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Commentary: In contrast to what we believe?

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CENTRAL MESSAGE

Contrast-induced acute kidney injury is complex and poorly understood. Recent clinical trials suggest that it is not common and closely associated with certain risk factors.

Waheed and Choi¹ present an invited expert opinion of contrast-induced acute kidney injury (CI-AKI). Patients presenting for cardiac/thoracic surgery often have recent exposure to contrast from diagnostic and therapeutic procedures (eg, coronary angiography or imaging studies). To optimize postoperative outcomes, clinicians strive to risk stratify for CI-AKI after exposure to contrast, potentially leading to delayed surgery or administration of ineffective strategies. The expert opinion concisely summarizes current recommendations for diagnostic criteria, risk factors, and prevention of CI-AKI, helping clinicians make informed, evidence-based decisions for their patients. The most notable takeaway is that CI-AKI is not as common as once thought. Early studies lacked sophistication and did not account for confounding covariates. Multiple risk factors associated with AKI (eg, hypertension, diabetes, and pre-existing renal insufficiency) and commonly used preventative strategies were not adjusted for, thus presenting the illusion that contrast was a contributing factor in AKI. More recent large clinical trials revealed that CI-AKI primarily affects patients with low estimated glomerular filtration rates and diabetes. This is an ideal example of how multiple poorly designed studies can yield erroneous results and change medical practice only to be subsequently refuted by properly designed clinical trials.

There are numerous examples of this phenomenon in our robust evidence-based world. Examples include hormone replacement therapy, use of class IC antiarrhythmic agents, pulmonary artery catheter use, stenting for stable coronary artery disease, and screening practices for prostate-specific

antigen. Prasad and colleagues² coined the term *medical reversal* to signify changes in clinical practice based on superior clinical trials.² The authors reviewed all original articles in the *New England Journal of Medicine* published within a year, and found that 46% of articles constituted medical reversal and another 9% were classified as inconclusive regarding current medical practice. These numbers are staggering, and account for just 1 year in a single prestigious journal. Additionally, Tatsioni and colleagues³ have shown that highly cited observational studies continue to be supported in the medical community, despite subsequent contradictory support from randomized trials. Essentially, once a certain medical practice is established, it continues to propagate even when subsequent evidence does not support it.

How can clinicians make better informed decisions? Understandably, not every medical question is amenable to the gold standard of research design: large randomized controlled trials. For instance, patients cannot be randomized to receive a contrast agent for a diagnostic test. However, important questions can be answered by research trials that are held accountable for robust study design and statistical analysis, free of commercial and political bias. The opinions by Waheed and Choi¹ highlight the missteps in understanding CI-AKI and they call for well-designed trials to address unknown variables. Suggestions that certain practices (eg, immediate hemodialysis to remove contrast, aggressive volume

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expansion, and use of diuretics) for prevention of CI-AKI should be abandoned based on little supporting evidence are laudable. It is a reminder that as gatekeepers for implementation of medical care, clinicians must continually assess available data and abandon practices that are not beneficial.

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