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Acute kidney injury, glomerulonephritis and tubulointerstitial nephritis following vaccination: VigiBase analysis

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Objectives: Vaccination is the long-term established measure for disease prevention and worldwide outbreak of COVID-19 necessitates mass scale vaccination. However, there is a public concern on the risk of renal adverse reactions from several types of vaccination.v

Methods: We analyzed VigiBase (n = 120,715,116 reports), the World Health Organization pharmacovigilance database from Dec 1967 to Jul 2022 using disproportionate Bayesian reporting. Information component (IC) compares observed and expected values to find the associations of vaccines with acute kidney injury (AKI), glomerulonephritis (GN) and tubulointerstitial nephritis (TIN).

Results: We found 5,484 AKI (13.8% fatal), 2,846 GN (29.4% fatal) and 289 TIN reports (23.2% fatal) as vaccine-associated adverse reactions. Almost reports indicated single drug suspected cases (>99.5% reports). The cumulative number of reports on vaccine-associated AKI, GN and TIN gradually increased and Americas was most prevalent regions of reporting. Examining the different vaccines separately, reporting count of COVID-19 mRNA vaccines sharply increased and it solely was associated with significantly higher reporting of AKI (IC_{025} 1.09) and TIN (IC_{025} 0.48). Patients aged 12-17 years had the highest IC values for COVID-19 mRNA vaccine-associated AKI and TIN. Hepatitis B (IC_{025} 3.22), influenza (IC_{025} 2.64) and COVID-19 mRNA vaccine (IC_{025} 2.89) were prominently over-reported among ten types of vaccines with significant signals of GN.

Conclusions: AKI, GN and TIN substantially occurred following vaccination and it was most noticeable in patients exposed to COVID-19 mRNA vaccines. Clinicians should consider the increased risk of renal adverse reactions after vaccination.