

The anti-inflammatory drug dexamethasone helps prevent serious kidney complications that can arise following heart surgery, according to the results of a randomized clinical trial. The study, entitled "Intraoperative High-Dose Dexamethasone and Severe Acute Kidney Injury after Cardiac Surgery," appears in an upcoming issue of the *Journal of the American Society of Nephrology (JASN)*, could lead to a change in care for patients during cardiac operations.

Acute kidney injury is one of the most devastating complications following cardiac surgery. Approximately 1% of patients undergoing cardiac surgery require dialysis to treat severe AKI that arises after surgery, and the incidence is higher among patients with pre-operative chronic kidney disease. These patients experience strikingly high death rates while in the hospital that exceed 40%.

"One percent sounds like a small percentage, however given the fact that each year, over half a million people undergo heart surgery in the United States alone, this means that an estimated 5,000 patients develop renal failure and of those about 2,500 die as a result of this complication," said Kirolos Jacob, MD from the University Medical Center, Utrecht, The Netherlands. He noted that these figures are rising due to the aging population.

Because heart surgery initiates an inflammatory reaction in the body that can have negative effects on the kidneys, Dr. Jacob and his colleagues wondered whether giving patients dexamethasone, an anti-inflammatory drug, could decrease the risk of severe AKI following cardiac surgery. The team analyzed the results of a large randomized controlled trial called the Dutch Dexamethasone for Cardiac Surgery (DECS) trial, which included 4465 patients undergoing cardiac surgery who were randomized to receive placebo or dexamethasone during surgery. The original trial tested whether dexamethasone could reduce the risk of a variety of major postoperative complications. In this analysis, the investigators specifically examined kidney failure and focused on the most severe form: AKI requiring dialysis.

Dexamethasone appeared to protect against the development of severe AKI. Patients who received the drug had about a 2.5-times lower risk of developing AKI requiring dialysis compared with those receiving a placebo.

"The beneficial effects of dexamethasone were particularly present in those who already had pre-existing kidney disease before heart surgery," said Dr. Jacob. "This reinforces the fact that

this drug could be of major importance for the increasing elderly population with pre-existing kidney disease undergoing a heart operation."

The study is the largest randomized, placebo-controlled trial showing a potential benefit of any therapeutic drug for the prevention of severe kidney injury following heart surgery. A single dose of dexamethasone during a heart operation is inexpensive, straightforward, painless, and safe for patients. "These advantages make the intervention very accessible and cost-effective, especially since the costs for dialysis are very high," said Dr. Jacob.

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