Case Report

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Two cases of giant cell arteritis following ChAdOx1 nCoV-19 vaccination – complication or coincidence?

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Case 1

This 66 years old woman had the ChAdOx1 nCoV-19 vaccine on 25 February 2021 and about 6 hours later, she started to get pain in the right side of her head. She also had flu-like symptoms which lasted a couple of days, but these settled down whilst the headaches persisted. She also developed scalp tenderness and obvious swelling of possibly frontal branch of right temporal artery (see figure 1). She did not develop any jaw claudication, visual or systemic symptoms. She was seen in the out of hours GP clinic on 29 of February 2021 and was started on Prednisolone 40 mg daily with resolution of symptoms in a few days. Her blood tests in February 2021 showed rise in CRP to 16.8 mg/L (NR 0-5) compared to December 2020 value of 3.3. Ultrasound (US) showed normal appearances in the temporal or axillary arteries, although this was delayed 2 weeks post corticosteroid (CS) therapy. Her visible temporofrontal abnormalities had disappeared within a few days of treatment. CT scan head with venogram was normal and treatment for GCA was continued.

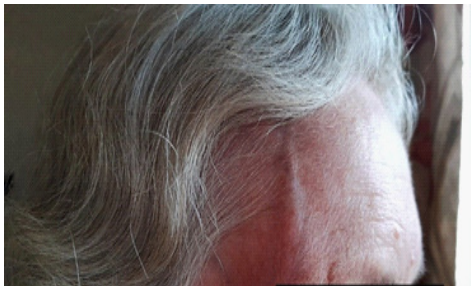

Figure 1: *Arterial prominence after Covid-19 vaccination.*

Case 2

This is an extremely fit 70 year old gamekeeper. He had the ChAdOx1 nCoV-19 vaccine on 27 February 2021 and from next day he started getting bad right frontotemporal headaches. He also had pain in the right eye and developed discomfort on chewing. He then developed similar symptoms on the other side and also bilateral scalp tenderness. He did not have any polymyalgic or systemic symptoms. Blood tests showed mild rise in inflammatory markers with CRP 25.5 mg/L (NR 0-5) and ESR 38 mm/hr. Ophthalmology assessment was normal, he was started on oral Prednisolone at 60 mg daily and referred to rheumatology. Although his rheumatology assessment was only possible 2 weeks after initiation of CS, temporal artery US showed a definite halo on the frontal branch of right temporal artery as well as possible halo on the left frontal branch. He had an excellent response to CS, and his inflammatory markers returned to normal.

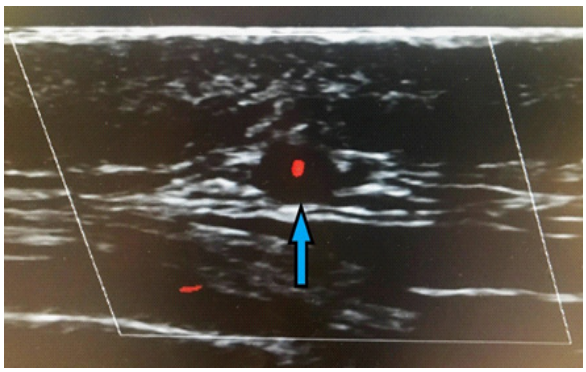

Figure 2: *GCA US image with halo in frontal branch of right temporal artery.*

Discussion

Headache is a very common adverse event following Covid-19 vaccination with other common side-effects being fatigue, myalgia, arthralgia, nausea and diarrhoea [1]. Other complications include vaccine induced thrombosis and thrombocytopenia [2] and rare reports of transverse myelitis [3]. Other groups have reported series of GCA cases following influenza vaccination [4,5] and increased incidence of GCA has been described following varicella zoster vaccination [6]. In this study, the likelihood of developing GCA was ~2.7 times compared to

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unvaccinated people following vaccination for varicella.

We believe that this is the first published report of GCA following Covid-19 vaccination. Medicines and Healthcare Regulatory Authority (MHRA) has received a number of yellow card reports for GCA following Covid-19 vaccination [7] with 59 cases being reported after ChAdOx1 nCoV-19 vaccine and 5 cases after BNT162b2 vaccine. The first round of vaccination in UK has seen these 2 vaccines being commonly deployed with millions of people vaccinated, hence this would be considered a rare adverse event. The large COVID symptom study also found ChAdOx1 nCoV-19 vaccine to be more immunogenic compared to BNT162b2 vaccine [1].

In this series, it is possible that there had already been immune activation and these patients would have developed GCA irrespective of vaccination. In the first case, GCA is not histologically proven as the case presented to our department only two weeks after the initiation of corticosteroids. We did consider doing a temporal artery biopsy, however, we felt that the likely benefit was small, the window of opportunity for a biopsy was very short and the risks with Covid-19 being widely prevalent in the community were too high. The convincing history, inflamed temporal vessel post vaccination and normal CT head with venogram were consistent with clinical diagnosis of GCA. In 2nd case, GCA was ultrasound proven although again, we did not request a biopsy.

The etiopathogenesis of vasculitic inflammation is unknown. But it is conceivable that the Chimpanzee adenovirus antigen used as an adjuvant in ChAdOx1 nCoV-19 vaccine might induce the immune mechanism leading to more widespread inflammation [4]. Our hypothesis is that there had been possible abnormal immunological activation with vaccine-related antigens promoting antibody development and immune complex deposition causing attendant inflammatory response leading to inflammation in the blood vessels. Hyperactivation of the immune system secondary to cross-reactivity and molecular mimicry trigger autoimmune disorders [8]. The presence of obvious triggers may denote a different spectrum, and more research is needed to understand this association and its consequences.

In conclusion, these cases illustrate the need for heightened vigilance and importance of further research exploring the links between vaccination and large vessel vasculitis in terms of association, pathogenesis and outcomes.

Key messages:

Vaccination could induce vasculitis such as giant cell arteritis and increased vigilance is necessary.

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