Asymmetric Hypertensive Retinopathy With Masked Hypertension in a Type 2 Diabetic Patient

Maskelenmiş Hipertansiyonu Olan Tip 2 Diyabetli Bir Olguda Asimetrik Hipertansif Retinopati

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ABSTRACT

There are 4 potential group of patients according to their blood pressure measurements; true normotensives, true hypertensives, white coat hypertensives (hypertensive by OBP and normotensive by HBP or ABPM), masked hypertension (MH) (normotensive by OBP and hypertensive by out-of-office measurements). Depending on stage hypertansive retinopathy may cause wide range visual complaints. Our patient presented with a complaint of blurred vision on right eye and systemic evaluation revealed masked hypertension with atheromatous plaque in carotid artery. Therefore we aimed to emphasize that masked hypertension may be more prevalent in patients with type 2 diabetes due to irregular hemodynamic auto regulation and advanced hypertensive retinopathy may accompany. Consequently routine follow-up is suggested like true hypertensive patients.

Key Words: Asymmetric, carotid, hypertensive, masked, retinopathy.

ÖZ

Sistemik kan basıncı yönünden sınıflandırlma yapıldığında literatürde 4 ana başlık mevcuttur; normotansif, hipertansif, beyaz önlük hipertansiyonu ve maskelenmiş hipertansiyon. Hipertansif retinopati sistemik kan basıncı yüksekliği olan hastalarda evresine göre herhangi bir vizüyel yakınmaya yol açmayabileceği gibi, ciddi ve kalıcı görme kayıplarına yol açabilmektedir. Polikliniğimize sağ gözde bulanık görme şikayetleriyle başvuran ve sistemik tansiyon yüksekliği ile ilgili bir yakınması olmayan hastada asimetrik hipertansif retinopati tanısıyla yapılan sistemik değerlendirilmesinde maskelenmiş hipertansiyon ve karotis arter plağı tespit edilmiştir. Literatürde yaptığımız taramalarda maskelenmiş hipertansiyonu olan vakalarda hipertansif retinopati ile ilgili bir bildiye rastlamadık. Bu nedenle bu olgumuzla diyabet hastalarında maskelenmiş hipertansiyonun hemodinamik regülasyonun bozulmuş olması nedeniyle daha sık görülebileceğini ve maskelenmiş hipertansiyonu olan hastalarda da ileri evre hipertansif retinopati görülebileceğini bu nedenle, bu vakaların da düzenli aralıklarla kontrol muayenelerinin yapılması gerektiğini vurgulamayı amaçladık.

Anahtar Sözcükler: Asimetrik, hipertansif, karotis, maskelenmiş, retinopati.

INTRODUCTION

As the whole body comprising of blood vessels, hypertension is a multi-systemic disorder and eye is not an exception through all systems. On the other hand eye has a distinctive feature, allowing us to visualize early vascular changes due to elevated blood pressure thus provides reliable evaluation of cerebrovascular and cardiovascular disease risks.[1,2] High blood pressure related ocular abnormalities can be categorized as choroidopathy, retinopathy and optic neuropathy.[3,4]

Arterial hypertension (AH) is the most common reason for adults to visit the physician's office.[5] Diagnosis of AH was based on blood-pressure measurements done in doctors'

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office though there were some group of patients whose office blood pressure (OBP) measurements were in normal limits but having hypertensive patients' clinical signs and symptoms. Therefore, there are 4 potential group of patients according to their blood pressure measurements: truly normotensive, truly hypertensive, white coat hypertensive (hypertensive by OBP and normotensive by ambulatory blood pressure monitoring (ABPM)), masked hypertension (MH) (normotensive by OBP and hypertensive by out-of-office measurements).[6] European Society of Hypertension's defines MH as a clinical condition in which a patient's OBP level is <140/90 mmHg, but ABPM or measurements are above normal limits.[7] As hypertensive retinopathy is one of the end organ damages, it is also an important way to follow patients regarding cardiovascular morbidity. Due to elevated blood pressure masked hypertension cause similar damages like greater left ventricular mass and carotid atherosclerosis. We herein want to present a case diagnosed as having masked hypertension associated with unilateral carotid artery atheromatous plaque, after seeing asymmetric hypertensive retinopathy.

CASE REPORT

A 44-year-old Caucasian man was referred to our out-patient clinic with the complaint of decreased vision in his right eye for a month. His past medical history revealed type 2 diabetes mellitus, and left eye severe amblyopia due to anisometropia. On examination his best corrected visual acuity (BCVA) was 20/30 with plano in the right eye, and 20/200 with +8.00 diopters correction in the left eye. There was right relative afferent pupillary defect. Slit lamp examinations of both eyes were normal. Fundus examination disclosed optic disk edema with disk haemorrhage in the right eye, increased vascular tortuosity and decreased arteriolar-to-venular width ratio with venular changes at points where arteries and venules crossover in both eyes. Fundus examination also revealed one tiny (100-150 µm) parafoveal hypopigmented spot in the right eye. (Figure 1) Intraocular pressure measurements in both eyes were within normal limits. He was said to rest at least 10 minutes for measurement of his systemic arterial blood-pressure, and he said he neither smoked nor drank on the exam day. His systemic blood-pressure was 130/90 mmHg. Fluorescein angiography (FA) revealed parafoveal non-expansing, stable hypofluorescent spot, early hyperfluoresence and late staining on optic disk in the right eye (Figure-1). Optical coherence tomography (OCT) macular scans showed localized retinal pigment epithelium (RPE) defect corresponding to the hypopigmented spot, and nerve fiber analysis showed papillary edema in the right eye (Figure-1). Based on these findings diagnosis of hypertensive retinopathy was made. A carotid artery doppler ultrasonography was performed to explain the asymmetry of hypertensive retinopathy which revealed 20-30% narrowing in his left carotid artery due to atheromatous plaques, for which the department of cardiovascular surgery didn't offer any surgical intervention. He was asked to measure his blood pressure after resting at least ten minutes two times in a day for ten days, one in the morning and one in the evening and to see a cardiologist afterwards. His blood-pressure follow-up, echocardiography (ECG) and echocardiogram (ECO) results were within normal limits so no medication was started. We asked a holter monitor test because his daily ordinary blood pressure measurements were within normal limits. Holter monitor test revealed masked hypertension. In addition to an angiotensin converting enzyme (ACE) inhibitor proper medications for diabetes and hyperlipidemia were started. With the current systemic medications his visual acuity increased to 20/20 in the right eye at one month follow-up. Fundus examination revealed that optic disk changes were gone in the right eye, though vascular tortuosity was remained in both eyes (Figure 2). Retinal nerve fiber layer analysis was also affirmative with normal thickness in relative positions. At his second monthly follow-up visual acuity of 20/20 was remaining but retinal nerve fiber layer analysis showed reduced thickness in all positions (Figure 2).

Six months after admission his visual acuity was 20/25 in right eye. Fundus examination revealed pale optic disk, decreased vascular tortuosity and caliber in right eye, but left vascular tortuosity was remained in left eye and optic disk was normal (Figure 3). However, there was relative afferent pupillary defect in the right eye.

DISCUSSION

In differential diagnosis we evaluated optic neuropathies; disc appearance was hyperemic in both eyes but ocular movements were within normal limits and they were pain free. His visual field test results were not certain due to errors though confrontation examination revealed neither altitudinal defect nor central/cecocentral scotoma. His neurologic examination followed by neuroradiologic evaluation ruled out any neuropathology. Furthermore rheumatologic evaluation didn't reveal any related pathology.

In our clinical practice, fundoscopy is a routine examination in hypertensive patients, because increased cardiovascular morbidity is a well known fact in hypertensive patients with hypertensive retinopathy. On the other hand there are many patients who were diagnosed of hypertension by referral due to presence of hypertensive fundoscopic abnormalities like in our case. We know one-third of normotensive type 2 diabetic patients have masked hypertension with accompanying end organ damages.[8] Moreover, Pressione Arteriose Moniterate e Loro Associazioni study showed a prevelance of 9% in the general population and 14.5% among normotensive population regarding masked hypertension.[9] Since atherosclerosis has been shown to be associated with high blood pressure, there are many case reports relating athero-

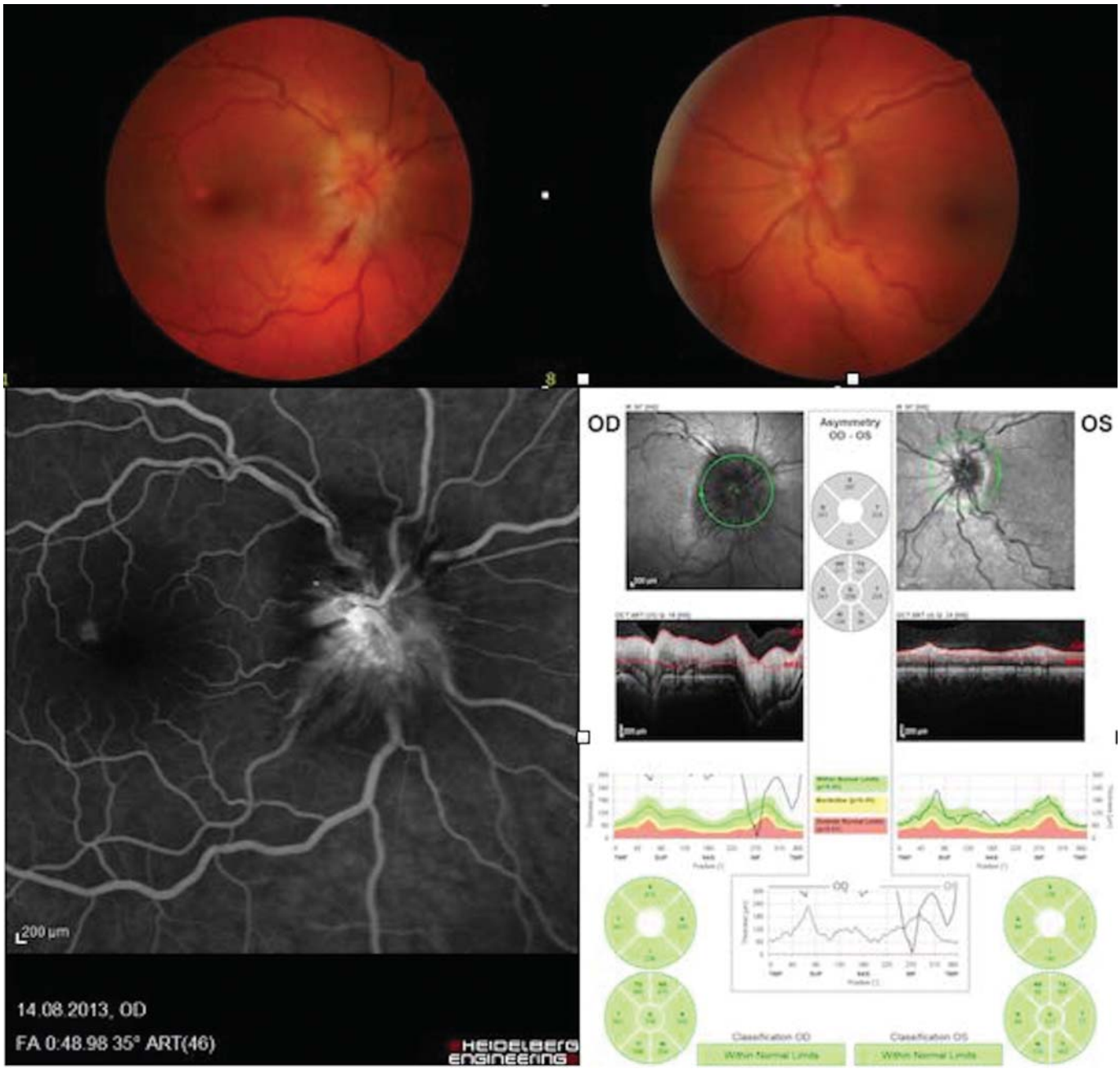

Figure 1. *Presentation OCT and Fundus photo*

sclerosis and systemic hypertension. But asymmetric hypertensive retinopathy is very rare because most of the plaques are located in aorta. Therefore, both eyes are affected symmetrically. Though asymmetric hypertensive retinopathy is well known as one of the ocular findings of carotid artery diseases, we couldn't find any reports regarding asymmetric hypertensive retinopathy due to carotid artery plaques with masked hypertension. Atheromatous plaque in left carotid artery partially protected our patient's left retinal vasculature, and kept in grade 2 while fellow eye is in grade 4.

Cardiologic evaluation was also normal except for left ventricular diastolic dysfunction which commonly seen in hypertensive patients due to increased interventricular septum and posterior wall thickness. These cardiologic alterations are usually accompanied by higher urinary albumin excretion rate (UAER), but was normal in our case. Urinary analysis was normal despite having grade 4 retinopathy as an end organ damage. At the beginning we had suspects regarding hypertensive retinopathy as the only case because of unusual asymmetric presentation, and normal OBP levels. When we searched literature, we came across with masked hypertension nomenclature, and carotid artery doppler ultrasonography confirmed our suspicions.[10]

In every follow-up examination while on ACE medication vascular tortuosity and optic disk edema seriously reduced in the right eye but we couldn't see same changes in the fellow eye. This might be due to left carotid artery plaques too, because vasculature of left eye was protected from high

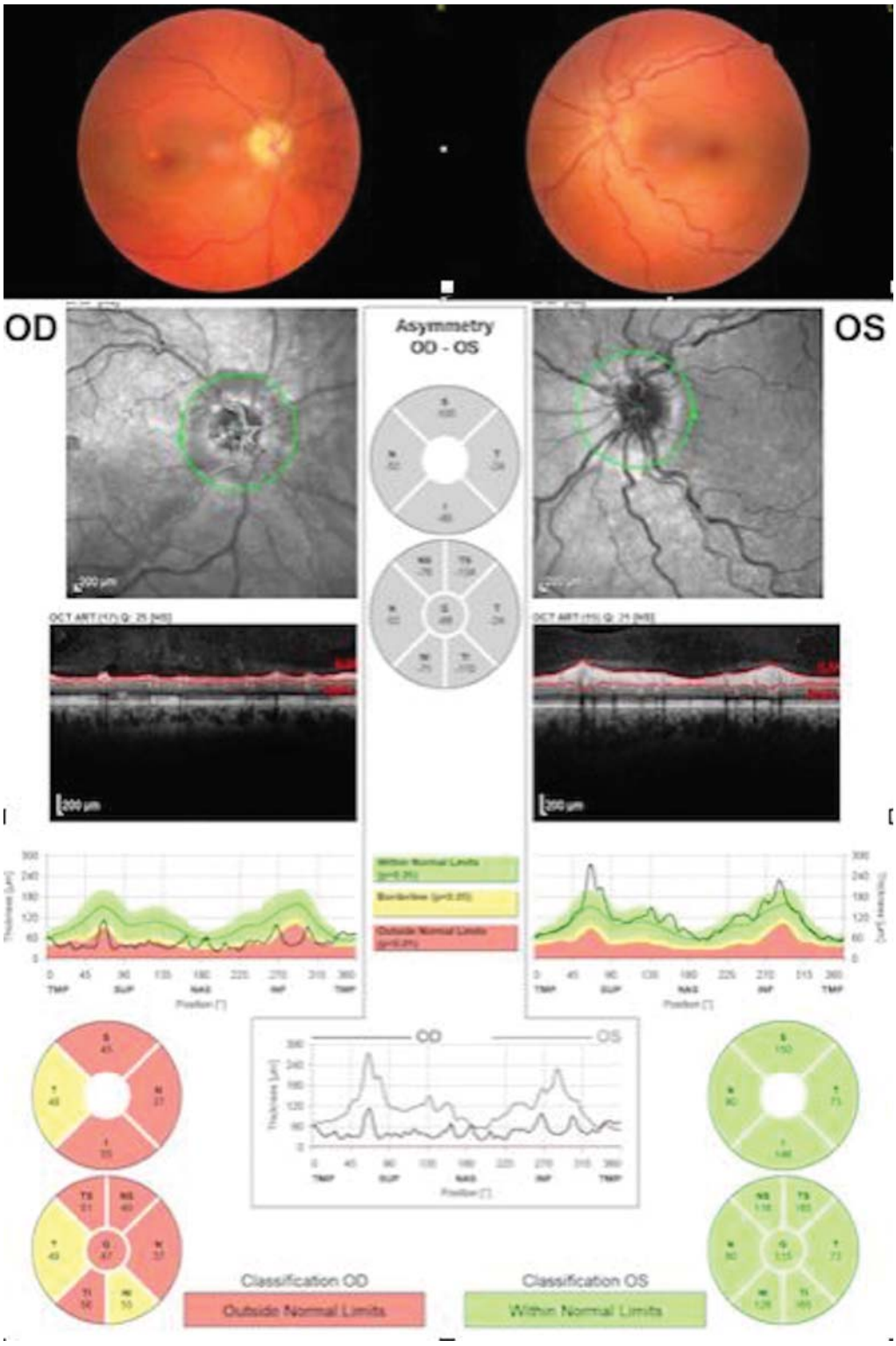

Figure 2. *follow-up oct and funds photo*

blood pressure levels. At this point medication didn't cause a real dipping in blood pressure levels for left eye but right eye was directly affected from medication with a real systemic blood pressure dipping.

As an ophthalmologist we may be expose to lots of unaware hypertensive patients, and save them from lots of systemic complications by referring. We have to keep in mind masked hypertension can cause similar morbidities even though daily blood pressure measurements are normal.

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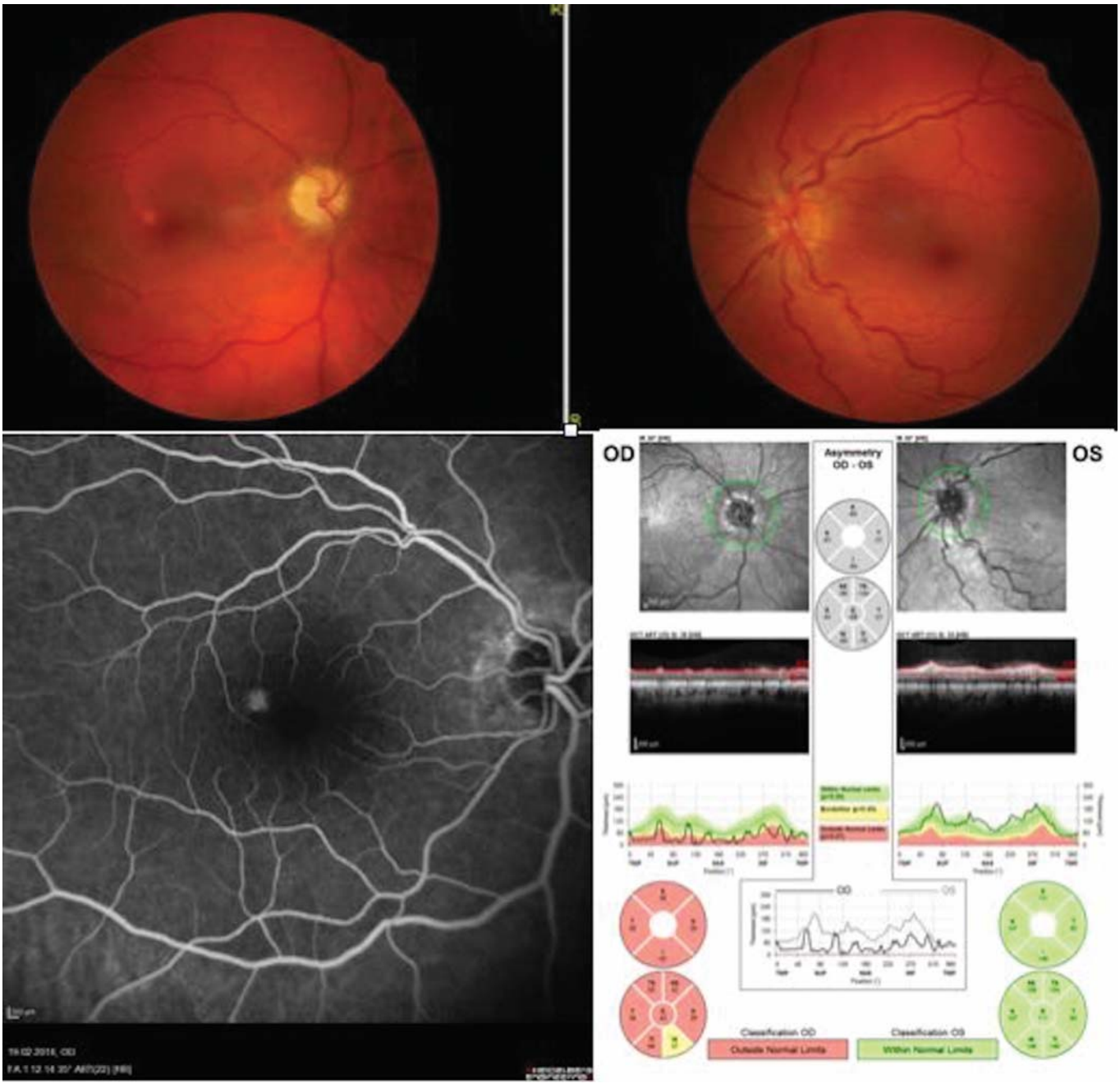

Figure 3. *6 months oct and fundus photo*

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