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Vacunas

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Carta al Director

Optic neuritis associated with COVID-19-related vaccines



Neuritis óptica asociada a las vacunas relacionadas con COVID-19 vacunas

Dear Editor;

There were more than 634,754,573 COVID-19-infected cases and 6,609,414 global deaths from SARS-CoV-2 infection by November 2022, as the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) pandemic continues to spread worldwide. It is imperative in this case to create effective SARS-CoV-2 vaccinations as a strategy to lessen the severity of the illness and subsequent deaths.¹ Adenoviral vectors (AstraZeneca and Janssen), messenger RNA (m-RNA)-based vaccines (Pfizer and Moderna), and inactivated virus are three vaccine categories that have been approved by the World Health Organization to prevent SARS-CoV-2 illness (as Sinovac). In phase 3 randomized studies, these vaccine doses were not associated with significant adverse effects.² However, given the substantial side effects associated with COVID-19 vaccinations and the quick and extensive clinical use of these vaccines, they must be further evaluated. Another issue that continues to be difficult is the clinical effectiveness of SARS-CoV-2 vaccinations in immune-compromised people.³

Early observations indicate that COVID-19 infection causes ocular symptoms via both direct invasion and indirect immune-mediated processes.⁴ In this respect, it is known that SARS-CoV-2-infected people have ocular symptoms like conjunctivitis, scleritis, orbital inflammation, keratitis, and retinal damage.⁵ However, after receiving the COVID-19 vaccine, reports of neuro-ophthalmic symptoms have been made. The literature states that after receiving the COVID-19 vaccine, ocular issues involving the ophthalmic uvea, optic nerve, retina, orbit, cornea, and retinal vessels, as well as cranial nerve palsies (such as those affecting the oculomotor, abducens, and facial nerves), have emerged.⁶⁻⁸ Additionally, after receiving the SARS-CoV-2 vaccine, optic neuritis, an uncommon demyelinating effect, has been reported.

Historically, following various vaccinations, central demyelinating symptoms together with additional optic neuritis, acute transverse myelitis, and even acute disseminated encephalomyelitis are frequently documented.⁵ According to

research from England, syphilis (OR: 5.76), mycoplasma (OR: 3.90), and the Epstein-Barr virus (OR: 2.3) are infectious diseases that are correlated with ocular neuritis.⁹ However, after receiving the COVID-19 vaccine's priming dosage, there was an uncommon cluster of severe optic neuritis in UK populations, which was at odds with the epidemiological trends of the previous 22 years. According to Petzold et al.'s review of the neurological adverse effects linked to COVID-19 post-vaccination in the UK, 85 cases of optic neuritis following COVID-19 vaccination had acceptable reviews following treatment.¹⁰ In Taiwan, Lee and colleagues reported the first case of optic neuritis after a second vaccination with OxfordAstraZeneca, stating that early detection and treatment may help to stop demyelinating progression in those cases¹¹; Optic neuritis has reportedly occurred following administration of different COVID-19 vaccines, such as mRNA-1273, BNT162b2, or Ad26.COV2.S, according to the literature. Historically, influenza, anti-rabies, HPV, and other vaccines have all been linked to optic neuritis. In conclusion, vaccine-induced optic neuritis is an unfortunate side effect, but it seldom manifests.¹² It appears that vaccines and their adjuvants help to induce a strong immune response. As a result, ophthalmic nervous system injuries may occur following reactivation.¹³ However, the absence of adjuvants in some of COVID-19 vaccines on the one hand, and the occurrence of autoimmune reactions (it is the same as in adjuvant-containing vaccines) on the other hand remains a mystery.¹⁴ There are some indications that the COVID-19 vaccine caused anti-CD20 antibodies to be produced and elevated.¹⁵ Furthermore, earlier research suggested that the susceptibility to ocular neuropathies following immunization may be due to an autoimmune mechanism. In this regard, research has demonstrated that post-vaccination optic neuropathy is linked to molecular mimicry, which causes neutralizing antibodies against the SARS-CoV-2 spike protein to cross-react with components of the central nervous system,

particularly the optic nerve.¹⁶ As a result, the condition may also be caused by synergistic interactions involving the autoimmune response, endothelial dysfunction, and comorbidities such as younger age, gender, diabetes, or hypertension.

According to recent cohort data, there is a clear difference between COVID-19 vaccine-induced optic neuritis and prior conventional optic neuritis in terms of disease severity, bilateral presentation, age, gender, and even radiological appearances. AstraZeneca (ChAdOx1) was given to a large number of people who had no prior evidence of neuro-inflammation.¹⁷ Paybast et al., 2022, recently reported six individuals with neuromyelitis optica spectrum disease who developed optic neuritis six days after receiving the COVID-19 vaccine. Two doses of the COVID-19 vaccine were administered to more than 90% of the subjects, 83.3% of whom were female and had numerous comorbid conditions (77%) prior to treatment.¹⁸ The most common ophthalmic neuropathies linked to the SARS-CoV-2 vaccines were also reported by Elnahry and colleagues. They discovered that all COVID-19 vaccines can cause ophthalmic manifestations like anterior ischemic optic neuropathy (AION), optic neuritis (ON), autoimmune optic neuropathy, and leber hereditary optic neuropathy (LHON). This study suggested that after 9.6 ± 8.7 days, younger fetuses were affected by ophthalmic-related adverse outcomes.⁵

In conclusion, the majority of populations tolerate the SARS-CoV-2 vaccination types well. However, there were some negative side effects, notably in people with neuromyelitis optica spectrum conditions, such as mild optic neuritis. The clinical advantages of receiving the COVID-19 vaccine far exceed the hazards. Optic neuritis has unique symptoms and, in the majority of cases, resolves on its own without special care. Therefore, more extensive research is required to address the true prevalence of ocular neuropathies linked to COVID-19 immunization.

Conflict of interest

Nil.

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