

Bilateral Optic Neuritis after vaccination against Covid-19: Case report

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INTRODUCTION

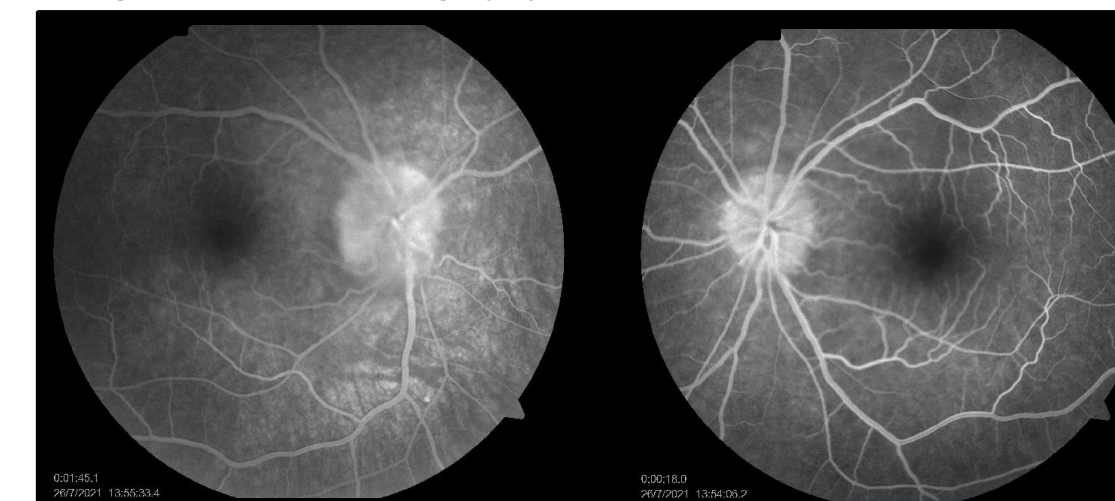
- Even with the undeniable advancement of medicine in recent decades, the Covid-19 pandemic has shown how vulnerable we are, in the face of the emergence of new diseases. On the other hand, history has never seen such a rapid response power to develop and make effective vaccines available in the face of a pandemic, with more than 13 billion doses of vaccines administered throughout the country in just over two years. the world.[1]
- The urgency imposed by the pandemic situation ended up increasing the occurrence of adverse effects, which ended up generating criticism of the vaccines that were fundamental in overcoming the critical moment that had existed since the emergence of SARS-CoV 2.
- Since its emergence, the symptoms of Covid-19 have been predominantly respiratory, but this disease has a wide spectrum of clinical manifestations that can affect numerous organs and systems. Thus, since the beginning of the pandemic, several ophthalmological manifestations of Covid-19 have been reported, including conjunctivitis, episcleritis, vascular occlusions, dacryoadenitis, among others.[2] Although neurophthalmological manifestations are less common, such as optic neuritis (ON), they have a greater potential to cause definitive visual deficit, thus increasing their importance in the daily practice of the ophthalmologist.

CASE REPORT

- Male patient, 41 years old, with no history or significant comorbidities, first attended at Visão Hospital de Olhos – Taguatinga Unit, on 07/22/2021 with a complaint of “Slight darkening of vision” intermittent and progressive in the right eye (OD), after vaccination with Astrazeneca for Covid-19 performed 8 days before, he denied visual alteration in the left eye (LE) or low visual acuity (BAV). On examination, he presented uncorrected visual acuity (VA) of 20/20 in Snellen notation for both eyes (AO). Biomicroscopy showed only conjunctival hyperemia, IOP of 13mmHg in the AO, and at fundoscopy an alteration of the optic disc (OD) was observed, questioning the edema of the OP, and the patient was then referred to the unit's retinal service for retinal mapping and management. In the retina service, the patient underwent retinal mapping and color retinography [fig 1] which confirmed “Edema of the optic disc in the AO”, and then an Optical Coherence Tomography (OCT) of the macula was requested, this time without retinal alterations and Retinography Fluorescent [fig 2] which registered “AO papilla edema”. The established diagnostic hypothesis was Optic Neuritis due to self-limited vaccine reaction to Covid-19. Considering that visual acuity was >20/30 in the Snellen notation, based on the reference literature,[3] it was decided on the part of ophthalmology to maintain a conservative approach under surveillance, with referral to the neurology service to rule out other diagnostic hypotheses. From the neurology point of view, the patient underwent Magnetic Nuclear Resonance of the Skull, which showed “Slight tortuosity of the optic nerves associated with a slight intraocular protrusion.” and Arterial and venous angiogram without significant alterations. Patient showed complete improvement of symptoms maintaining VA 20/20 in Snellen notation, corroborating the initial diagnosis of ON due to self-limited vaccine reaction.



• Figure 1 - Color Retinography - 07/26/2021



• Figure 2 - Fluorescent Retinography – 07/26/2021

DISCUSSION

- In vaccine reactions with neurophthalmological manifestations, it is proposed that a cross-reaction of neutralizing antibodies directed to the SARS-CoV-2 spike proteins react with the proteins of the retinal vasculature and with the retinal pigment epithelial cells. [5]
- In a review of 45 cases of ON associated with the Covid-19 vaccine, 33% of the cases were bilateral, with a mean age of 39.7 ± 12.8 years, and mean time from vaccination to onset of symptoms of 9.6 ± 8.7 days. [5]
- Thromboembolic effects are most often associated with patient-used Astrazeneca vaccines, but neurophthalmic events have been observed with all currently approved vaccines.[5;6;7]
- The patient was immunized with the 1st dose of the vaccine Astrazeneca/Fiocruz -COVIDSHIELD BATCH: 215VCD134Z, which uses a deficient chimpanzee adenovirus vector for recombinant replication that encodes the S protein and the SARS-CoV-2 glycoprotein (ChAdOx 1), containing, therefore, the SARS-CoV-2 structural surface glycoprotein antigen gene, without the use of adjuvants in its composition.
- The patient in the reported case has, age, time of vaccination, signs and symptoms correlated to the other cases cited in the literature.

REFERENCES

- 1.COVID-19 Dashboard by the Center for Systems Science and Engineering (CSSE) at Johns Hopkins University (JHU). <https://coronavirus.jhu.edu/map.html> (acesso em 16 de janeiro de 2023).
- 2.Sen M, Honavar SG, Sharma N, Sachdev MS. COVID-19 and eye: A review of ophthalmic manifestations of COVID-19. *Indian J Ophthalmol* 2022;70:488-509
- 3.Arash Maleki, MD. COVID-19 Recombinant mRNA Vaccines and Serious Ocular Inflammatory Side Effects: Real or Coincidence?. *J Ophthalmic Vis Res.* 2021 Jul-Sep; 16(3): 490-501
- 4.Jossy A, Jacob N, Sarkar S, Gokhale T, Kaliaperumal S, Deb AK. COVID-19-associated optic neuritis – A case series and review of literature. *Indian J Ophthalmol* 2022;70:310-6.
- 5.Elshahry, A.G.; Al-Nawafih, M.Y.; Gamal Eldin, A.A.; Solyman, O.; Sallam, A.B.; Phillips, P.H.; Elhusseiny, A.M. COVID-19 Vaccine-Associated Optic Neuropathy: A Systematic Review of 45 Patients. *Vaccines* 2022, 10, 1758. <https://doi.org/10.3390/vaccines10101758>
- 6.García-Estrada C, Gómez-Figueroa E, Alban L, Arias-Cárdenas A. Optic neuritis after COVID-19 vaccine application. *Clin Exp Neuroimmunol.* 2022;13:72-74. <https://doi.org/10.1111/cen3.12682>
- 7.Valentina Arnao, Mario Baronello Maimone, Valentina Perini, Bilateral optic neuritis after COVID vaccination. *Neurological Sciences* (2022) 43:2965–2966. <https://doi.org/10.1007/s10072-021-05832-9>