

The Use of High-Resolution Optical Coherence Tomography for the Diagnosis of Ocular Surface Masqueraders

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Background

Ocular surface masqueraders encompass any ocular surface lesion masquerading as another ocular surface lesion. Ocular surface neoplasia can hide within other ocular surface pathologies or appear as a benign lesion, averting recognition as a potentially dangerous lesion. Anterior segment high-resolution optical coherence tomography (HR-OCT) has emerged as an adjunctive tool to clinical acumen, however there is a knowledge gap on whether its images can aid in the diagnosis of clinically ambiguous ocular surface lesions. The purpose of this study is to evaluate the utility of HR-OCT in guiding the diagnosis and management of these lesions, to avoid missing a potentially malignant ocular surface lesion.

Methods

22 individuals with a clinically ambiguous ocular surface lesion with slit lamp photographs (SLP), HR-OCT images, and histopathological examination were included in the study. The presumptive clinical diagnosis based on SLP was compared to the diagnosis suggested by HR-OCT findings and ultimately to the definitive diagnosis by histopathology. The main outcome of this study was the frequency in which HR-OCT findings guided the clinician to the correct diagnosis.

Results

Mean age was 53 ± 20 years, 59% male, 86% identified as white and 21% as Hispanic. 7 lesions were epithelial, 3 had an epithelial and a subepithelial component, and 12 were subepithelial. HR-OCT was most effective in discerning lesion location (epithelial, subepithelial or both), successfully identifying the location in 100% of cases. In terms of the final diagnosis, classic HR-OCT findings were detected in 77.2% of cases while suggestive features were detected in 22.7% of cases.

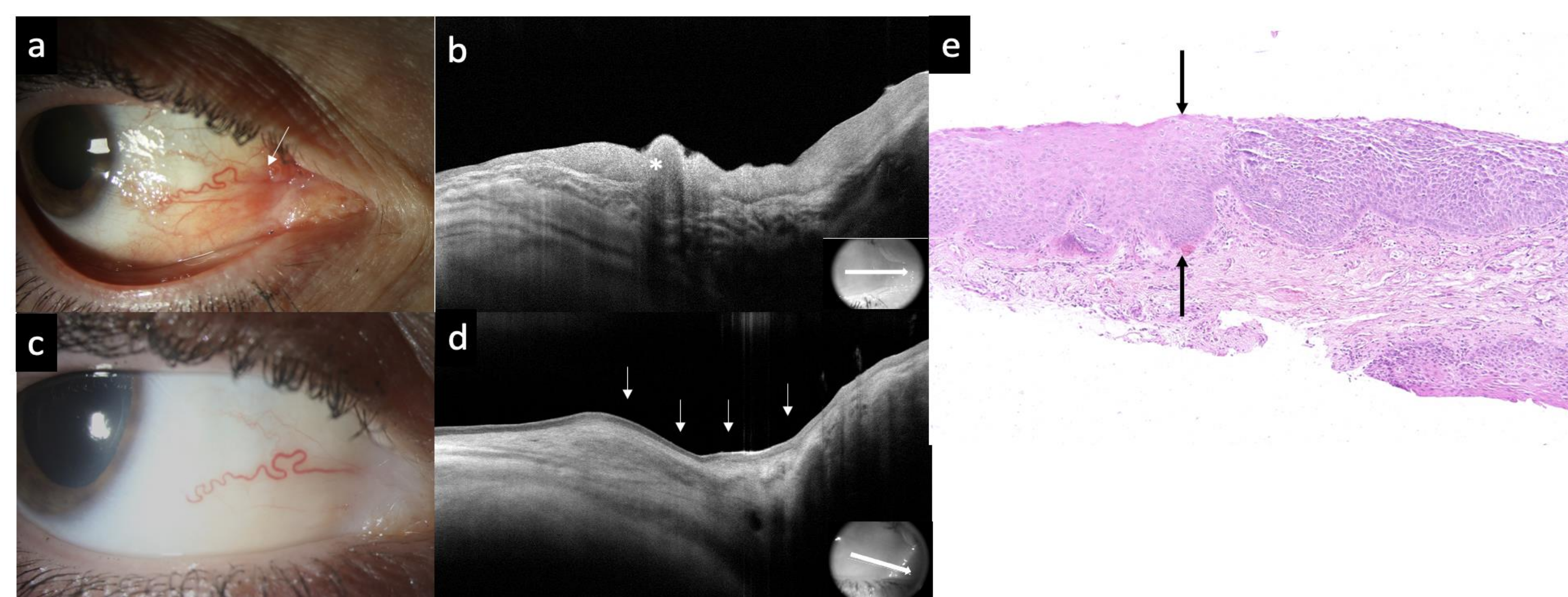


Figure 1: Chronic red eye which was identified as an ocular surface squamous neoplasia by the HR-OCT

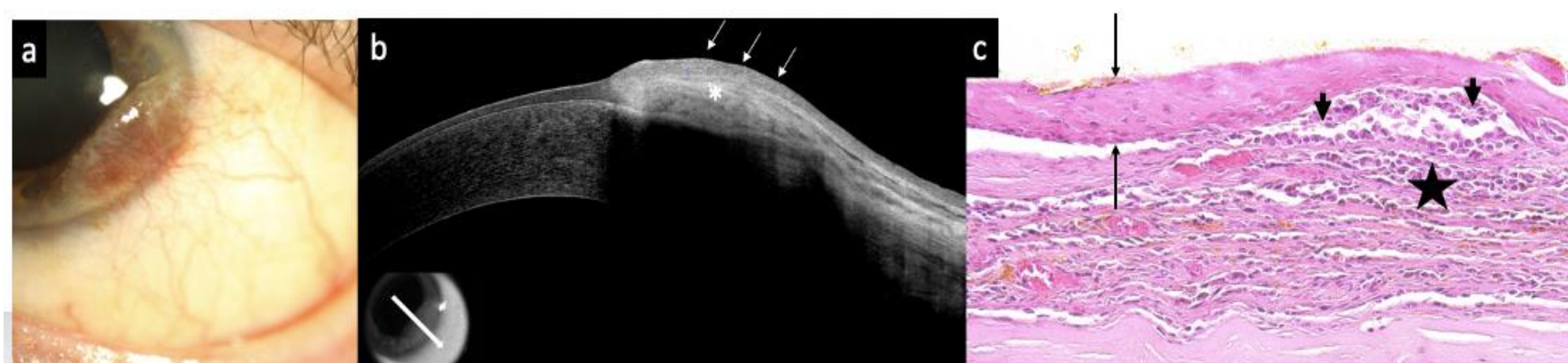


Figure 2: Amelanotic conjunctival melanoma identified on HR-OCT that was masquerading as scar tissue on the eye

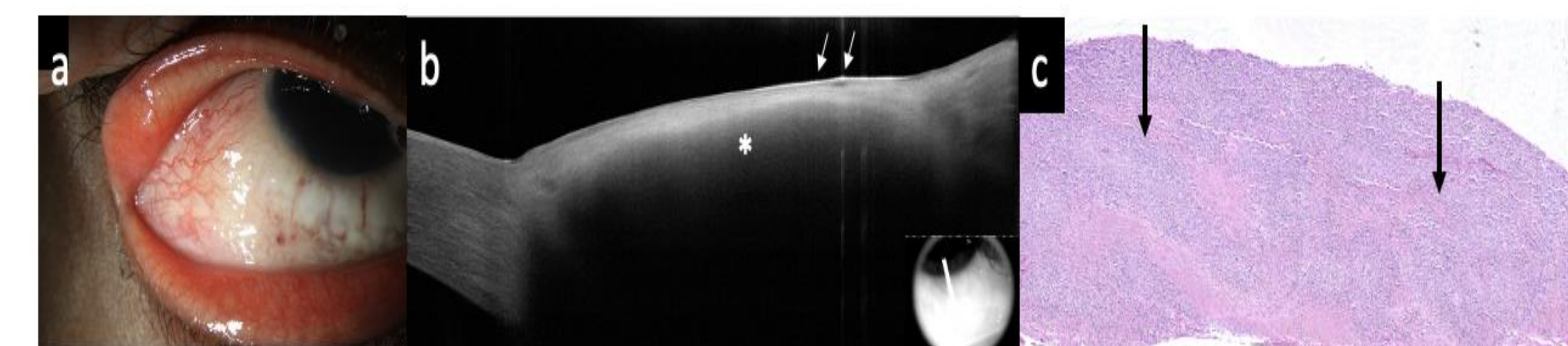


Figure 3: Painless, diffuse infiltrate of the conjunctiva was examined on HR-OCT showing a highly cellular monomorphic infiltrate suggestive of lymphoma. Biopsy with flow cytometry and gene rearrangement confirmed high-grade B cell lymphoma.

Conclusion

- HR-OCT can be a valuable diagnostic tool, assisting in the differentiation of ambiguous ocular surface lesions.
- HR-OCT can visualize morphological patterns of the lesion aiding in the localization and diagnosis of the mass., allowing for the identification of potentially dangerous ocular surface malignancies.

Support

NIH Center Core Grant P30EY014801, RPB Unrestricted Award, Dr. Ronald and Alicia Lepke Grant, The Lee and Claire Hager Grant, The Robert Farr Family Grant, The Grant and Diana Stanton-Thornbrough, The Robert Baer Family Grant, The Roberto and Antonia Menendez Grant, The Emilyn Page and Mark Feldberg Grant, The Calvin and Flavia Oak Support Fund, The Robert Farr Family Grant, The Jose Ferreira de Melo Grant, The Richard and Kathy Lesser Grant, The Honorable A. Jay Cristol Grant, The Michele and Ted Kaplan Grant and the Richard Azar Family Grant (institutional grants).