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Vigilance regarding drug induced AKI

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Drug-induced kidney disease (DIKD) accounts for 19–26% of cases of acute kidney injury (AKI) in hospitalized patients. Drug, patient, and kidney related factors are associated with increased risk for nephrotoxicity. Generally, dose and duration of drug exposure, immune effects, and combination of nephrotoxic drugs are associated with nephrotoxicity. Recent reports showed that apical (e.g. megallin, P-gp etc) and basolateral (OCT, OAT) drug transports influence on the concentration of drug in proximal tubule, which is related with DIKD. Modulation of these transports could prevent DKID. Some drugs (methotrexate, indinavir etc) are related to crytalline induced nephropathy and cast nephropathy. Recently, it is reported that vancomycin aggregation represents a new mode of tubular cast formation. Drug induced acute tubulointerstitial nephritis (AIN) is a delayed T-cell-mediated hypersensitivity reaction. Drug induced AIN is an important phenotype of DIKD. However, DIKD is often not recognized because there is no standard to identify drug-induced nephrotoxicity. Recently the International Serious Adverse Event Consortium has initiated a phenotype standardization project for drug induced adverse events. They developed the pheontypes of DIKD and proposed that DIKD presents in one of four phenotypes: AKI, glomerular disorder, tubular disorder, or nephrolithiasis/crystalluria. They suggested the criteria of DIKD. 1. The drug exposure must be at least 24 h prior to the event. 2. Reasonable evidence for biological plausibility for the causal drug, based on known mechanism of drug effect, metabolism, and immunogenicity. 3. Complete data (including the medication history, biomarker concentrations, comorbid diseases, concurrent risk factors) is required to account for concomitant risks and exposures to other nephrotoxic agents. 4. The strength of the relationship between the attributable drug and phenotype should be based on drug exposure duration, extent of the primary and secondary criteria met, and the time course of the injury. Further research is needed to validate this criteria. DIKD is related with diverse mechanisms. Clinicians will need to understand these diverse mechanisms and phenotypes of DIKD and make efforts to detect and prevent the occurrence of DIKD at an early stage.