



## A Young Man with a Dark Spot: Dark Without Pressure

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### Case Presentation:

An 18-year-old Hispanic male was referred for evaluation of a peripheral retinal lesion in his left eye noted on a routine exam with his optometrist. The patient was asymptomatic and he denied any past medical history. He was a moderate myope who denied any past ocular surgery or trauma.

On exam visual acuity was 20/20 in both eyes. Anterior segments were normal bilaterally. Fundus examination of the right eye was unremarkable. Fundus examination of the left eye was notable for a well-circumscribed lesion in the nasal midperiphery (Figure 1).

The lesion was flat and darker than the surrounding fundus, with homogenous coloration throughout. The retinal and choroidal vasculature were unobscured by the lesion.

Optical coherence tomography through the lesion confirmed that the lesion was flat and not associated with any distortion of the retinal or choroidal architecture (Figure 2). The most notable finding on OCT was hyporeflectivity of the ellipsoid zone throughout the lesion. This hyporeflectivity was not associated with retinal thinning or any apparent tissue loss.

The lesion was consistent with dark without pressure. The patient was counseled that this was a benign, incidental finding and routine follow up was planned.

### Discussion:

Originally described in 1975, dark without pressure

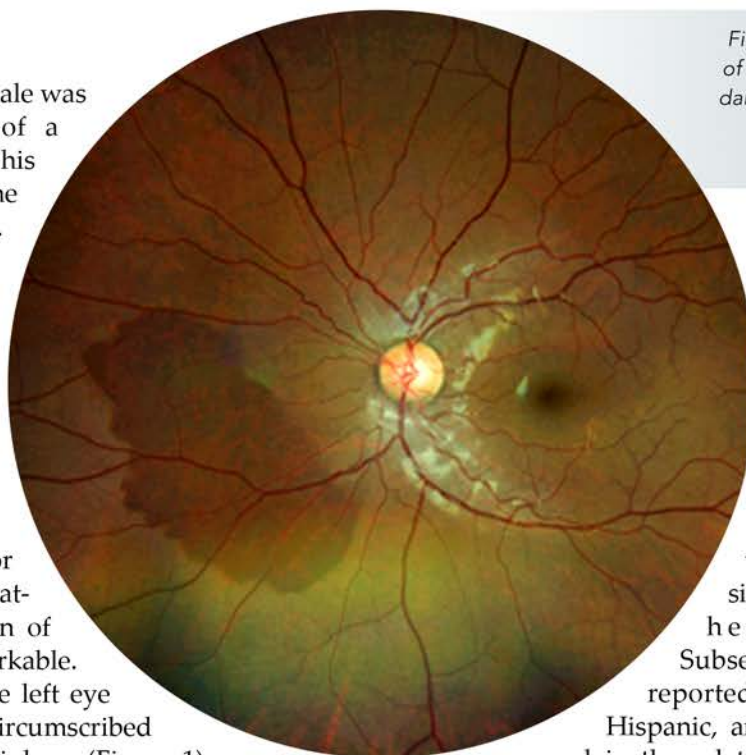


Figure 1: Fundus photograph of the left eye demonstrated a dark, well-circumscribed lesion with scalloped edges in the nasal midperiphery.

lesions are characteristically dark brown, flat, geographical, and homogenous lesions most often noted in the midperipheral retina or posterior pole.<sup>1</sup> In the initial series of Nagpal et al. seven patients were described, all of whom were African American and six of whom had sickle cell hemoglobinopathies.<sup>1</sup>

Subsequent case series have reported the lesions in white, Hispanic, and Asian patients as well, and in these later series no patients were diagnosed with a sickle cell hemoglobinopathy or retinopathy.<sup>2-3</sup> It has been suggested that the lesions are perhaps more prevalent in pigmented fundi, or that pigmented fundi make the lesions—often an incidental finding—more readily observable.<sup>3</sup>

Dark without pressure lesions tend to be discovered in a younger patient population. Multiple pediatric cases have been described in the literature and no cases have been reported in patients over 56 years old.<sup>1-3</sup> It is surmised that the lesions are acquired, rather than congenital, as case reports have documented the appearance of the lesions in the course of routine follow up.<sup>3</sup> Additionally, the lesions have also been noted to be migratory and transient in nature, with case reports documenting lesions that have changed shape and size, as well as resolved completely, in the course of follow up.<sup>2</sup>

OCT is a useful tool to confirm the presence of dark

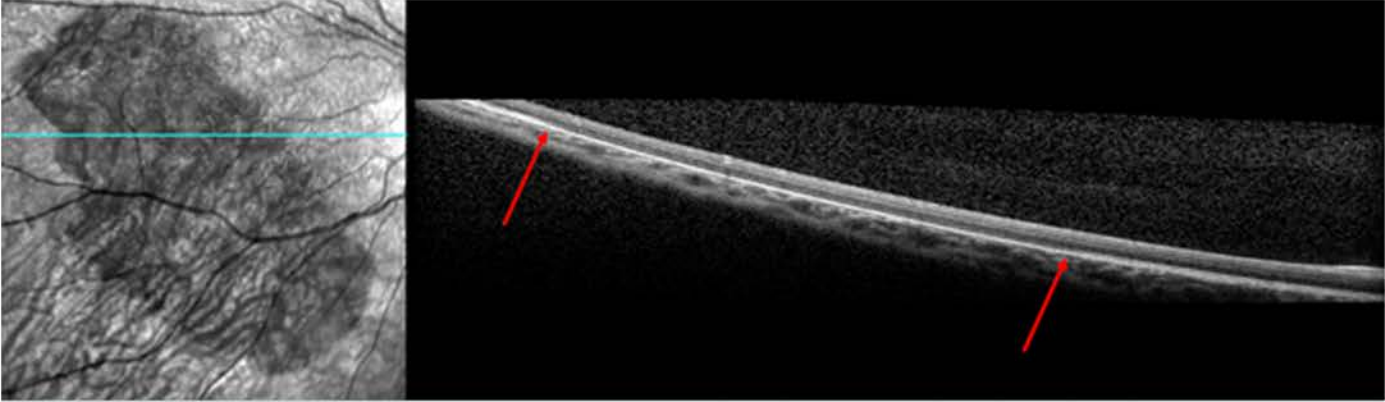


Figure 2: OCT through the lesion revealed abrupt transitions (arrows) from normal ellipsoid zone reflectivity outside the lesion to hyporeflectivity of the ellipsoid zone within the lesion. No other significant anatomic distortions were noted.

without pressure lesions. Multiple case series have reported the same ellipsoid zone hyporeflectivity as is seen in our case.<sup>2-3</sup> This hyporeflectivity is in notable contrast to the hyperreflective ellipsoid zone that is the predominant OCT finding in white without pressure lesions.<sup>2</sup> In addition to OCT fundus autofluorescence is another useful imaging modality; in FAF dark without pressure lesions demonstrate homogenous hypoauto-fluorescence throughout the lesion. Given these findings on multimodal imaging it has been suggested that these lesions are loci of abnormal photoreceptor structure and/or altered photopigment with a different spectral range than the surrounding retina, though why such changes would be acquired and transient is unclear.<sup>2-3</sup> Further studies are needed to confirm these hypotheses.

The functional significance of dark without pressure lesions remains unknown, and is perhaps non-existent. Patients are uniformly asymptomatic. Fawzi et al. reported normal results on Goldman visual field and full-field electroretinogram testing in one of their patients.<sup>2</sup> Long term follow up of dark without pressure lesions has not been reported to date.

Dark without pressure lesions are important to identify as a benign finding, thus sparing patients—often children—unnecessary testing and office visits. Clinicians should be aware that these dark, homogenous, mid-peripheral lesions can be migratory and transient in nature. In unclear cases, FAF and especially OCT are recommended to confirm the expected findings in these lesions.

### References

1. Nagpal KC, Goldberg MF, Asdourian G, Goldbaum M, Huamonte F. Dark-without-pressure fundus lesions. *Brit J Ophthal* 1975(59): 476-479.
2. Fawzi AA, Nielsen JS, Mateo-Montoya A, Somkijrungrroj T, Li HK, Gonzales J, Mauget-Faysse M, Jampol LM. Multimodal imaging of white and dark without pressure fundus lesions. *Retina* 2014(34): 2376-2387.
3. Pimentel MAF, Duncan JL, Campomanes AG, Moore A. Dark without pressure changes in a paediatric age group. *Eye* 2020 [Epub ahead of print].

Case of the Month Supported by:



The 37th Annual Visiting Professor Lecture Series scheduled for Saturday, September 12, 2020 has been canceled in the interest of public safety.

The meeting will now be held on Saturday, September 11, 2021 at the Eric P. Newman Center on the campus of the Wash U. School of Medicine.

