



# Journal of Acute Disease

## Letter to Editor



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## COVID-19 vaccine-related retinal vascular occlusion

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Retinal artery or vein occlusion (RAVO) is the ocular analog of cerebral stroke, and the iatrogenic causes, such as vaccines, were reported[1]. The popularity of COVID-19 vaccines caused concerns about their potential association with RAVO[2,3]. To investigate this potential association, we searched PubMed, MEDLINE, and EMBASE on March 28, 2023, with the following keywords: ["retinal artery occlusion" OR "retinal vein occlusion"] AND "COVID-19 vaccines".

Narrative reviews were available on case reports and series. However, these publications have a major drawback of lacking control groups to prove a correlation. Excluding case reports and case series, we found only two original research studies[4,5]. In the Germany multi-center case-control study, Feltgen *et al.* found no increased risk of RAVO after 1st dose of COVID-19 vaccines, no matter the overall RAVO or subgroup analysis[4]. However, no boosters for COVID-19 vaccinations were included, and the types of vaccines were not specific (including both mRNA and viral vector vaccines). Therefore, caution should be paid to its interpretation.

Hashimoto *et al.* investigated 2nd booster doses of COVID-19 vaccines in their cohort, however, retinal artery occlusion was not studied[5]. This Japanese cohort showed no increased risk of retinal vein occlusion (RVO) after 1st dose of COVID-19 vaccination, but an increased risk of RVO after 2nd dose. Despite a positive finding in the matched cohort part, their study found no increased risk in the self-controlled case series method, a method which is often used to investigate the association between vaccination and adverse events for time-invariant confounders. Hashimoto *et al.* pointed

out that the discrepancy might be caused by the confounding factor of body mass index, which was a known risk factor for RVO, but not a studied data item in their cohort study[5]. Given the uncertain conclusions presented above, further studies are needed to evaluate the correlation of either 1st or booster doses of COVID-19 vaccination with RAVO.

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### Conflict of interest statement

The authors report no conflict of interest.

### Authors' contributions

SCLA developed the concept, and WYL acquired the data. Both authors contributed to the analysis and interpretation of the data and writing the article.

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