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Case Report

Bilateral Posterior Ischemic Optic Neuropathy (PION) Post COVID Vaccination (COVISHIELD) in a Young Woman: A Rare Case Report

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Abstract

A 32 years old woman presented with gradual, painless diminution of vision after receiving COVID vaccination (COVISHIELD). Diminution of vision was progressive for the next 4 months and later stabilized. Patient had bilateral optic atrophy with rest of the fundus findings within normal limit. On the basis of history, clinical examination and investigations, a diagnosis of bilateral Posterior ischemic optic neuropathy was made after ruling out possibilities of other related clinical entities.

Keywords: COVID; Optic Neuritis (ON); Ischemic Optic Neuropathies (ION)

Introduction

Ocular manifestations related to Coronavirus Disease (COVID) were mostly represented by conjunctivitis, but the neurotropic character of Corona virus could justify the appearance of certain neuro-ophthalmological manifestations, such as: optic neuritis (ON), ischemic optic neuropathies (ION), cranial nerve palsies, visual field anomalies.

Optic neuropathy has been reported in COVID and the mechanisms remain ill-defined although several hypotheses have been proposed including inflammatory cytokines and a transient hypercoagulable state.

Several case reports have suggested ION post COVID [1-4], commonly Non-arteritic Anterior ION (NAION). Few review articles [5,6] shows multiple case reports of ION post COVID vaccination as well, and majority have found out NAION to be the predominant etiology.

Posterior Ischemic Optic Neuropathy (PION) is an acute optic neuropathy due to ischemia in the posterior (retrobulbar) portion of the optic nerve, characterized clinically by acute, painless vision loss in one or both eyes, the presence or absence of a relative afferent pupillary defect (RAPD) with a relatively normal fundus findings. The vision loss typically occurs over hours but can worsen over days to weeks [7].

Case Report

A 32 years old female presented to the Outpatient department (OPD) with chief complaints of diminution of vision since 3 years. Presenting complaint started 3 weeks after receiving COVID vaccine (COVISHIELD). Patient developed fever and malaise 1 day after receiving the vaccine. Fever lasted for 3 days and later patient recovered. After 3 weeks of vaccination, patient had bilateral diminution of vision which was gradual in onset, progressive in nature. Patient consulted local ophthalmologist, but etiology could not be detected and was prescribed topical lubricating drops and the old reports showed normal anterior segment and fundus findings. The vision kept dropping over the period of next 4 months and patient consulted multiple ophthalmologists meanwhile, but diagnosis could not be made and patient was started on topical anti-glaucoma medication (Brimonidine Tartrate 0.15% and Timolol maleate 0.5%) considering disc changes to be glaucomatous by one of the practitioner. After 4 months of presenting complaint, vision stabilized and has been constant since past 2 years and 8 months.

When patient presented to our OPD, the best corrected visual acuity was 20/40 for distance and N12 for near in both the eyes respectively.

On examination, anterior segment findings were within normal limit with normal pupillary reflex and clear crystalline lens in both the eyes.

On fundus examination in both the eyes, media were clear. Optic disc was normal in size, shape with round, regular and well-defined margins with cup disc ratio 0.4:1. Yellowish discoloration of both the optic discs were noted, which was suggestive of bilateral optic atrophy (Figure 1A,B).

Macula examination was within normal limit clinically and on optical coherence tomography.

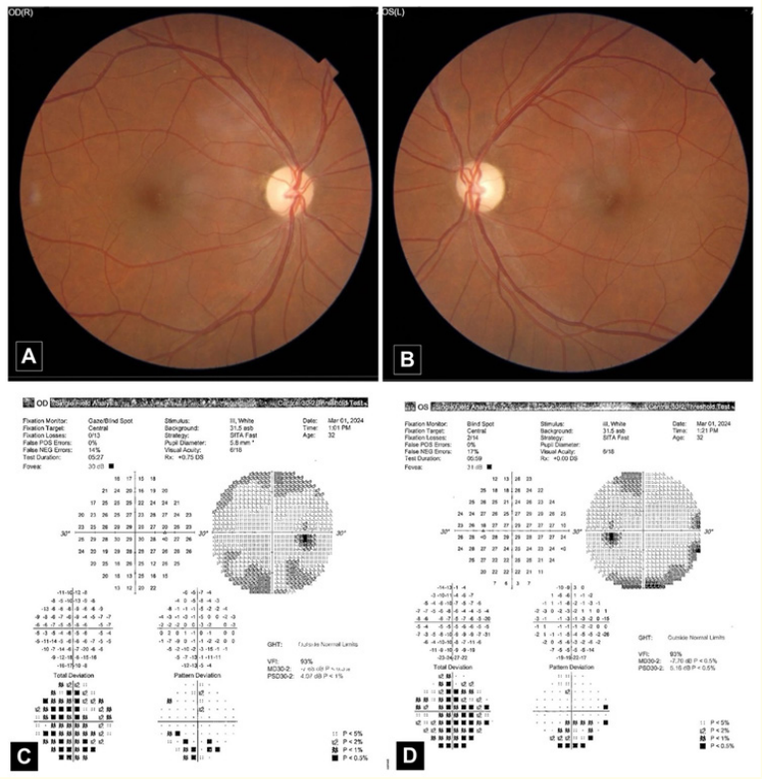

Figure 1: A, B. Fundus photo of right and left eye showing optic atrophy with normal macula and peripheral fundus. C, D. Shows HVF 30-2 with non-specific inferior scotomas.

Peripheral retina was within normal limit.

Red-green color deficiency was noted as per Ishihara chart.

Contrast sensitivity was 0.45 and 0.60 for right and left eye respectively.

Humphrey's visual field (HVF) 30-2 did not corroborate with the clinical diagnosis of optic atrophy or ION and shows non-specific scotomas inferiorly in both the eyes (Figure 1C,D).

For blood investigations, complete blood count, Erythrocytic Sedimentation Rate (ESR), lipid profile and serum homocysteine were done, and came out to be within normal range.

Magnetic Resonance Index (MRI) report was also within normal limit.

Anti-glaucoma medications were stopped and poor prognosis explained in view of optic atrophy and patient was asked for regular follow-up every 6 months.

Discussion

As a sequalae of COVID-19 infection, many isolated case reports [1-4] and few review articles [5,6] were published which presented with ocular manifestations in form of ION [1-4], mostly NAION, which could be possibly due to hypercoagulable state in presence of the infection.

It can be challenging to differentiate whether the diagnosis is AION or PION when we encounter such patient after a long time of onset of symptoms, based on their previous medical records and investigations as clinical picture changes with the due course of time.

Principally, PION is a clinical diagnosis and is made by a process of exclusion, in contrast to its counterpart, AION.

The optic disc is normal initially, but over time optic atrophy develops in the affected eye [7]. Visual acuity ranges from normal to no light perception.

No alternative etiology for any ocular, orbital, or neurological findings should be found that could potentially explain patients' vision loss in order to diagnose PION [7].

Absence of a typical altitudinal field defect, which is mostly present in NAION, also supports our diagnosis in this particular case.

In our case, disc edema was never present even at the time of onset of the symptoms and during the course of its progression, and the diminution of vision was painless, which rules out the possibility of presence of optic neuritis or AION. The clinical examination, fundus findings and the blood investigations were within normal limits at the time of onset of symptoms and MRI report was normal.

Patient does not have any other systemic disorder and not on any medication which could have possibly led to the hypercoagulable state.

During the course of the symptoms and even after that, patient was never tested positive for COVID.

Ours is unique case report where patient presented with bilateral PION (most probably Non-arteritic PION), after receiving COVID vaccination (COVISHIELD), in a young woman.

Apart from only considering the long term sequalae of COVID infection itself, one should also look at the sequalae of vaccine as well to understand the manifestations of the same in long term.

For management of such cases, complete evaluation by a clinical hematologist is mandatory in early phase of the onset of symptoms to rule out any hypercoagulable state and for its management to prevent risk of stroke or any other related comorbidity.

Declaration of Patient Consent

The author certify that they have obtained all appropriate patient consent forms. In the form the patient has/have given his/her consent for his/her image and other clinical information to be reported in the journal. The patient understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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