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A Sudden Decline in Visual Acuity Revealing AION During Pregnancy

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Abstract **Case Report**

Non-arteritic anterior ischemic optic neuropathy (NAION) is the second most common optic neuropathy after glaucoma. We report a 32-week pregnant woman with type 1 diabetes who developed sudden, painless vision loss in the left eye upon awakening. Examination revealed optic disc edema with cilioretinal artery occlusion, and OCT confirmed intraretinal edema. Arteritic causes were excluded, but hypotensive episodes were identified. Supportive management with hydration, lateral positioning, and antiplatelet therapy led to partial visual recovery and reperfusion, though optic disc pallor and early neovascularization persisted. This case highlights the role of pregnancy-related hypotension and diabetes in NAION pathogenesis.

Keywords: NAION, Pregnancy, Diabetes, Vision loss, Optic neuropathy, Hypotension.

INTRODUCTION

Anterior ischemic optic neuropathy (AION) results from insufficient perfusion of the para-optic branches of the short posterior ciliary arteries. It represents the second most common optic neuropathy after glaucoma.

This condition typically affects individuals over the age of fifty, although cases have also been reported in younger patients. Diabetes is considered one of the major risk factors associated with non-arteritic anterior ischemic optic neuropathy (NAION).

Moreover, the physiological changes occurring during pregnancy may increase the risk of vascular events and contribute to the onset or worsening of certain ophthalmic disorders.

AION remains a serious condition due to its potential for irreversible blindness and its unpredictable prognosis

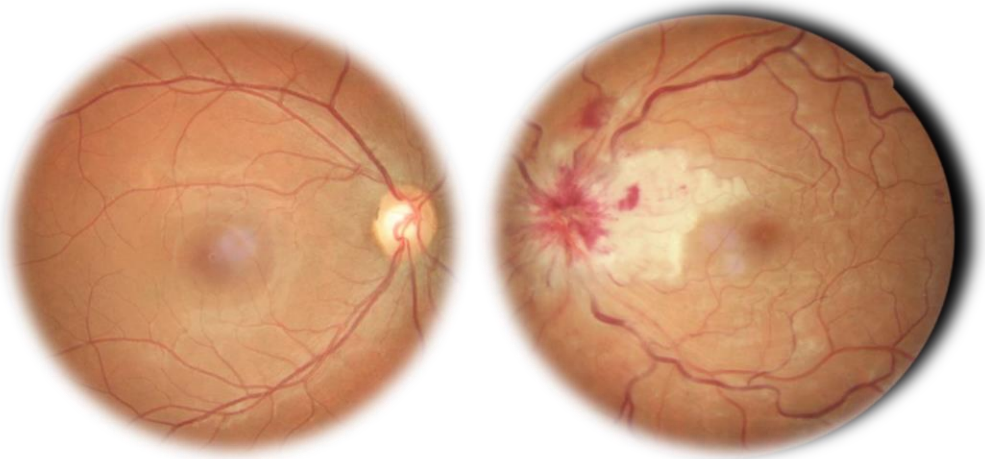
CASE REPORT

We present the case of a 32-week pregnant woman (G2P1) who had a healthy pregnancy with no complications or positive findings in preeclampsia and serology tests. Her only cardiovascular risk factor was type 1 diabetes, well-managed for 10 years with insulin therapy.

She experienced a sudden decrease in visual acuity in her left eye upon waking, without pain or other symptoms. There was no history of migraines, transient monocular blindness, or use of medications that could explain the condition.

Physical and gynecological examinations were normal, with blood pressure recorded at 140/80 mm Hg. Ophthalmological evaluation revealed normal vision in the right eye (10/10), but visual acuity in the left eye was less than 1/10, with absent direct light reflex on the left side. The anterior segments and adnexa were normal, and intraocular pressure was 15 mmHg in the right eye.

The left fundus examination revealed ischemic white retinal edema in the central retinal artery (CRA) territory, with preservation of the fovea, extensive pre-retinal hemorrhages, and venous dilation. The right fundus was normal. The visual field test and color vision assessment were challenging due to severely reduced visual acuity. The patient declined fluorescein angiography due to her pregnancy. Spectral-domain optical coherence tomography (SD-OCT) showed hyper-reflectivity in the inner plexiform and inner nuclear layers, indicating intra-retinal edema located nasally fovea.



A **B**

Figure 1: (A) The right fundus examination was normal. (B) The left fundus examination revealed ischemic edema of the optic nerve associated with

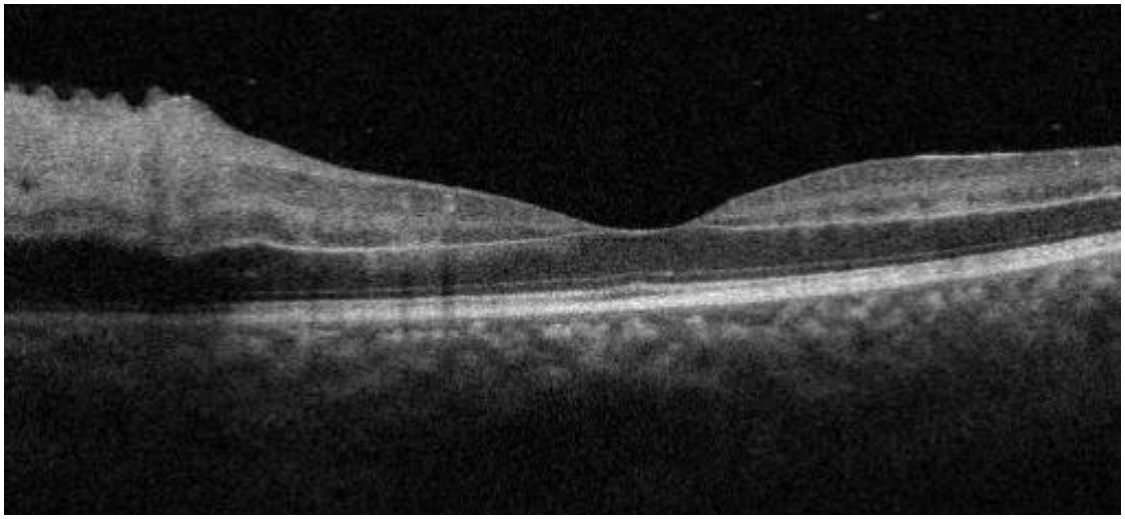


Figure 2: SD-OCT revealed hyperreflectivity of the inner plexiform and inner nuclear layers, consistent with intraretinal edema located nasal to the fovea

The clinical symptoms and fundoscopic findings were suggestive of anterior ischemic optic neuropathy (AION) associated with cilioretinal artery occlusion, complicated by retinal vein occlusion.

Emergency Workup:

An arteritic origin was excluded due to normal ESR (12 mm/hr) and CRP (4 mg/L). Cerebral MR angiography showed no intracranial abnormalities.

Delayed Workup:

General medical, cardiovascular, and vasculitis investigations were normal. Notably, 24-hour Holter ECG, transthoracic echocardiography, and Doppler ultrasound showed no significant abnormalities, except for mild bilateral carotid stenosis (<50%). Blood pressure monitoring identified two hypotensive episodes (90/50 mmHg daytime, 80/50 mmHg nighttime).

Therapeutic Approach:

The patient was started on fluid intake (over 3L/day) and strict bed rest in the left lateral decubitus position. A preventive antiplatelet agent was prescribed after consultation with her gynecologist.

Follow-up at 3 months:

The patient showed gradual improvement in visual function (BCVA: 3/10, P4) and morphological recovery. Fundus examination (figure 3) revealed increased signs of central vein occlusion (CVO) and papillary pallor. Fluorescein angiography was performed after the patient's delivery (figure 4,5), showed recanalization of the optic disc and cilioretinal artery, but also indicated peripheral retinal ischemia and nasally located neovascularization. SD-OCT (figure6) demonstrated a normal foveal profile with resolution of intraretinal edema and focal thinning in the nuclear layers.

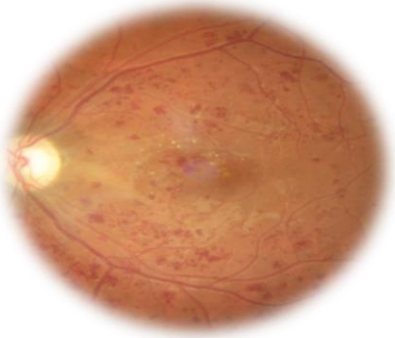


Figure 3: FO at 3 months during follow-up

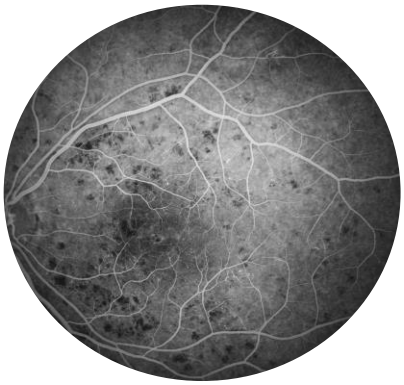


Figure 4: Retinal angiography image at the arteriovenous phase of the posterior pole showing reperfusion of the optic disc and the cilioretinal artery

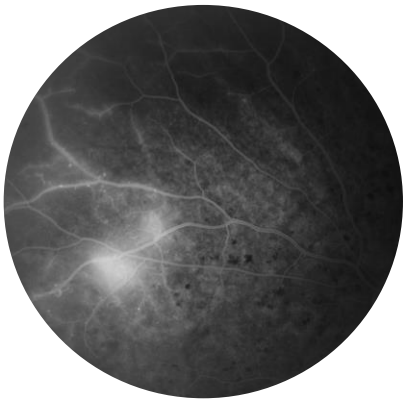


Figure 5: Retinal angiography image at the arteriovenous phase in the superior nasal region, demonstrating peripheral retinal ischemia with early neovascularization.

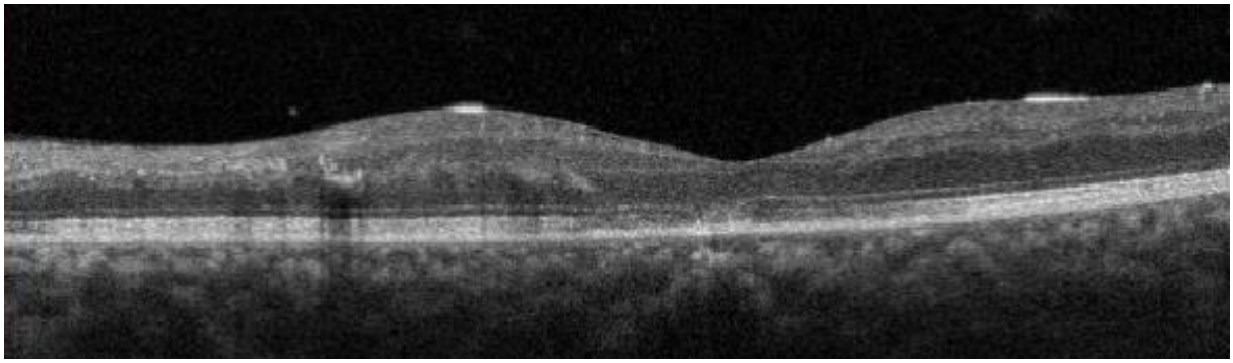


Figure 6: SD-OCT image demonstrating a restored normal foveolar contour with complete resolution of intraretinal edema and focal thinning of the nuclear layers.

DISCUSSION

Non-arteritic anterior ischemic optic neuropathy (NAION) is generally considered idiopathic, but its pathophysiology is multifactorial, involving both local and systemic factors. A well-documented anatomical predisposition is the presence of a small optic disc with little or no physiologic cup, the so-called "disc at risk," which increases axonal crowding and susceptibility to ischemia [1,2,8].

Cardiovascular risk factors play a central role, including systemic hypertension, nocturnal hypotension, diabetes mellitus, smoking, obesity, and obstructive sleep apnea [3,4,6,17,19]. Local causes such as optic disc drusen may also contribute.

Several drugs have been associated with NAION, notably phosphodiesterase-5 inhibitors, triptans, interferon-alpha, amiodarone, and nasal decongestants [11,12]. More recently, semaglutide, a GLP-1 receptor agonist widely prescribed for diabetes and obesity, has been linked to an increased risk of NAION in large cohort studies [9,10].

Pregnancy represents a particular physiological context, characterized by a 20–30% decrease in blood pressure due to reduced peripheral resistance and increased cardiac output [15]. After 24 weeks of gestation, compression of the inferior vena cava by the gravid uterus in the supine position may further reduce venous return and cardiac output, causing maternal hypotension, especially at night [15]. This mechanism has been implicated in pregnancy-associated NAION, with reports of visual loss upon awakening [14,16]. In such cases, 24-hour blood pressure monitoring is recommended to detect pathological nocturnal hypotension [6,15].

Finally, the coexistence of NAION with cilioretinal artery occlusion, although rare, suggests a more severe impairment of the posterior ciliary circulation. In the present case, this dual ischemic mechanism may be explained by pregnancy-related arterial hypotension combined with pre-existing diabetes, two synergistic risk factors for optic nerve and retinal hypoperfusion [6,18,20]

CONCLUSION

The pathophysiology of non-arteritic anterior ischemic optic neuropathy (NAION) is not well understood, but pregnancy-related hemodynamic and metabolic changes contribute to its development. Ophthalmologists must rule out giant cell arteritis and manage cardiovascular risks. There is no curative treatment for NAION, but the visual prognosis is generally better than the arteritic form, with about 50% of cases showing limited visual recovery. The risk of bilateral involvement is around 15% after 5 years.

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