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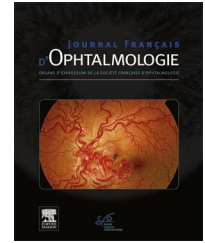


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LETTER TO THE EDITOR

Bilateral anterior uveitis after BNT162b2 mRNA vaccine: Case report



Uvéite antérieure bilatérale après vaccin mRNA BNT162b2 : à propos d'un cas

Introduction

Coronavirus disease 2019 (COVID-19) is a highly contagious and multisystemic disease caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). Various vaccines have been produced to prevent the spread of this disease and to control the pandemic. One of them, BNT162b2 mRNA (Pfizer-BioNTech) vaccine; it is a nucleoside modified RNA vaccine with lipid nanoparticle formula, stabilized by perfusion [1]. Vaccines can have local or systemic side effects.

We aimed to present a case of an anterior uveitis case that developed after the first dose of COVID-19 vaccine.

Case report

A 54-year-old female patient, who did not have any disease other than diabetes mellitus, had complaints of redness, blurred vision, eye and headache that started in both eyes 3 days after the first dose of BNT162b2 mRNA (Pfizer-BioNTech) vaccine. Three days later, she was referred to our clinic. She had the best corrected visual acuity of 5/20 on the snellen chart in both eyes. Conjunctiva of both eyes were hyperemic, corneal epithelial edema and keratic precipitates were observed in the lower quadrant. There was intense reaction in the anterior chamber and posterior synechia in the right eye (Figs. 1A-D). Intraocular pressure values were 60 mmHg in the right and 55 mmHg in the left with the Goldman applanation tonometer. Corneal edema was attributed to high intraocular pressure. Fundus examination was normal. The patient was hospitalized and necessary blood tests were taken. Intravenous 20% mannitol 2x150cc, oral acetazolamide 2x250 mg, topically timolol + dorzolamide 2x1, 0.15% brimonidine 2x1 were started for glaucoma. For anterior uveitis, topical 0.1% dexamethasone 8x1, 1% cycloplegic drops 3x1 and 0.1% dexamethasone ointment 1x1 nightly were started. Optical coherence tomography taken on the second day was normal (Figs. 2A,B). There was no abnormality in laboratory tests, but only ANA and CMV IgG were positive.

On the third day of treatment, intraocular pressure values were 20 mmHg in the right and 18 mmHg in the left. It was observed that corneal edema improved and anterior

chamber reaction decreased. Systemic glaucoma medications were discontinued. His right posterior synechia was continuing. On the fourth day, it was observed that the posterior synechia in the right eye was resolved (Figs. 1E,F). On the fifth day of treatment, intraocular pressures were 13 mmHg in the right and 17 mmHg in the left, and topical glaucoma drugs were also discontinued. With the reduction of anterior chamber reaction, topical steroid drugs were decreased. He was discharged 1 week after hospitalization with topical steroid and cycloplegic drops. During the follow-ups, the patient had no recurrent complaints.

Discussion

Although vaccine-related uveitis and ocular side effects are rare, uveitis-associated vaccines were hepatitis B virus (HBV), human papilloma virus (HPV), influenza virus, Bacille-Calmette-Guerin (BCG), varicella virus, measles-mumps-rubella (MMR), yellow fever, hepatitis A (HAV) and typhoid vaccines. The median time from vaccination to uveitis onset was 16 days (range 1 day to 6 years). Although the pathogenesis is often unclear, several mechanisms have been postulated:

- including secondary molecular mimicry due to close similarity between vaccine peptide fragments and peptides of the uvea themselves;
- adjuvants such as aluminum salts to cause inflammatory damage
- and delayed-type hypersensitivity through direct viral infection and accumulation of immune complexes [2–5].

While the majority of ocular side effects related to COVID-19 vaccines are related to the eyelid and conjunctiva, a few of them are seen in the form of anterior segment, uvea, retina and optic nerve inflammation [5].

Boletta et al. in their study examining uveitis and ocular side effects after COVID-19 vaccine, they evaluated 43 eyes of 34 patients. The mean age of the patient group consisting of 20 females and 14 males was 49.8 years (range 18–83 years). The mean time between vaccination and onset of ocular complications is 9.4 days (range 1–30 days). The most common complications were anterior uveitis in 5 patients and retinal vein occlusion in 5 patients. Twenty-three cases occurred after BNT162b2 mRNA vaccination (Pfizer-BioNTech), 7 after ChAdOx1nCoV-19 vaccine (Oxford-AstraZeneca), 3 after mRNA-1273 vaccination (ModernaTX), 1 after Ad26.COV2 vaccine (Janssen Johnson & Johnson) [6].

Rabinovitch et al. in their study evaluating uveitis after BNT162b2 mRNA (Pfizer-BioNTech) vaccine, they showed that 21 patients had anterior uveitis and two of them were

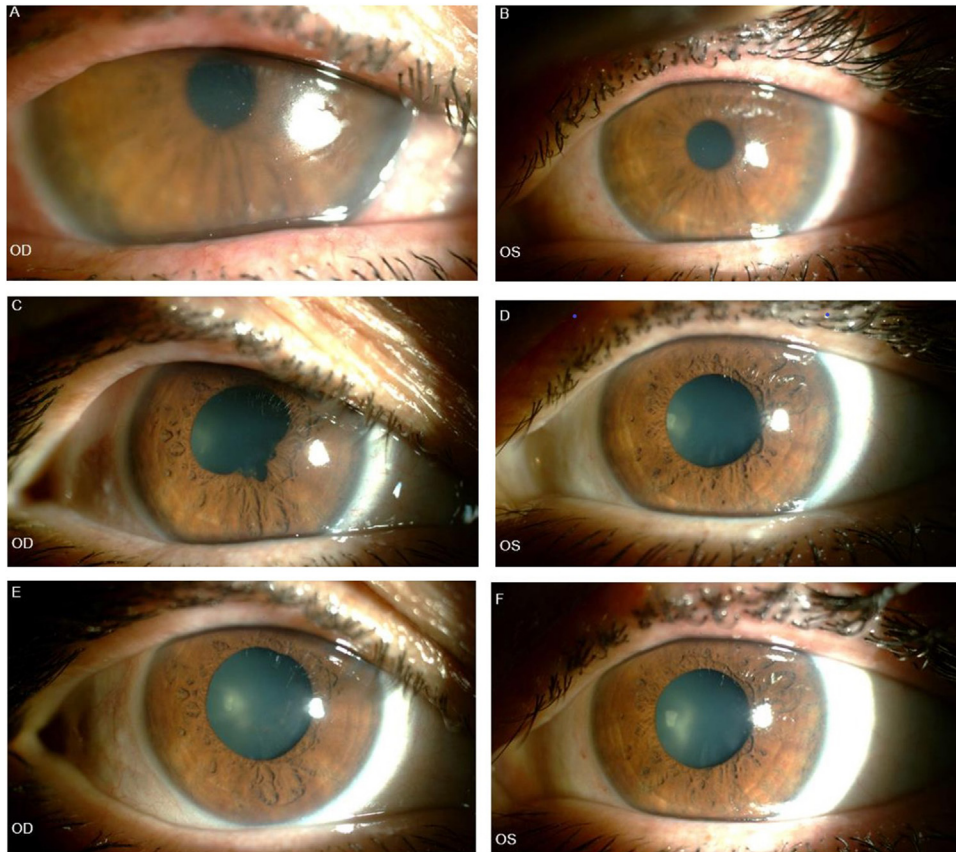


Figure 1. Anterior segment photographs of both eyes during treatment. (A-B) The first day the patient's conjunctiva was hyperemic, photophobia was present. She had corneal edema. (C) The second day, posterior synechia of the right eye was clearly visible. (D) Left eye conjunctival hyperemia decreased. (E-F) The fourth day, posterior synechia in right eye resolved and both eye conjunctival hyperemia decreased. OD = right eye; OS = left eye.

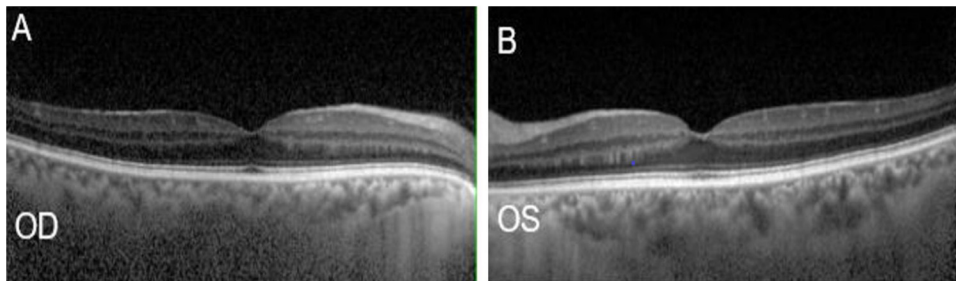


Figure 2. Normal macula optical coherence tomography images of the patient's right and left eye. OD = right eye; OS = left eye.

bilateral. Eight of these patients had uveitis after the first dose and 13 after the second dose of vaccination, and the mean time from vaccination to uveitis onset was 7.5 ± 7.3 days (1-30 days) [7].

As far as we have researched in the literature, one case of anterior uveitis with an elevated intraocular pressure due to the COVID-19 vaccine has been reported, except for our case. This case is a patient who developed unilateral granulomatous hypertensive uveitis 5 days after the second dose of mRNA-1273 (ModernaTX) vaccine and was previously treated for herpes keratouveitis [8]. In our case, there was no previous history of uveitis and antiviral treatment was not required.

In conclusion, this case shows that bilateral anterior uveitis with high intraocular pressure may occur after the COVID-19 vaccine. Physicians should keep in mind that anterior uveitis cases can be seen after COVID-19 vaccine.

Disclosure of interest

The author declares that he has no competing interests.

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