

Choroidal Neovascularization Post-Alexandrite Laser Hair Removal: OCT Angiography and Intravitreal aflibercept Injection: A Case Study

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Received: 28-3-2024, Accepted: 15-5-2024, Published online:16-6-2024

EJO(MOC) 2024;4(2):111-115.

Short title: OCT Angiography and Intravitreal aflibercept Injection: A Case Study

Abstract:

Introduction: Photic retinopathy is a rare condition that typically occurs due to prolonged exposure to intense light sources. This case report presents a unique instance of photic retinopathy resulting from accidental exposure to alexandrite laser.

Case presentation: A twenty-year-old female with no prior medical history experienced immediate vision loss in her left eye after unintentional self-exposure to an Alexandrite laser. Diagnostic imaging revealed a yellowish macular spot surrounded by a pigment halo on colored fundus photography, disrupted retinal layers on Heidelberg Spectralis Optical Coherence Tomography (OCT), and occult choroidal neovascularization on Optical Coherence Tomography-Angiography (OCT-A), indicating significant macular damage. Various treatment strategies were employed to prevent further progression and improve vision.

Conclusion: This paper highlights a rare side effect of Alexandrite laser exposure detected using OCT-A. Early diagnosis and management, including intravitreal aflibercept injection, were crucial in achieving favorable visual outcomes. The implementation of specific protective measures is essential for preventing photic retinopathy.

Keywords: Alexandrite laser, Photic retinopathy, Protective measures, OCTA, CNV.

INTRODUCTION

Photic retinopathy refers to the photomechanical injury of retinal tissue following prolonged or intense exposure to light energy. It is characterized by bilateral blurring of vision, paracentral scotoma, or headache. While most cases of photic retinopathy recover spontaneously within six months, some individuals may experience permanent manifestations. Various sources of intense light, such as sungazing, viewing solar eclipses, laser pointers, or laser epilation devices, can contribute to its occurrence. Laser-induced ocular injuries often present clinically with retinal or vitreous hemorrhage, scarring, pre-retinal membrane formation, and retinopathy. The use of alexandrite lasers, commonly employed for hair

removal, has been associated with chorio-retinal anastomosis and choroidal neovascularization. In recent times, Optical Coherence Tomography-Angiography (OCT-A) has emerged as a preferred technique for chorio-retinal imaging. With its shorter acquisition time, minimal adverse effects, and detailed three-dimensional imaging capabilities, this non-invasive method has surpassed conventional angiography. In this paper, we present a case of photic retinopathy complicated by choroidal neovascularization, confirmed through OCT-A imaging.

CASE PRESENTATION

A twenty-year-old female with no prior medical history presented with immediate vision loss in her left eye following

accidental self-directed exposure to an Alexandrite laser during laser facial hair removal at a skin care center. Upon clinical examination and retinal imaging in Kafrelsheikh university hospital, her initial visual acuity was recorded as finger count 3m in the left eye. Fundus examination revealed distorted lines on the Amsler grid test, a yellowish white

macular spot surrounded by pigment, and disruption of the Inner Segment/Outer Segment Border (IS/OS) complex, suggestive of a macular burn. Heidelberg Spectralis Optical coherence tomography (OCT) demonstrated a break in Bruch's membrane (Figure 1).

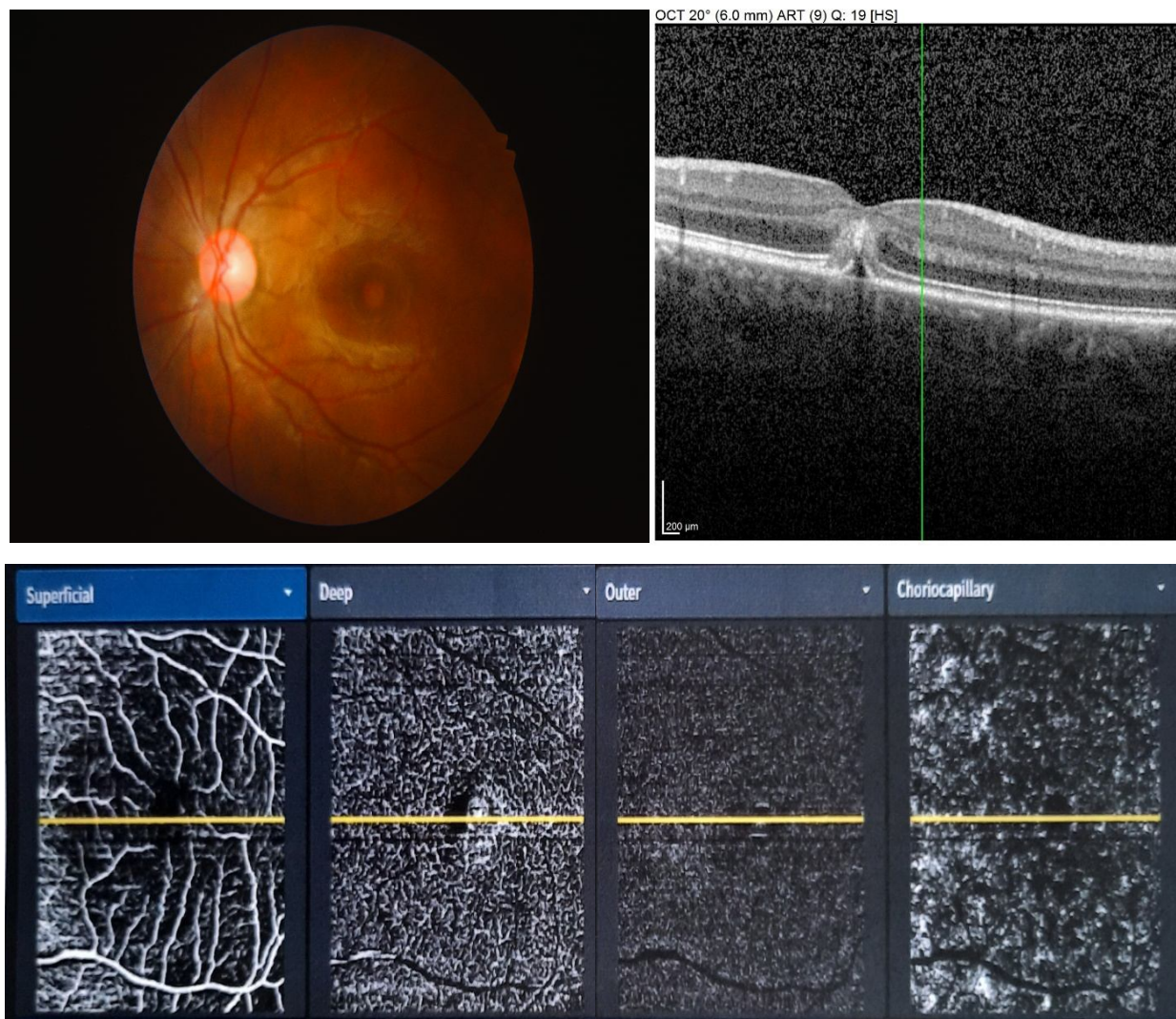


Figure 1: initial presentation of left eye: (a) fundus photo shows a yellowish foveolar spot, (b) optical coherence tomography picture reveals a disrupted IS/OS complex, break of Bruch's membrane and full-thickness foveolar hyperreflectivity and (c) Optical coherence tomography angiography of left eye showing macular damage.

To address inflammation and promote healing, a treatment regimen was initiated, including oral steroids, steroid eye drops, non-steroidal anti-inflammatory drugs, carbonic anhydrase inhibitors, and multivitamins. However, despite these interventions, the patient's visual acuity further declined

to finger count 1m after three weeks. OCT revealed the presence of a hyper-reflective tuft invading the outer retinal layers, while OCT-A demonstrated hyper-reflectivity consistent with occult choroidal neovascularization, confirming the diagnosis (Figure 2).

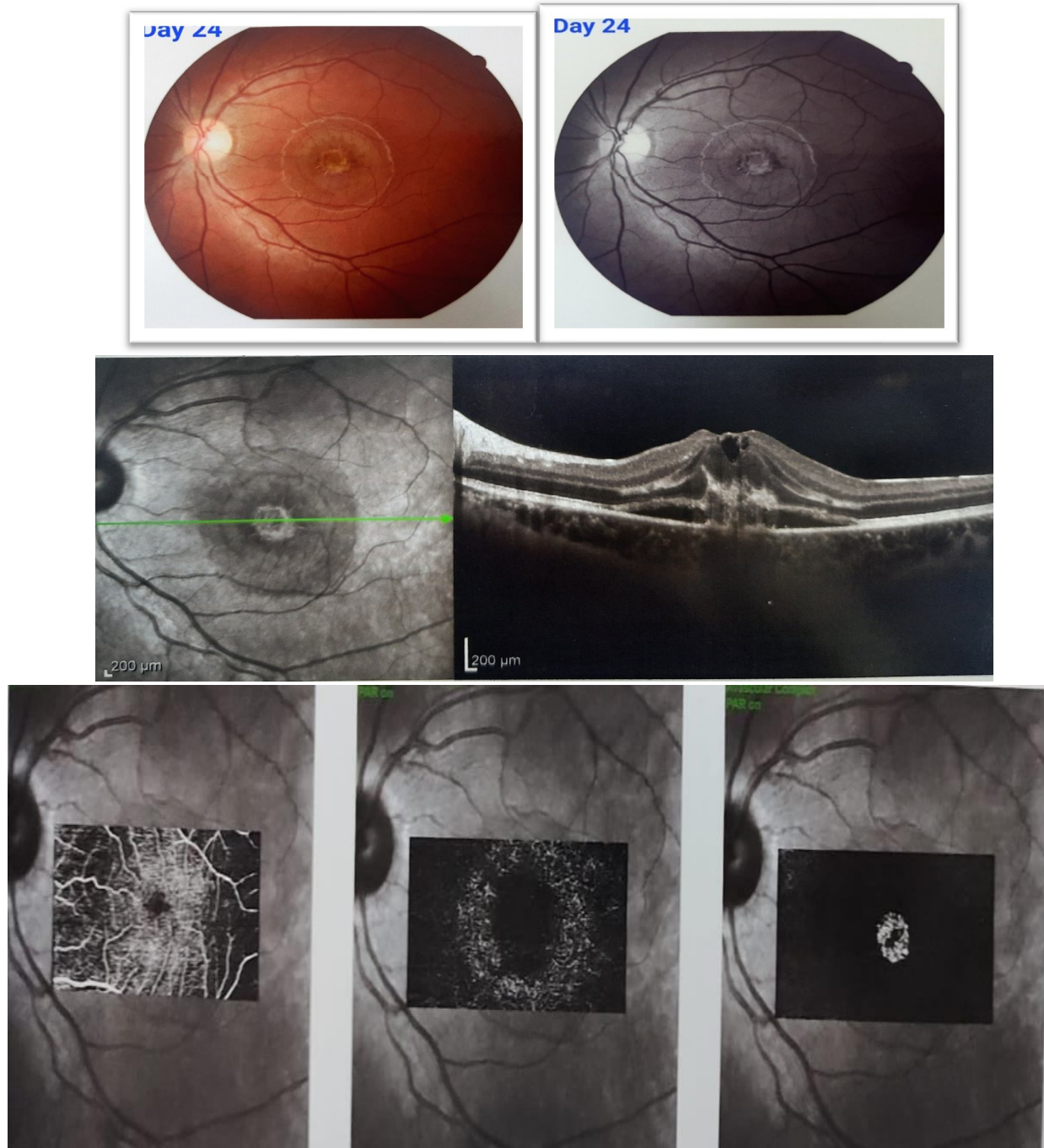


Figure 2: examination of left eye three weeks later: (a) fundus photo revealed an intraretinal and subretinal area of hemorrhaging, (b) fundus autofluorescence, (c) Optical coherence tomography revealed choroidal neovascularization with disruption of the retinal pigment epithelium, ellipsoid zone, and outer-retina, and subretinal fluid. and (d) Optical coherence tomography angiography of the outer retina depicted choroidal neovascularization with a “Medusa head” appearance.

In light of these findings, a decision was made to administer an intravitreal injection of Aflibercept (an anti-VEGF medication). One month following the initial injection, there is

significant improvement in both visual acuity, which improved to 0.7, and a reduction in central macular thickness from 574 μ m to 382 μ m. (**Figure 3**).

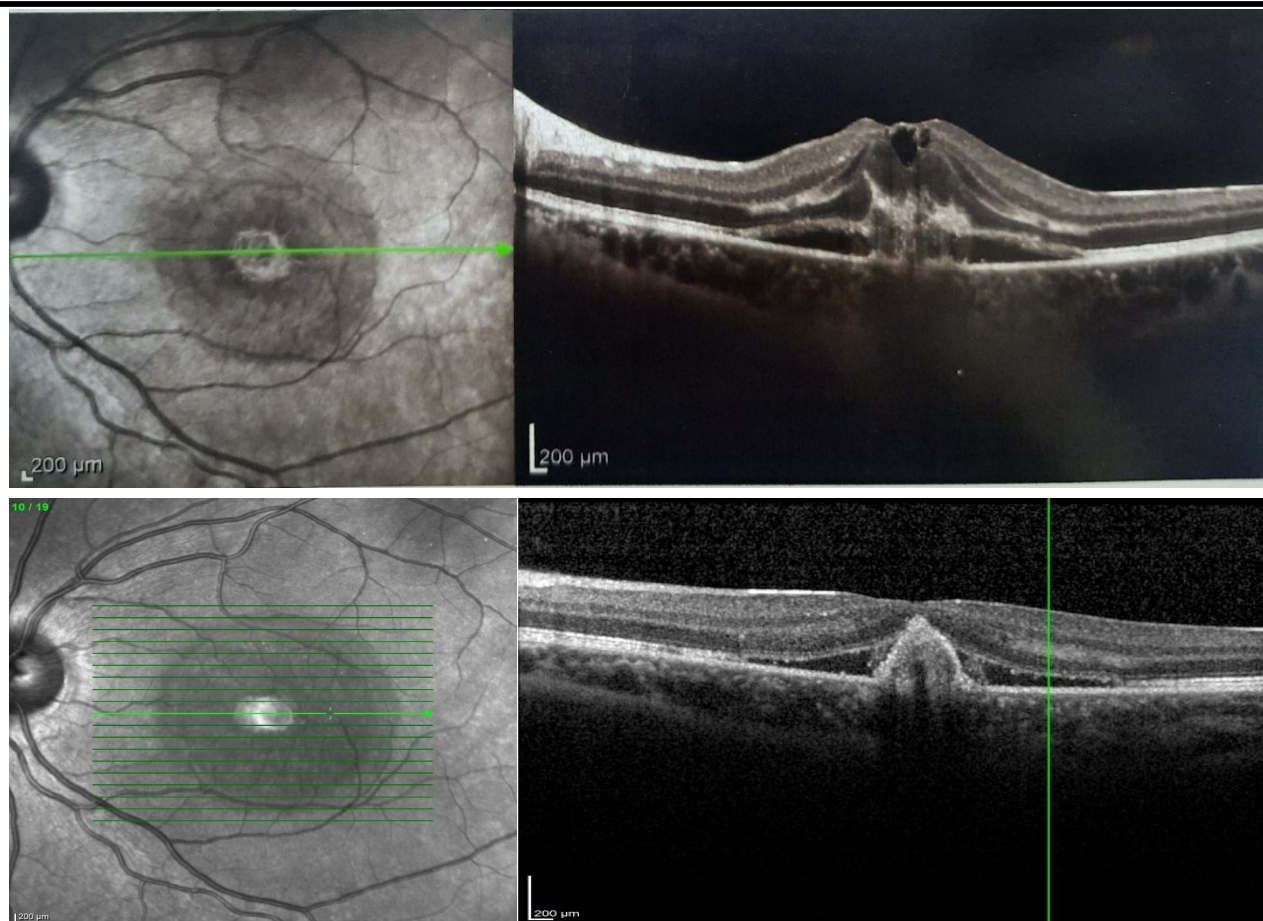


Figure 3: Heidelberg Spectralis OCT images of left eye before and one month after Aflibercept injection

CONCLUSION

This paper sheds light on a rare side effect of Alexandrite laser exposure, utilizing OCT-A to visualize abnormal vascular networks and blood flow patterns. The timely diagnosis and appropriate management strategies, particularly early intervention with intravitreal aflibercept, played a crucial role in improving visual outcomes. It is imperative to conduct future follow-up evaluations and imaging tests to monitor the patient's progress.

The implementation of protective measures remains paramount in the management of photic retinopathy. These measures encompass screening patients for ocular diseases, minimizing exposure to intense light sources, providing safety training, utilizing appropriate eyewear, employing corneal shields when necessary, and discouraging self-administration of laser treatments. By adhering to these preventive measures,

the incidence of photic retinopathy can be significantly reduced.

Disclosure

The author(s) report no conflicts of interest in this work.

ACKNOWLEDGEMENT: None

Data Availability: The authors declare that all data supporting the findings of this study are available within the article and its supplementary information file.

Competing interests: The authors declare no competing interests.

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Ethics declarations: All procedures performed in the study followed the 1964 Helsinki declaration and its later

amendments, University Ethics Committee approved the project.

Conflict of interest

Mohamed A. ELShafie, Hussien El-Ansarey, Abdulrahman M. Radi, Mohammed O. Abdelmawla, Yasmeen M. Ghazy. All authors have no conflicts of interest that are directly relevant to the content of this review.

Funding: No sources of funding were used to conduct this review.

Reviewer disclosures: No relevant financial or other relationships to disclose.

Declaration of interest: No financial affiliations or financial involvement with any organization or entity with a financial competing with the subject matter or materials discussed in the review.

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