**ABSTRACT**

- Fluorescein angiography (FA) is a diagnostic imaging modality to visualize abnormalities in retinal and choroidal circulation such as vascular leakage.
- There is a need of objective quantification and detection of vascular pathology in uveitis.
- We demonstrate the potential of two novel automated processing techniques to detect leakage in FA images.

**METHODS**

- Images used in this study belonged to patients enrolled in the Uveitis/Intraocular Inflammatory Biobank (iBank) protocol at the NEI who underwent FA using the Optos 200Tx (Optos plc, Dunfermline, United Kingdom)
- Individual early and mid-phase angiographic images were selected if vascular leakage was identified by expert readers.
- Patient images were excluded in the cases of poor image quality, media opacity and severe artifacts obscuring view.
- Angiographic Images were retrospectively downloaded, removed of patient identifying information, and exported to analysis software.

**RESULTS**

<table>
<thead>
<tr>
<th>ORIGINAL</th>
<th>APPROACH 1</th>
<th>APPROACH 2</th>
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<tbody>
<tr>
<td><img src="image1" alt="Original Image" /></td>
<td><img src="image2" alt="Approach 1 Image" /></td>
<td><img src="image3" alt="Approach 2 Image" /></td>
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Application of approach 1 and approach 2 before and after oral corticosteroids in a patient with mild vasculature leakage. Approach 2 demonstrates quantifiable improvement in leakage after treatment.

**LIMITATIONS & FUTURE DIRECTION**

**Limitations:**
- Different FOVs in FA videos in the same clinical practice
- Distortion of images due to eye movement and blinking
- Interframe motion cannot be modeled as rigid
- Uveitis: vitreous haze could confound visible media

**Future Directions:**
- Refinement of algorithms + deep learning integration
- Reproducibility and repeatability across multicenter trials
- Explore skeleton structure as predictor/marker of disease

**CONCLUSION**

Our methods of FA image processing provides two novel algorithmic approaches to identifying leakage in patients with uveitis. Further refinement is warranted to apply to real-world patient care.

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