

COVID-19 infection and vaccination among children

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Key message

- Coronavirus disease 2019 (COVID-19) infection and immunization have been linked with kidney problems; however, causality has not been proven.
- Concern about confounders is usually needed.
- Correspondence about a published article on the COVID-19 vaccine

We would like to share our ideas about the publication "Kidney complications associated with COVID-19 infection and vaccination in children and adolescents: a brief review".¹⁾ According to Baek and Cho,¹⁾ coronavirus disease 2019 (COVID-19) infection and immunization in children and adolescents have been linked to kidney problems such as idiopathic nephrotic syndrome and various glomerulopathies. Further, the morbidity and mortality of these consequences seem relatively low; more importantly, the connection has not yet been conclusively proven. Considering the compelling data supporting the safety and effectiveness of the COVID-19 vaccine, Baek and Cho¹⁾ stated that vaccine reluctance in these age groups should be addressed.

This brief study offers an overview of kidney problems associated with COVID-19 and immunization in children and adolescents. This emphasizes the possibility of multisystem inflammatory syndrome in children, which may result in acute kidney injury. This study also emphasizes the scarcity of reports on renal problems in this population, such as idiopathic nephrotic syndrome and various glomerulopathies. The limited availability of studies on renal problems linked to COVID-19 and vaccination in children and adolescents is a limitation of this review. The scarcity of data may restrict available knowledge of the occurrence, severity, and long-term consequences of these problems. It is usually difficult to discern the clinical interrelationship if other concurrent problems are not ruled out. COVID-19 and its vaccination may cause kidney problems. There are many reported cases in the literature; however, investigations to rule out comorbidities that may cause kidney problems are incomplete. Among hospitalized COVID-19 patients, advanced-stage acute renal damage is associated with exceedingly high mortality rates.²⁾ Age, male sex, and comorbidities are risk factors for death among COVID-19 patients.²⁾

Any clinical problem occurring after a COVID-19 infection or vaccination might or might not be the result of said infection or vaccination. In more complex cases, kidney problems detected after vaccination may be effects of an unidentified concurrent or prior asymptomatic COVID-19 infection. Furthermore, the review stated that the etiology of such difficulties has yet to be firmly established, implying that further research is required. Asymptomatic COVID-19 patients can present clinically before or after vaccination is received. Asymptomatic COVID-19 may additionally co-occur.³⁾ Without complete diagnostic laboratory testing, it may not be possible to completely rule out asymptomatic clinical problems. The role of genetics is becoming increasingly important. The immune system's response to a vaccine may differ depending on how it reacts to specific genetic traits. Further studies with larger sample sizes and multicenter approaches may be beneficial. It may be possible to conduct in-depth epidemiological studies to examine the relationship between the disease and immunization. In these studies, the prevalence of illness was typically observed in both vaccinated and unvaccinated groups.

As there are few reports on renal issues, further research may seek to collect more detailed information to ascertain the true prevalence of kidney disorders in this population. Understanding the elements that can lead to renal issues in children and teenagers who have experienced the COVID-19 illness or immunization is crucial. Additional research might aim to identify potential risk factors for renal problems, such as age, underlying medical conditions, genetic susceptibility, or particular vaccination formulations. Several background genetic components can affect an individual's response to COVID-19 vaccination. For example, polymorphisms of the tumor necrosis factor- α -related gene are strongly related to antibody production following COVID-19 vaccination and might be associated with different clinical conditions noted thereafter.⁴⁾ A similar observation was reported for the rs1883832 polymorphism (CD40-1C>T) and the variant alleles of ALDH2 and rs671.^{5,6)} T and B lymphocyte phenotypes are also important predictors of the humoral response to COVID-19 vaccination in patients with end-stage renal illness.⁷⁾

Understanding the potential long-term effects of kidney diseases linked to COVID-19 and immunization in children and teenagers is vital. The long-term effects of these problems on renal function, general health, and quality of life should be the subjects

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of further research.

See the article "Kidney complications associated with COVID-19 infection and vaccination in children and adolescents: a brief review" via <https://doi.org/10.3345/cep.2023.00738>.

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