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CE - LETTER TO THE EDITOR

Large-vessel vasculitis following the Pfizer-BioNTech COVID-19 vaccine

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Dear Sir,

At the end of 2019, a novel coronavirus now known as severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) was identified as the cause of a cluster of pneumonia cases in Wuhan, a city in the Hubei Province of China. It rapidly spread, resulting in a global pandemic. In February 2020, the World Health Organization named the disease COVID-19, which stands for coronavirus disease 2019. Its high transmission rate and the scarcity of effective treatment led to the rapid development of vaccines. By the end of 2020, several vaccines had become available for use in different parts of the world, over 40 candidate vaccines were in human trials, and over 150 were in preclinical trials [1]. As a result, a series of adverse events after vaccination continue to be reported. Hereafter, we report a case of large vessel vasculitis (LVV) in patient who received the first dose of mRNA COVID-19 vaccine (BNT162b2—Pfizer-BioNTech). A 63-year-old woman with a personal history of hypertension has been observed at the end of June 2021 to a tertiary-care center (San Carlo Hospital), in Basilicata region (Italy). The day following the first vaccination (May 2021), she experienced fatigue, myalgias and after 5 days she rapidly developed fatigue as well as low grade fevers, anorexia, and headache. Over the next 4 weeks she complained a 15 lb weight loss and polymyalgia rheumatica (PMR)– like symptoms (fatigue, arthralgia, stiffness of upper arms, shoulders and neck). She denied previous similar episodes or recent infectious diseases including COVID-19; a molecular diagnostic test for COVID-19 was also performed, and was negative. Physical examination showed limitation on the range of motion about the shoulders (inability to actively abduct the shoulders past 90 degrees) and the cervical spine. Neurologic evaluation demonstrated normal muscle strength. Laboratory values were remarkable for elevated C-reactive protein (74 mg/L), erythrocyte sedimentation rate (ESR) (104 mm/h), ferritin (1227 ng/mL) levels and mild normochromic, normocytic anaemia (haemoglobin 10.6 g/dL). The following tests were negative or normal: antinuclear antibodies, antineutrophil cytoplasmic antibodies and cryoglobulins, C3, C4, serum thyroid-stimulating hormone (TSH), creatine kinase (CK), vitamin D and serology for hepatotropic viruses and HIV was negative. Positron emission tomography (PET) was performed and demonstrated an increased fluorodeoxyglucose (FDG) vascular uptake compatible with large-vessels vasculitis (Fig. 1). The distribution of vasculitis with large artery (aortic arch, thoracic and abdominal aorta) involvement of her carotid, subclavian arteries suggests Large-Vessel Vasculitis. A diagnosis of giant cell arteritis (GCA) would fit her onset of disease after age 50 and the subclavian changes, which may occur in GCA also in the absence of temporal artery involvement [2]. She refused contrast-enhanced MR angiography. According to the 2018 update of the EULAR recommendations for the management of large vessel vasculitis [3], for induction of remission, we initiated immediately with high dose glucocorticoid (GC) therapy (50 mg/day prednisone-equivalent). On the fourth week systemic symptoms (anorexia, fever, malaise and arthralgias) resolved and CRP, ESR, ferritin and haemoglobin normalized. The tapering of GC therapy is ongoing. Up to now a systematic review revealed that influenza vaccine is the most often reported in post-vaccination cases of vasculitis [4]. The pathogenesis of post-vaccination vasculitis remains unclear. To our knowledge, this is the first report of large vessel vasculitis following by BNT162b2 vaccination. Moreover, cases of vasculitis secondary to SARS-CoV-2 infection or after COVID-19 vaccination have also been reported in temporal association with their administration. (Table 1). Physicians should be aware of this complication, but should continue to encourage vaccination efforts given the well documented safety profile and efficacy of the Pfizer-BioNTech BNT16B2b2 mRNA vaccine [5]. Further randomized studies would be required

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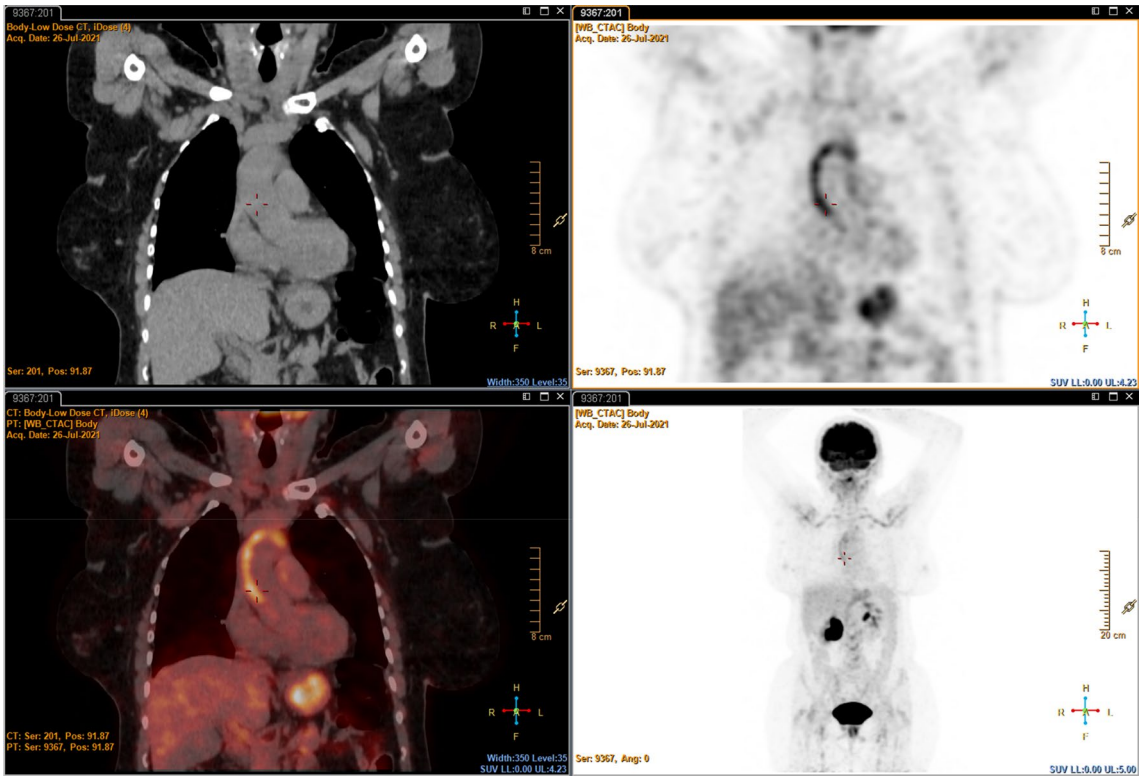

Fig. 1 Positron emission tomography (PET) that demonstrated an increased fluorodeoxyglucose (FDG) vascular uptake compatible with large-vessels vasculitis

Table 1 Cases reported with vasculitis after COVID-19 vaccination

Author	Type of vaccine	Diagnosis
Dash et al.	adenoviral vector vaccine	Urticarial vasculitis
Cohen et al. Bostan et al.	mRNA vaccine	Leukocytoclastic vasculitis
Shakoor et al.	mRNA vaccine	ANCA-associated vasculitis
Vassallo et al.	mRNA vaccine	Cutaneous lymphocytic vasculitis
Izzedine et al.	mRNA vaccine	Renal vasculitis
Obeid et al.	mRNA vaccine	Reactivation of IgA vasculitis
Nastro et al.	mRNA vaccine	Small vessel vasculitis
Gillion et al.	adenoviral vector vaccine	Granulomatous vasculitis
Hines et al.	mRNA vaccine	Henoch–Schönlein purpura
Guzmán-Pérez et al.	adenoviral vector vaccine	Small-vessel vasculitis
Berry et al.	adenoviral vector vaccine	Cutaneous small vessel vasculitis

to compare the frequencies and type of immune-mediated manifestations after these vaccines.

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Declarations

Conflict of interest The authors declare that they have no competing interests.

Ethical approval This study was conducted according to the Declaration of Helsinkiand the guidelines of Good Clinical Practice. Written informed consent was obtained from this patient.

Human and animal rights All procedures performed were in accordance with the ethical standards of the institutional and/or national research committee.

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