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A potential association between COVID-19 vaccination and development of alzheimer's disease

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Abstract

Background: The challenges of the COVID-19 pandemic extend to concerns about vaccine side effects, particularly potential links to neurodegenerative diseases such as Alzheimer's disease (AD).

Aim: This study investigates the association between COVID-19 vaccination and the onset of AD and its prodromal state, mild cognitive impairment (MCI).

Design: A nationwide, retrospective cohort study leveraging data from the Korean National Health Insurance Service was conducted.

Methods: The study, conducted in Seoul, South Korea, analyzed data from a random 50% sample of city residents aged 65 and above, totaling 558,017 individuals. Participants were divided into vaccinated and unvaccinated groups, with vaccinations including mRNA and cDNA vaccines. The study focused on AD and MCI incidences post-vaccination, identified via ICD-10 codes, using multivariable logistic and Cox regression analyses. Patients with vascular dementia or Parkinson's disease served as controls.

Results: Findings showed an increased incidence of MCI and AD in vaccinated individuals, particularly those receiving mRNA vaccines, within three months post-vaccination. The mRNA vaccine group exhibited a significantly higher incidence of AD (Odds Ratio [OR]: 1.225; 95% Confidence Interval [CI]: 1.025-1.464; $p = 0.026$) and MCI (OR: 2.377; CI: 1.845-3.064; $p < 0.001$) compared to the unvaccinated group. No significant relationship was found with vascular dementia or Parkinson's disease.

Conclusions: Preliminary evidence suggests a potential link between COVID-19 vaccination, particularly mRNA vaccines, and increased incidences of AD and MCI. This underscores the need for further research to elucidate the relationship between vaccine-induced immune responses and neurodegenerative processes, advocating for continuous monitoring and investigation into the vaccines' long-term neurological impacts.

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