td>Test</td>
<td>Sensitivity</td>
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<tr>
<td>FA - OCTA</td>
<td>0.92 (CI: 0.7903-0.9776)</td>
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<tr>
<td>FA/ICGA- OCTA</td>
<td>0.83 (CI: 0.6524-0.895)</td>
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Concordance between different imaging modalities resulted good: FA and OCTA was 0.62 (0.61-0.80) and between FA/ICGA and OCTA was 0.76 (0.61-0.80).

The sensitivity for detecting CNV was: 92% for FA and OCTA, 83% for FA/ICGA and OCTA.

Table 2. Reliability Statistics for Diagnostic Test in CNV with occult component

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<th>Reliability Statistic (95% Exact Confidence Interval)</th>
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<tbody>
<tr>
<td>Test</td>
<td>Sensitivity</td>
</tr>
<tr>
<td>FA - OCTA</td>
<td>0.85 (CI: 0.4902-0.9433)</td>
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<tr>
<td>FA/ICGA - OCTA</td>
<td>0.73 (CI: 0.4841-0.879)</td>
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Considering only CNV with occult component, concordance resulted moderate: 0.43 (0.41-0.60) for FA and OCTA, 0.63 (0.61-0.80) for FA/ICGA and OCTA.

Sensitivity in cases with no classic component was: 80% for FA and OCTA and 73% for FA/ICGA and OCTA.

CONCLUSION

OCT angiography shows good concordance compared to traditional FA with or not ICGA. OCTA and FA show high sensitivity in all cases with or no occult component. Sensitivity results lower if ICGA is considered in the comparison analysis because of the presence of occult lesions with hemorrhagic component. Specificity resulted very low in all groups.

REFERENCES


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