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Letter to the Editor

If SARS-CoV-2-Related Large Vessel Vasculitis on FDG-PET does not Require Immunosuppressants, A False Positive Result should be Considered

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We read with interest the article by Oyama *et al.* on three cases (Patient 1: 59-year-old man, Patient 2: 79-year-old man, Patient 3: 67-year-old man) of large-vessel vasculitis following SARS-CoV-2 infection (SC2I) ^[1]. Patient 1 recovered completely without treatment ^[1]. Patient 2 received only loxoprofen and also recovered without immunosuppressive treatment ^[1]. Patient 3 also recovered spontaneously without treatment of either the SARS-CoV-2 infection or the vasculitis ^[1]. The study is promising, but some points warrant discussion.

First, the vasculitis was not confirmed by digital subtraction angiography (DSA), computed tomography angiography (CTA), magnetic resonance angiography (MRA, black-blood sequences), or biopsy. FDG-PET can be misleading in the diagnosis of vasculitis, as it can be confused with atherosclerosis or even dissection ^[2].

The second point is that no cerebral imaging was performed in patient 1 ^[1]. The patient had been suffering from headaches for two weeks prior to admission ^[1]. Vasculitis of the aorta and carotid arteries does not explain the headaches. Did the patient also have vasculitis of the small intracerebral arteries? What was the cause of the headaches, and what were the results of the cerebrospinal fluid (CSF) analysis? It is known that SC2I can be complicated by immunoencephalitis or meningitis ^[2].

The third point is that the causal relationship between SC2I and vasculitis in patient 2 is unclear. The patient had a cough and fever for one month ^[1]. SC2I was diagnosed no earlier than one month later and manifested with crackles and ground-glass opacities ^[1]. It is highly unusual for SC2I to remain undetected for a month during the pandemic. Why was the patient not investigated for infectious causes of the cough earlier? The patient had a history of lung abscess ^[1]. What type of bacteria was identified as the cause of the abscess, and what treatment did he receive for the lung abscess? Is it possible that this was a relapse of the previous lung infection?

The fourth point is that it is unusual for the SC2I-associated large-vessel arteritis to resolve spontaneously in all three cases without treatment ^[1]. Large-vessel vasculitis usually resolves only with the administration of glucocorticoids, tocilizumab, methotrexate, TNF-alpha blockers, immune-checkpoint inhibitors, or JAK inhibitors ^[3]. The lack of need for immunosuppressive therapy suggests that the PET findings may have been misinterpreted. Hypermetabolism on FDG-PET can also occur in atherosclerosis, as this is also considered an inflammatory disease. False-positive FDG-PET results leading to a misdiagnosis of vasculitis may also be caused by a delayed tracer scan interval, which may lead to the vascular uptake being misinterpreted as suggestive of large-vessel vasculitis ^[4]. Knowledge of technical sources of error in FDG-PET interpretation is crucial to assess the need for immunosuppression and the safety of continued immune checkpoint inhibitor therapy ^[4].

In summary, large-vessel vasculitis following SC2I should not be diagnosed solely by FDG-PET, but should be confirmed by conventional imaging techniques or biopsy. Large-vessel vasculitis detected by FDG-PET that has resolved without immunosuppressive therapy is highly likely to be a false positive result.

Declarations**Ethical Approval:** Not applicable.**Consent to Participation:** Not applicable.**Consent for Publication:** Not applicable.**Funding:** None received.**Availability of Data and Material:** All data are available from the corresponding author.**Completing Interests:** The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.**Author Contribution:** JF was responsible for the design and conception, discussed available data with coauthors, wrote the first draft, and gave final approval. FS and CS: contributed to literature search, discussion, correction, and final approval.**Keywords:** SARS-CoV-2 Infection, Large Vessel Vasculitis, FDG-PET, Aortitis, COVID-19**References**

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