

Optical Coherence Tomography Angiography Features in Melanocytoma of the Optic Nerve

Adriano Carnevali, MD; Lea Querques, MD; Ilaria Zucchiatti, MD; Vincenzo Scorcìa, MD; Francesco Bandello, MD, FEBO; Giuseppe Querques, MD, PhD

ABSTRACT: Optic disc melanocytoma (ODM) is a pigmented tumor with malignant potential characterized clinically as a dark brown to black lesion with feathery margins. The authors report a case of ODM and describe the utility of optical coherence tomography angiography (OCTA) in detecting superficial tumor vascularization. This case report demonstrated the ability of OCTA to reveal the fine abnormal retinal vasculature on the surface of the lesion, a characteristic of ODM, which has been previously correlated with tumor growth.

[*Ophthalmic Surg Lasers Imaging Retina*. 2017;48:364-366.]

A 60-year old man presented to our department with a diagnosis of optic disc melanocytoma (ODM) in his right eye. There were no remarkable findings in his left eye. Best-corrected visual acuity was 20/20 in both eyes, and intraocular pressure was 14 mm Hg. Funduscopic examination revealed the presence of characteristic jet-black lesion on the optic disc (Figure 1A). Fundus autofluorescence (FAF) revealed enlarged hypoautofluorescence from the optic disc (Figure 1B). Early phase fluorescein angiography (FA) revealed fine retinal vasculature correlated with ODM and demonstrated by late leakage at the nasal/superior optic disc margin (Figure 1C). Spectral-domain optical coherence tomography (SD-OCT) (Spectralis; Heidelberg Engineering, Heidelberg, Germany) showed a dome-shaped appearance along with a characteristic shadowing (Figure 1E). OCT angiography (OCTA) (AngioVue, AngioDisc 3 mm × 3 mm; Optovue, Fremont, CA) clearly revealed the fine abnormal retinal vasculature on the surface of the lesion (Figure 2).

ODM is a pigmented tumor that may have a malignant transformation.¹⁻³ Observation and correct follow-up may avoid erroneous enucleation of benign cases. On FA, ODM typically shows persistent hypofluorescence because melanocytes are deeply pigmented and closely compact with relative avascularity.⁴ Lee et al.⁵ estimated that tumor growth was 0% at 1 year, 5% at 2 years, 14% at 5 years,

From the Department of Ophthalmology, University Vita-Salute, IRCCS Ospedale San Raffaele, Milan, Italy (AC, LQ, IZ, FB, GQ); and the Department of Ophthalmology, University of "Magna Graecia," Catanzaro, Italy (AC, VS).

Originally submitted March 18, 2016. Revision received May 2, 2016. Accepted for publication June 7, 2016.

The authors report no relevant financial disclosures.

Address correspondence to Giuseppe Querques, MD, PhD, Department of Ophthalmology, University Vita-Salute, IRCCS Ospedale San Raffaele, Via Olgettina 60, Milan, 20132, Italy; email: giuseppe.querques@hotmail.it.

doi: 10.3928/23258160-20170329-14

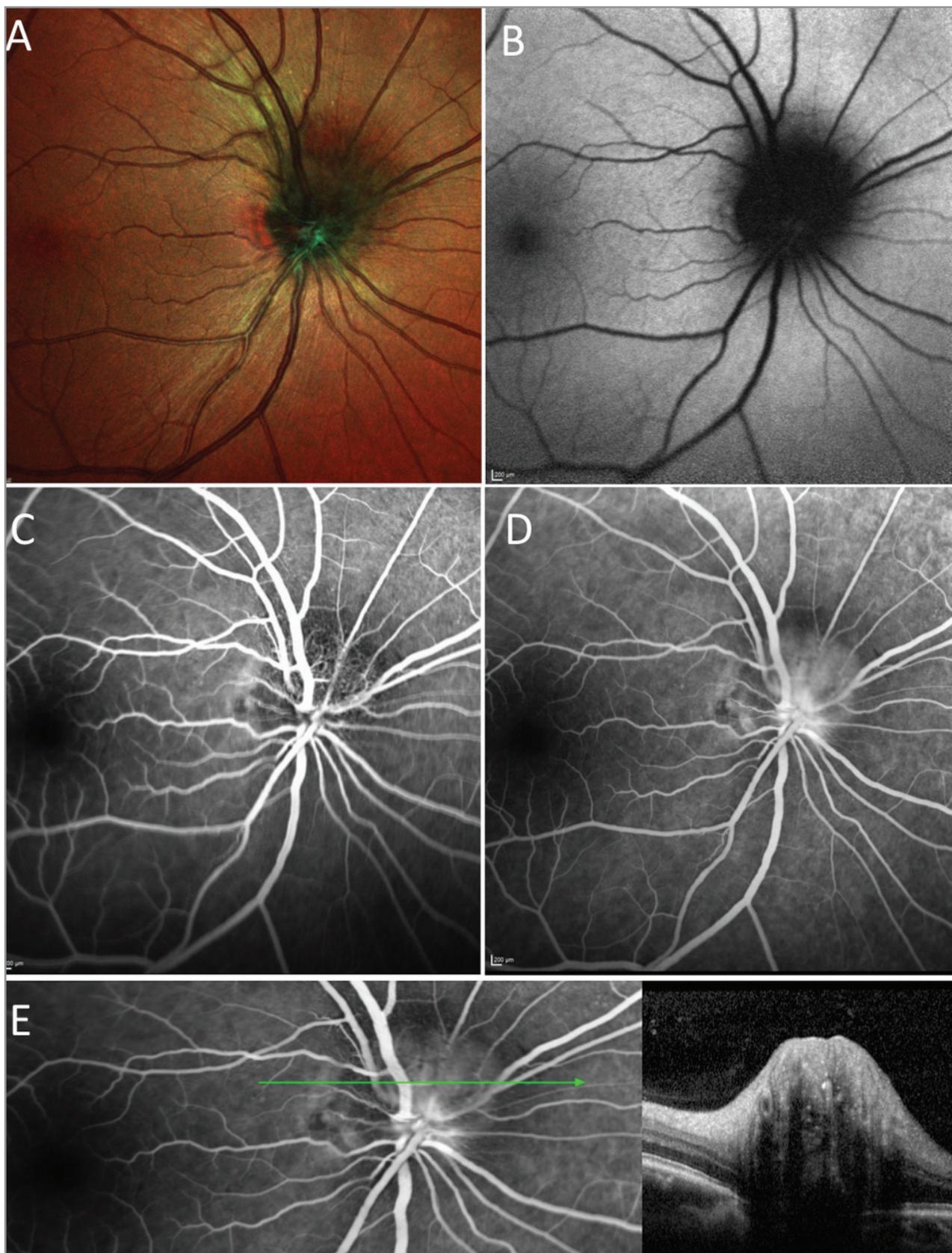


Figure 1. Multicolor image, fundus autofluorescence (FAF), fluorescein angiography (FA), and spectral-domain optical coherence tomography (SD-OCT) of optic disc melanocytoma (ODM). (A) Multicolor imaging revealed the presence of characteristic jet-black lesion on the optic disc. (B) FAF revealed enlarged hypoautofluorescence from the optic disc. (C, D) Early and late phases of FA showing a fine retinal vasculature in correlation with the ODM characterized by late leakage. (E) SD-OCT revealed a dome-shaped appearance along the ODM with a characteristic shadowing.

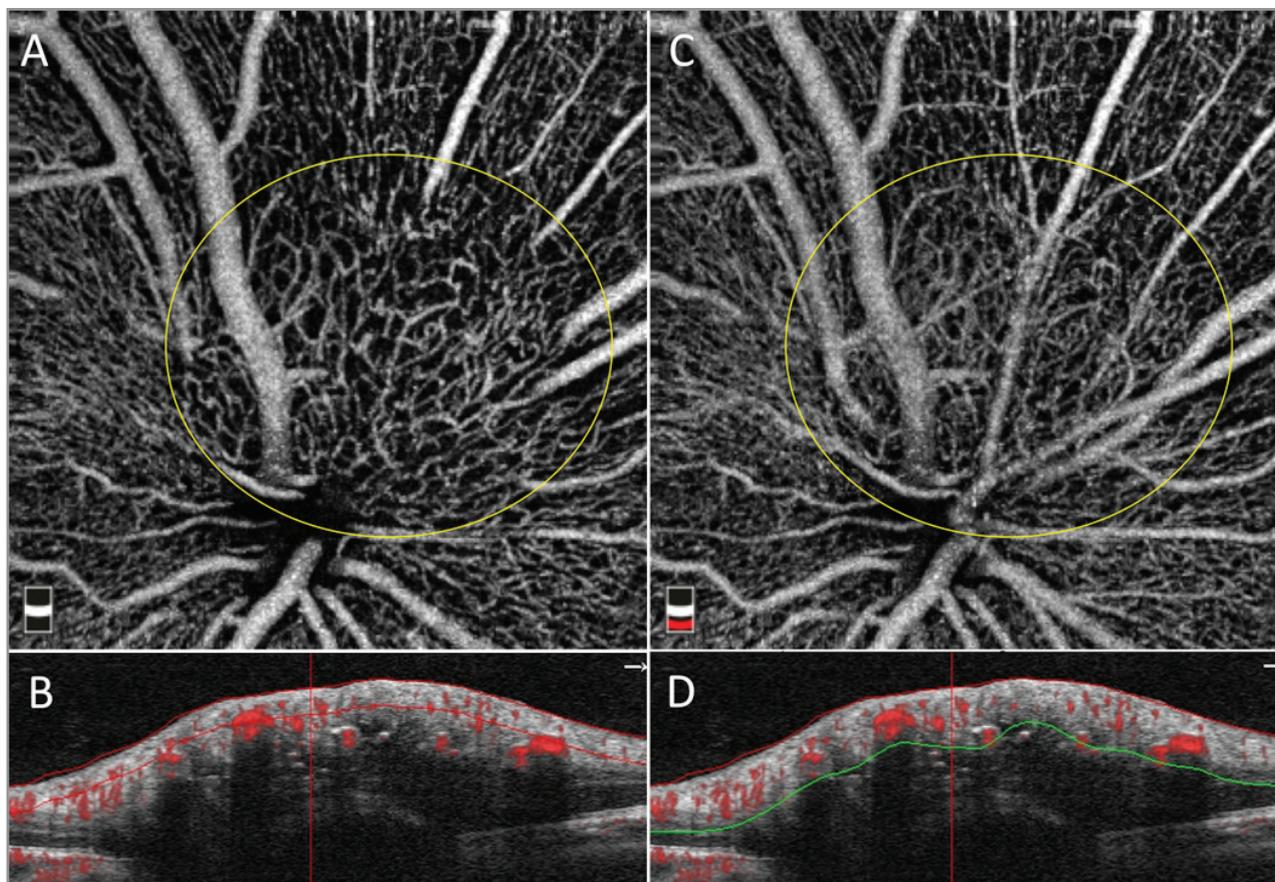


Figure 2. Optical coherence tomography angiography (OCTA) of optic disc melanocytoma (ODM). (A, B) OCTA (3 mm × 3 mm AngioVue disc) of nerve head plexus and corresponding OCT B-scan showing the fine superficial vasculature. (C, D) OCTA (3 mm × 3 mm AngioVue disc) of radial peripapillary capillaries plexus and corresponding OCT B-scan showing presence of abnormal vessels in the deeper layers.

and 57% at 8 years. The authors analyzed different variables including visual acuity, relative afferent pupillary defects, associated ocular pigmentation, tumor basal diameter, tumor height, involvement of the retina and/or choroid, associated ocular complications, associated systemic diseases, and tumor vascularization observed with FA for significant correlation with tumor growth.⁵ The only correlation identified with tumor growth was tumor surface vascularization observed with FA.⁵ In our case, FA showed an increased retinal vascularity on the surface of the lesion.

OCTA is a noninvasive, dyeless, quick, three-dimensional imaging technique that is unaffected by leakage, unlike traditional FA. OCTA allows automatic or manual segmentation by including in the field of analysis only the tissues of interest, which in our case were the nerve head and the radial peripapillary capillaries (AngioVue disc 3 mm × 3 mm).

To our knowledge, this is the first description of OCTA in a case of ODM. We demonstrated the

ability of OCTA to reveal the fine abnormal retinal vasculature on the surface of the lesion, a characteristic of ODM, which has been previously correlated with tumor growth.⁵ Our findings suggest that OCTA may be considered as a useful noninvasive tool in the evaluation of tumor growth and its possible malignant transformation.

REFERENCES

1. Eldaly H, Eldaly Z. Melanocytoma of the optic nerve head, thirty-month follow-up. *Semin Ophthalmol.* 2015;30(5-6):464-469.
2. Zimmerman LE, Garron LK. Melanocytoma of the optic disk. *International Ophthalmology Clinics.* 1962;2(2):431-440.
3. Zografos L, Othenin-Girard CB, Desjardins L, Schalenbourg A, Chamot L, Uffer S. Melanocytomas of the optic disk. *Am J Ophthalmol.* 2004;138(6):964-969.
4. Shields JA, Demirci H, Mashayekhi A, Eagle RC Jr, Shields CL. Melanocytoma of the optic disc: A review. *Surv Ophthalmol.* 2006;51(2):93-104.
5. Lee CS, Bae JH, Jeon IH, Byeon SH, Koh HJ, Lee SC. Melanocytoma of the optic disk in the Korean population. *Retina.* 2010;30(10):1714-1720.