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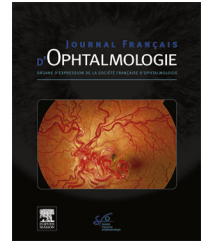
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LETTER TO THE EDITOR

Central serous chorioretinopathy following Pfizer-BioNTech COVID-19 vaccine: A case report



Choriorétinopathie séreuse centrale après vaccination par Pfizer-BioNTech contre la COVID-19 : à propos d'un cas

Introduction

On December 11, 2020, the US Food and Drug Administration (FDA) issued the first authorization for a vaccine for the prevention of coronavirus disease 2019 (COVID-19). The safety profile of the vaccine appears similar to the other virus vaccinations. Because of the emergency situation, monitoring the long-term effects has not been possible. Thus, it is important to report any adverse reaction occurring after the vaccine. We report a central serous chorioretinopathy (CSCR) following the administration of the first dose of the Pfizer-BioNTech COVID-19 vaccine.

Case report

A healthy 38-year-old man, military doctor, presented with a chief complaint of decreased vision of 2 day's duration. The patient received the first dose of the Pfizer-BioNTech COVID-19 vaccine on February 12, 2021. After 7 days, on February 19, he reported a blurred central vision in the left eye.

On presentation, best corrected visual acuity was 20/800 in the left eye and 20/20 in the right eye with intraocular pressures of 13 and 12 mmHg, respectively. Slit-lamp examination results were normal. Dilated fundus exam of the left eye showed a serous macular neurosensory detachment, the foveal light reflex was absent. Funduscopic examination of the left eye had normal results. Spectral domain optical coherence tomography (SD-OCT) revealed subretinal fluid. Enhanced-depth imaging SD-OCT showed increased subfoveal choroidal thickness (320 μ m). Fluorescein angiography demonstrated a focus of hyperfluorescence in early transit followed by late leakage and pooling into a serous detachment consistent with CSCR. The patient did not present any risk factors relating to the occurrence of CSCR with the exception of pachychoroid.

The patient received the second injection on March 26. Seven days after the injection the patient suffered from nausea, fever, tiredness and headache. Subretinal fluid persisted but did not increase. Four months after presentation, his visual acuity measured 20/630. Mild pigmentary changes

were present on funduscopic examination, and subretinal fluid remained visible on SD-OCT exam (Fig. 1).

Discussion

The vaccine BNT162b2, a lipid nanoparticle-formulated-nucleoside-modified RNA encoding the SARS-CoV-2 full-length spike, is the first COVID-19 vaccine approved by the FDA. The most common side effects are tiredness, headache, muscle pain, chills, fever, nausea and pain, swelling or redness at the site of injection.

Several ocular side effects have already been described following the administration of various vaccinations (varicella-zoster virus, measles, rubella, human papilloma...). Flu vaccination was associated with numerous ocular adverse effects, including uveitis, iritis, macular edema, exudative retinal detachment or CSCR. Palacios et al. reported a case of CSC after flu vaccination [1]. Foster et al. presented a CSCR case within 14 days from Anthrax vaccination [2]. Rosen et al. reported three cases of CSCR after smallpox vaccination [3]. In these cases, the patients developed symptoms between 3 and 21 days after vaccination.

Fowler et al. reported the case of young male who presented with unilateral CSCR three days after the first injection of a COVID-19 vaccine [4]. In this case CSCR resolved in three months. The authors did not specify whether the patient received a second injection. Our patient received a second injection which did not increase the subretinal fluid but which may have contributed to persistence of subretinal fluid.

Many ocular findings associated with COVID-19 vaccinations were reported – including abducens nerve palsy, corneal graft rejection, superior ophthalmic vein thrombosis, Vogt-Koyanagi-Harada disease reactivation, uveitis, central serous chorioretinopathy and onset of Graves' disease [5].

Because millions of people are now being vaccinated against COVID-19, events will start to appear in reports. Given that vaccine induced ocular phenomena have been established with many other vaccines, COVID-19 vaccinations should not be exempt. We acknowledge that it is not possible to confirm a causative link between CSCR and COVID-19 vaccine. The relation between the first dose and the loss of visual acuity' time of onset, the low incidence of CSR (9.9 per 100,000 individuals) and our case's absence of risk factors for CSR development are strong argument for a causal relationship.

The CSCR here reported might be considered as a rare ocular adverse effect of the COVID-19 vaccine. The onset of

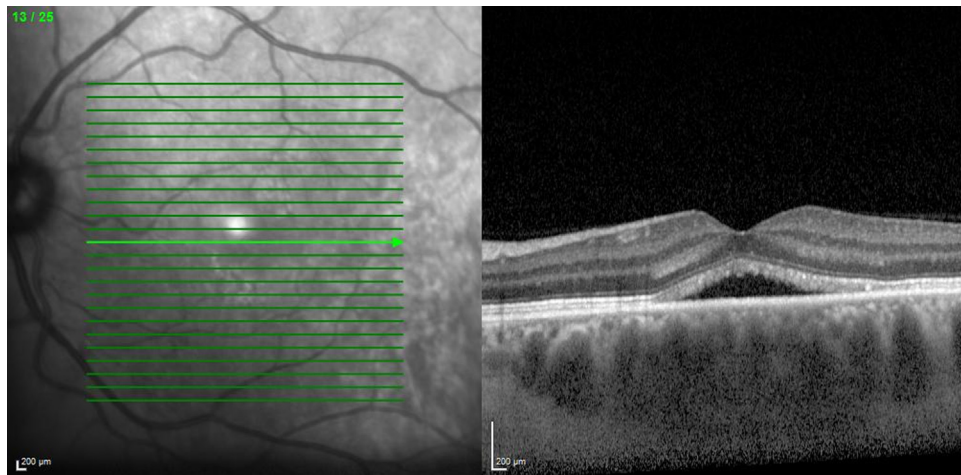


Figure 1. Spectral domain optical coherence tomography scan showing subretinal fluid.

ocular symptoms starting within seven days following vaccination suggests an autoimmune or inflammatory response to the vaccine. There remains a question of elucidating the mechanisms involved in a maladaptive immune response. It seems important for ophthalmologists to be aware of potential ocular side effects from COVID-19 vaccine.

Disclosure of interest

The authors declare that they have no competing interest.

This case report has never been the subject of a communication at a congress.

References

- [1] Palacios AI, Rodríguez M, Martín MD. Central serous chorioretinopathy of unusual etiology: a report of 2 cases. *Arch Soc Esp Oftalmol* 2014;89:275–8.
- [2] Foster BS, Agahigian DD. Central serous chorioretinopathy associated with anthrax vaccination. *Retina* 2004;24:624–5.
- [3] Rosen E. The significance of ocular complications following vaccination. *Br J Ophthalmol* 1949;33:358–68.
- [4] Fowler N, Mendez Martinez NR, Pallares BV, Maldonado RS. Acute-onset central serous retinopathy after immunization

with COVID-19 mRNA vaccine. *Am J Ophthalmol Case Rep* 2021;23:101136.

- [5] Ng XL, Betzler BK, Testi I, Ho SL, Tien M, Ngo WK, et al. Ocular adverse events after COVID-19 vaccination. *Ocul Immunol Inflamm* 2021, <http://dx.doi.org/10.1080/09273948.2021.1976221> [Online ahead of print].

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