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Letter to the Editor: Consideration of Neuroimmunological Diseases in Assessments of COVID-19 Vaccination Rates Among Patients With Chronic Medical Conditions

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To the Editor:

We read with interest an excellent paper by Nham et al.¹ on a nationwide cross-sectional study investigating coronavirus disease 2019 (COVID-19) vaccination rates among patients with chronic medical conditions using national health insurance claims data and national immunization registry. This study showed that the vaccination rate of patients with chronic medical conditions was about 10–20% lower than that of the general population, an important result with implications for public health authorities and healthcare providers.¹ This letter discusses the results of this study from a neurology perspective. In particular, we raise the issue of neuroimmunological diseases that were not included among the chronic neurological diseases considered in this study.

In the authors' paper, patients with serious diseases, such as malignancies, had lower vaccination rates than those with less serious diseases, such as isolated hypertension. Accordingly, the authors considered disease severity as an important factor in determining the COVID-19 vaccination rate of patients with chronic medical conditions.¹ We agree that disease severity is a major factor influencing vaccination rates. However, we believe that patient age is a more critical factor. In this study, patients aged 18–39 years had significantly lower vaccination rates for most chronic medical conditions than those aged 40 years and older. In particular, this tendency was more pronounced for the second and third vaccinations.¹ These findings indicate that younger individuals are more hesitant to vaccinate, as noted by the authors, consistent with previous results.² Therefore, to increase the adoption of COVID-19 vaccines including boosters, it is necessary to pay more attention to young individuals and their prevalent chronic medical conditions.

Another noteworthy item in the paper is that, among various chronic medical conditions, systemic lupus erythematosus (SLE) and hematological malignancy featured the lowest vaccination adoption rates.¹ Similarly, in a recent study of 914 adult SLE patients, the COVID-19 vaccination rate was 49.1%, significantly lower than that of the adult general

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population (77.8%).³ One interesting finding in this study was that SLE patients with neuromuscular manifestations tended to be more hesitant to receive the COVID-19 vaccine.³ Accordingly, we must pay closer attention to autoimmune diseases, especially those with neurological manifestations, along with malignancy in COVID-19 vaccination.

Accordingly, we believe that the chronic neurological disease group selected by the authors was overly limited to cerebrovascular and neurodegenerative diseases. This may be a limitation of this study. Neurodegenerative and cerebrovascular diseases, such as Parkinson's disease, Alzheimer's disease, and stroke, mainly occur in elderly individuals and are not prevalent in younger patients. Therefore, we believe that chronic neurological diseases that are important in young people with low vaccination rates are neuroimmunological diseases with a high prevalence among them. In particular, considering that the disease with the lowest vaccination rate in this study (along with hematological malignancy) was SLE, an autoimmune disease, it is essential to consider neuroimmunological diseases in addition to the chronic neurological disease group selected by the authors.

Several recent studies reported that quite a few patients with neuroimmunological diseases such as multiple sclerosis and myasthenia gravis are hesitant to receive the COVID-19 vaccination.^{4,5} In a recent survey-based study of Korean patients with myasthenia gravis, 33.1% (53/160) were hesitant to receive the COVID-19 vaccine, and only 41.3% (66/160) of the population actually did so.⁴ A study of 486 adult multiple sclerosis patients in the United States reported that 15.4% of subjects were reluctant to receive the COVID-19 vaccination.⁵ We recently investigated COVID-19 vaccination rates in patients with multiple sclerosis treated at our hospital. The mean patient age was 40.16 ± 13.64 years; the first, second, and third vaccination rates were 68.4%, 57.9%, and 31.6%, respectively (unpublished data). As such, the COVID-19 vaccination rate of patients with neuroimmunological diseases may be lower than that of patients with other chronic medical conditions in the author's paper, especially in Korea.

The authors' paper presents an interesting topic. However, the lack of neuroimmunological diseases among the examined chronic neurological diseases may be a study limitation. Neuroimmunological diseases are an important group of diseases that health authorities and healthcare providers should consider in relation to COVID-19 vaccination. Further studies of the COVID-19 vaccination rates of patients with these diseases are required.

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The Author's Response: Reply to “Consideration of Neuroimmunological Diseases in Assessments of COVID-19 Vaccination Rates Among Patients With Chronic Medical Conditions”

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Disclosure

The authors have no potential conflicts of interest to disclose.

To the editor:

We appreciate the authors' interest in our study.¹ As the authors pointed out, we found lower vaccination rates in younger people and in those with autoimmune disorders such as systemic lupus erythematosus. It is reasonable to infer that vaccination rates in patients with neuroinflammatory diseases would be significantly lower than the general population and possibly than people with other types of comorbidities. Hence, we agree that data on the actual status of vaccination rates in patients with neuroinflammatory diseases are needed.

While vaccination can reduce symptomatic infections and interpersonal transmission, the primary aim of vaccination is to prevent severe infections and deaths. Not only comorbidities but age itself is a crucial determinant of disease severity. Additionally, older people have more comorbidities than younger people, being a major concern for health authorities. For this reason, we focused on comorbidities common in older people.

Many of the medical conditions included in our study such as cancer, cardiovascular disease, and chronic kidney disease impose high burden on the healthcare system in terms of high prevalence and frequent healthcare utilization. Therefore, we thought that investigating vaccination rates in these patients would be of utmost importance for health authorities to reduce the number of severe cases and nosocomial outbreaks.

Although we did not include patients with neuroinflammatory diseases in our study, we believe that it is possible to bring attention to them by showing the low vaccination rates of patients with rheumatic diseases.

Again, we thank Kim et al. for their interest.

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