

UNILATERAL NEOVASCULARIZATION OF THE FOVEA IN A PATIENT WITH TYPE 2 DIABETES

PURPOSE

To report a unique case of unilateral *neovascularization* at the fovea (NVF) in a patient with type 2 diabetes.

CASE

A 59-year-old female with type 2 diabetes was referred for diabetic retinopathy assessment. Fundus examination of both eyes revealed retinal neovascularization elsewhere suggestive of proliferative diabetic retinopathy. The right eye macula showed an abnormal tissue tuft at the fovea, fibrovascular in appearance, suggestive of NVF. This was confirmed using multimodal imaging, including Optical coherence tomography (OCT), OCT angiography (OCTA) (Figure 1 A,B), and intravenous fluorescein angiography (IVFA) (Figure 2 A,B).

REFERENCES

1. Romano F, Preziosa C, Staurengi G, Pellegrini M. Foveal neovascularization in combined branch retinal vein and artery occlusion. *American Journal of Ophthalmology Case Reports*. 2021 Dec 1;24:101199.
2. Rajagopal J, Kamath AG, Kamath GG, Solanki N. Foveal neovascularisation in diabetic retinopathy: case report and review of literature. *International ophthalmology*. 2010 Jun;30(3):311-4.
3. Venkatesh R, Reddy NG, Jayadev C, Mutalik D, Agrawal S, Mishra P, Bhatt A, Yadav NK, Chhablani J. Contributory factors for developing foveal neovascularization in proliferative diabetic retinopathy. *European Journal of Ophthalmology*. 2022 Jan 21:11206721221075900.
4. Russell JF, Han IC. Toward a New Staging System for Diabetic Retinopathy Using Wide Field Swept-Source Optical Coherence Tomography Angiography. *Current diabetes reports*. 2021 Sep;21(9):1-1.

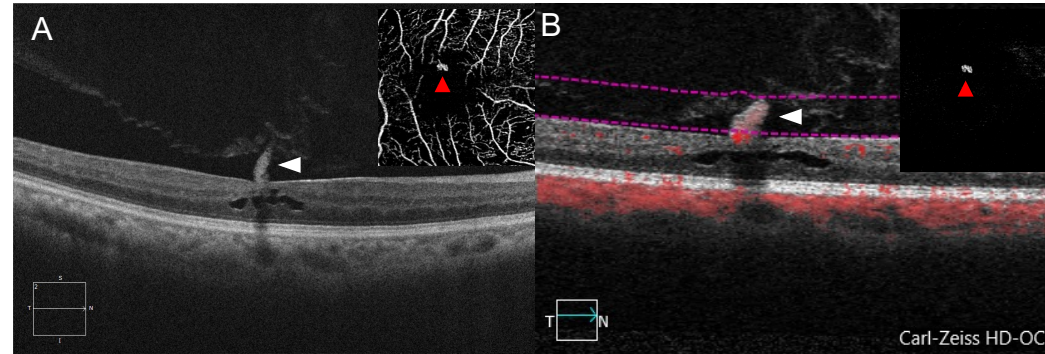


Figure 1: **A)** OCT b-scan of the right eye showing a tuft (white arrow) projecting from the fovea into the vitreous, and superficial capillary plexus slab on OCTA confirms the tuft to be vascular in nature and in the foveal avascular zone (red arrow). **B)** OCT b-scan with flow overlay showing flow in the foveal tuft (white arrow), and OCTA with manual vitreous slab reveals the neovascularization at the fovea (red arrow).

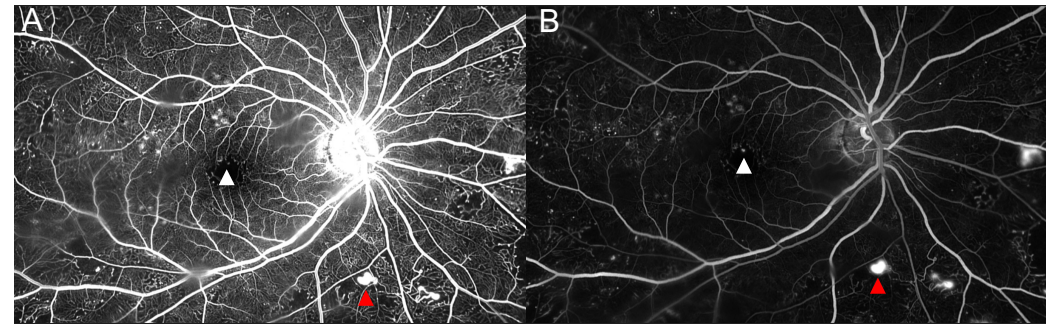


Figure 2: Early stage (A) and late stage (B) IVFA illustrates neovascularization elsewhere in the retina by prominent vessel leakage (red arrows), and neovascularization of the fovea at the edge of the perifoveal capillary network (white arrows).

DISCUSSION

New vessel growth, or neovascularization, is a diagnostic feature of proliferative diabetic retinopathy^{1,2,3}. Neovascularization almost always occurs at the optic disc and/or along vascular arcades adjacent to areas of nonperfusion but is rarely noted at fovea. This is due to the avascular nature of the fovea with the choroid generally compensating for any macular ischemia^{1,2,3}. However, choroidal blood flow is thought to be markedly reduced in patients with diabetes, predisposing them to NVF^{2,3}. Furthermore, no difference is seen in the occurrence of NVF between type 1 and type 2 diabetes³. OCTA is a relatively new, but simple, quick, non-invasive technique that can image retinal vasculature with high resolution. Advances in OCTA may impact clinical staging of retinal pathologies due to earlier visualization of vascular changes⁴.

LEARNING POINTS

1. NVF can occur in type 1 or 2 diabetes
2. Multimodal imaging helps increase diagnostic certainty of NVF
3. OCTA is a simple, fast, non-invasive technique, that may change the staging of PDR
4. Patients with PDR and NVF can improve with anti-VEGF injections and/or pan-retinal photocoagulation