Acute-onset dacryoadenitis following immunisation with mRNA COVID-19 vaccine

Treasa Murphy,1 Abdul Raheem Abu Shanab,1 Kristopher Kang,2 Christopher J Lyons1,3

SUMMARY
A 14-year-old boy was referred to the ophthalmology department with a 4-day history of rapid-onset right upper lid pain, swelling and erythema starting 9 hours after his first dose of COVID-19 mRNA vaccination (BNT162b2/Comirnaty, Pfizer-BioNTech). On examination, he had significant right upper lid ptosis, oedema and erythema, with associated limitation of right eye abduction and elevation. He was found to have acute dacryoadenitis with orbital inflammatory disease on clinical and laboratory investigations. He was given tapering oral prednisone and had full resolution of symptoms within 2 weeks. This is the first known case of orbital inflammation after COVID-19 mRNA vaccination. Given the temporal association between the patient’s vaccination and symptom onset, we believe it is likely that immunisation prompted the onset of disease.

BACKGROUND
The lacrimal gland is an integral component of the mucosal immune system, which protects the ocular surface.1 Acute dacryoadenitis is characterised by rapid enlargement of the lacrimal gland. It is often caused by viral or autoimmune disease.2

Ocular manifestations of the novel coronavirus (SARS-CoV-2) include changes consistent with follicular conjunctivitis in up to 32% of patients,3 with reports of anterior segment and posterior segment inflammatory4 5 and vascular changes6 and rare cases of orbital inflammation.2 7 8

Given the recent introduction of COVID-19 mRNA vaccines, data on short-term and long-term side effects are still evolving. Several case reports have noted the development of intraocular immunological and inflammatory events after COVID-19 mRNA vaccination,9 including cranial nerve palsies,10 11 uveitis,12 13 episcleritis,14 anterior scleritis,12 acute-onset central serous chorioenretinopathy15 and acute macular neupathy16 within 72 hours of receiving COVID-19 mRNA vaccinations.

To date, orbital inflammatory side effects of COVID-19 mRNA vaccines have not been reported. We present a healthy teenage boy who presented with unilateral acute-onset dacryoadenitis, 9 hours after receiving a first dose of COVID-19 mRNA vaccine.

CASE REPORT
A 14-year-old previously healthy boy, presented with a 4-day history of rapid-onset right upper lid pain, swelling and erythema starting 9 hours after his first dose of COVID-19 mRNA vaccination (BNT162b2/Comirnaty, Pfizer-BioNTech). There was no history of fever or respiratory symptoms. Systemic review was unremarkable. There was no recent travel history or history of COVID-19 infection.

On examination, visual acuities were 6/6 in each eye. The patient had right upper lid S-shaped ptosis, oedema and oedema (figure 1). There was conjunctival chemosis and significant conjunctival injection was noted over the right lateral rectus muscle. The right globe was mildly proptosed with interomedial globe displacement. Abduction and elevation of the right eye were severely limited with associated diplopia. Anterior segment and dilated fundal examination were normal.

INVESTIGATIONS
CT scan with intravenous contrast demonstrated an elliptical rim-enhancing collection at the right lacrimal gland that was enlarged compared with the left side. There was associated thickening of the lateral rectus and stranding of the overlying subcutaneous soft tissue anteriorly. There was no associated sinus disease (figure 2).

Laboratory testing showed white blood cell count 8.2×109/L, and C reactive protein 10 mg/L. Electrolytes, creatinine, hepatic transaminases, gamma glutamyltransferase, bilirubin, uric acid, lactate dehydrogenase and thyroid stimulating hormone were normal. Blood cultures and conjunctival swabs were negative. Epstein-Barr virus IgG and IgM antibody titres were negative.

Based on clinical and laboratory investigations, this patient was diagnosed with acute dacryoade- nitis with associated orbital inflammatory disease.

TREATMENT
The patient was admitted to hospital and started on empiric treatment with intravenous ceftriaxone and metronidazole two times daily. However, after noting no improvement after 1 day, he was started on oral prednisone 60 mg daily.

OUTCOME AND FOLLOW-UP
After 2 days, the pain had resolved, and the lid and conjunctival inflammation were improved. Eye
infection have been reported. All patients were sero-vaccination.

Given the temporal association between the patient's vaccination and symptoms of acute abducens nerve palsy, uveitis, Vogt-Koyanagi-Harada disease, and other ocular inflammatory events within 14 days of COVID-19 immunisation, the authors have not declared a specific grant for this research from any funding agency in the public, commercial or not-for-profit sectors.

Patient's perspective

Nine hours after my first dose of vaccine, I noticed that my right eye was really swollen and sore. I didn’t really get a fright. We went to the hospital, and I just trusted the doctors and nurses to make things better. I’m doing fine now. I’m glad that other people get to hear about my case. It doesn’t happen again.

Learning points

- This is the first described case of orbital inflammation after COVID-19 mRNA vaccination.
- This patient presented with classical dacryoadenitis clinical findings.
- Treatment with a tapering dose of oral prednisone led to full resolution of this patient’s inflammation.
- Acute dacryoadenitis and orbital inflammatory syndrome due to local immunological response may potentially occur after COVID-19 mRNA immunisation, although a causal relationship cannot be confirmed at this stage.

REFERENCES


