

## Hypertensive Chorioretinopathy due to Primary Renal Artery Stenosis

Koch CR<sup>1</sup>, Guerra RLL<sup>2\*</sup>, da Silva ISPD<sup>3</sup>, Oliveira Maia Jr ID<sup>3</sup> and Marback RL<sup>3</sup>

<sup>1</sup>Ophthalmologist at Baiano Institute for the Prevention of Blindness, Hospital Humberto Castro Lima, War, Salvador, Bahia, Brazil

<sup>2</sup>Ophthalmologist at Piglet Eye Clinic, War, Salvador, Bahia, Brazil

<sup>3</sup>Ophthalmologist at Hospital San Rafael - Foundation Mount Tabor, War, Salvador, Bahia, Brazil

### Abstract

**Purpose:** To describe a case of hypertensive chorioretinopathy due to secondary hypertension caused by primary renal artery stenosis.

**Method:** Case report by reviewing medical data.

**Case report:** Thirteen years old male, in treating for severe hypertension, presenting substantial bilateral visual impairment one month ago. During ophthalmologic examination, best corrected visual acuity in both eyes was 20/100 and hypertensive chorioretinopathy was found at the fundoscopic examination. Fundus photography, fluorescein angiography and optical coherence tomography were performed. Imaging tests showed left renal artery stenosis and a smaller left kidney. After clinical pharmacological treatment for arterial hypertension there was a slight improvement in visual acuity.

**Conclusion:** Primary renal artery stenosis unilateral is a condition uncommon which can evolve with hypertensive chorioretinopathy.

**Keywords:** Hypertensive chorioretinopathy; Fluorescein angiography; Optical coherence tomography; Renovascular hypertension

### Introduction

Malignant hypertension is a clinical syndrome characterized by severe systolic and diastolic blood pressure, usually appearing gradually over a period of several weeks to months [1]. It is often associated with a substantial and progressive deterioration in renal or cardiac function, and there is evidence encephalopathy [1].

The renal artery stenosis is the most common cause of systemic arterial hypertension (SAH) secondary, corresponding to about 5% of all cases of SAH [2]. Defined as a narrowing of the renal artery lumen, when more than 60% runs with reducing the size of the affected kidney [2].

In the presence of a hypertensive emergency (diastolic blood pressure greater than 120 mmHg associated with target organ damage), can find the characteristic findings such as the presence of exudates and retinal hemorrhages, and papilledema in more advanced cases [3].

The objective of this paper is to describe the ophthalmological findings of a patient who presented with hypertensive chorioretinopathy secondary to stenosis unilateral renal artery.

### Case Report

Male patient, fifteen, brown, born and raised in Salvador-BA was referred to the ophthalmology clinic complaining of decreased vision in both eyes, sudden, a month ago. There was no relevant data in the medical history and the family history, concerned mother with well controlled with medication use hypertension.

Reported episodes of holocranial headache, nausea and vomiting daily for 6 months was under hospitalization for treatment of arterial hypertension for 15 days, with improvement of symptoms. Showed blood pressure on admission of 240 × 150 mm Hg. Maintaining blood pressure within normal limits with the use of clonidine 0.600 mg/day, Hydralazine 200 mg/day, spironolactone 100 mg/day and Amlodipine 10 mg/day.

Ophthalmologic examination revealed visual acuity with best

correction was 20/100 in both eyes, intraocular pressure measured 12 mmHg and biomicroscopy unchanged. The retinal mapping presented in both eyes, clear ways, cotton wool spots in the posterior pole evident in the peripapillary region, moderate papillary edema, hard exudates in shaping "macular star", arteriolar reflex dorsal more than the normal, increased tortuosity of venules and hypo chromic punctuate lesions, some with hyper chromatic central points, dispersed in mid-periphery, corresponding to spots Elsching in the acute phase (Figures 1A-D).

Fluorescein angiography of both eyes showed normal arm-eye for age, presence of peridiscals capillary shunts in both eyes, the presence of punctuate hyper fluorescent lesion perivascular in the right eye by impregnation, the presence of hypo fluorescence area by capillary exclusion in right eye, located below and temporal to the macula, measuring approximately one disk diameter, presence of late peripapillary hyper fluorescence through leakage in the left eye, and presence of hypo fluorescent punctuate hyper fluorescent lesions with halos located in the midperiphery of both eyes corresponding to Elsching spots (Figures 1E-H).

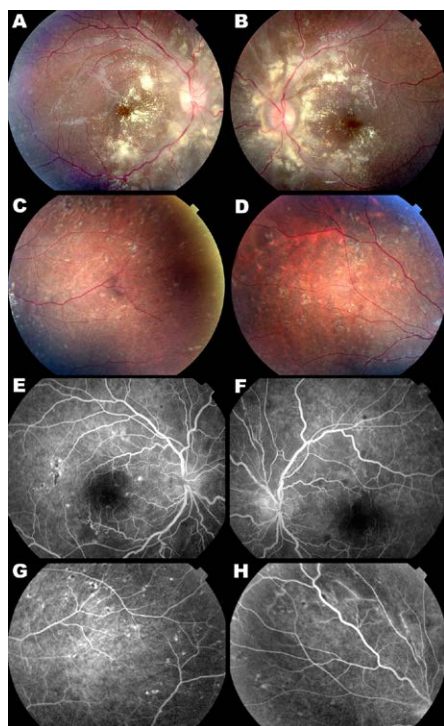
For optical coherence tomography (OCT) of the right eye is noted, the cut crosswise through the center of the fovea, vitreoretinal interface without change, mitigation of foveal depression, reduced thickness of the neurosensory retina with increased reflectivity of the inner layers and points hiperrefletivos scattered throughout its thickness, and condensed retinal line corresponding to the retinal pigment epithelium (RPE) unchanged (Figure 2A). In the left eye to the right eye shows

**\*Corresponding author:** Guerra RLL, Ophthalmologist at Piglet Eye Clinic, War, Salvador, Bahia, Brazil, Tel: +557135256555; E-mail: [ricardo@leitaoguerra.com.br](mailto:ricardo@leitaoguerra.com.br)

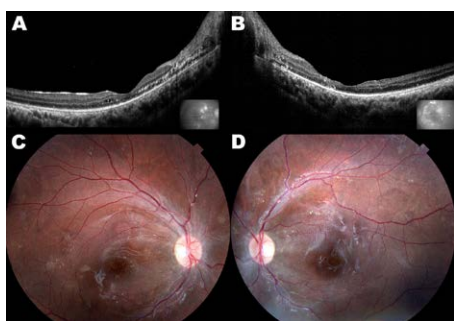
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**Figure 1:** A and B) Fundus photography at first examination. C and D) Elsching Spots in both eye's periphery. E and F) Fluorescein angiography (mild phase). G and H) Fluorescein angiography of Figures 1C and 1D areas.



**Figure 2:** A and B) Optical coherence tomography at first examination. C and D) Fundus photography after treatment.

similar findings, plus a condensed retinal line attached to the retinal surface suggesting that it was epiretinal membrane (Figure 2B).

Ultrasonography of the kidneys observed asymmetry in size, with the smaller left kidney (9.5 cm × 4.9 cm) than the right (13.6 cm × 5.3 cm), and to perform angiography was observed partial obstruction of the left renal artery confirming the diagnosis of hypertension secondary to stenosis of the left renal artery.

About a year after the first eye appointment, the patient remained asymptomatic, maintaining control of blood pressure with the same drugs described above in regular clinical monitoring and evaluating the possibility of angioplasty with specialized staff. She reported mild improvement in visual acuity was not identified by the ophthalmologic examination, showed improvement in the fundus, with a reduction of exudates and cotton wool spots (Figures 2C and 2D).

## Discussion

The retina provides a window for studying human circulation. Retinal arterioles can be easily visualized noninvasively and share similar anatomical and physiological properties with coronary and cerebral microcirculation [4]. Some retinal findings are useful for staging and rate of cardiovascular risk among these, the presence of hard exudates, retinal hemorrhages and cotton wool spots, when associated with papilledema, are strongly associated with mortality risk [4]. In the case described the patient was compatible with high mortality risk clinical features.

Fluorescein angiography is useful in the evaluation of patients with hypertension, particularly by allowing better analysis of vascular caliber [5]. The findings in hypertensive chorioretinopathy vary according to the fundus changes present during the examination. Acute lesions of the retinal pigment epithelium tend to cause impregnation of contrast while chronic lesions cause only window defect [6]. In the case presented, the evidenced micro vascular changes in examination (shunts) and the appearance of lesions in the midperiphery (stains Elsching) suggest a restoration of ocular homeostasis ceased after the acute phase of the disease.

The OCT allows analysis of biological tissues with micrometer resolution and noninvasively [7]. In recent years it has become an important imaging test for diagnosis and monitoring of various vitreoretinal diseases [7]. In the case described, the OCT showed in both eyes, the increased reflectivity of the inner layers of the retina, probably corresponding to the presence of intracellular edema, and hiperrefletivos intrarretinianos scattered points corresponding to intrarretinianos exudates.

The treatment of hypertension secondary to renal artery stenosis aims at effective control of arterial hypertension and preservation of renal function. The choice of treatment should be individualized and involves blood pressure control with medication, angioplasty or stenting and surgical revascularization. The etiology of the stenosis, the patient's age and the presence of other diseases should be evaluated to determine the best therapeutic option [8]. In the case described, the patient keeps pressure control medication and is under evaluation for possible angioplasty specialized team.

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