

Prophylactic sodium bicarbonate infusion and acute kidney injury after open heart surgery

April 16 2013

Contrary to the positive findings of a previous pilot study, administration of a sodium bicarbonate-based infusion to induce urinary alkalization during and after surgery does not reduce the incidence of acute kidney injury (AKI) and may even cause harm in patients undergoing open heart surgery.

These are the conclusions of a study by Anja Haase-Fielitz of the Otto-von-Guericke-University in Magdeburg, Germany, Rinaldo Bellomo of the Austin Hospital in Melbourne, Australia, and colleagues, published in this week's *PLOS Medicine*, that suggest an infusion of sodium bicarbonate during [open heart surgery](#) is not a useful treatment for preventing AKI following open heart surgery.

The authors conducted a multicenter, double-blinded, randomized controlled in 350 adult patients undergoing open heart surgery with the use of cardiopulmonary bypass. Patients received either 24 hours of intravenous infusion of sodium bicarbonate or [sodium chloride](#) (saline control) at the beginning of surgery.

The results showed that a significantly larger proportion of patients receiving sodium bicarbonate developed AKI after surgery, as compared to those receiving saline control. Based on these findings the study was terminated before planned recruitment was completed. A key limitation of the study is that a greater proportion of patients receiving sodium

bicarbonate had [chronic kidney disease](#) prior to surgery compared to those receiving saline control. After controlling for this difference at baseline, there were no longer significant differences in AKI outcomes between the groups. However, it was observed that a significantly greater proportion of patients receiving sodium bicarbonate died in the hospital after surgery compared to patients receiving saline control.

The authors say: "Urinary alkalization using sodium bicarbonate infusion was not found to reduce the incidence of acute kidney injury or attenuate tubular damage following open heart surgery; however, it was associated with a possible increase in mortality."

They add: "On this basis of our findings we do not recommend the prophylactic use of perioperative infusions of [sodium bicarbonate](#) to reduce the incidence or severity of acute kidney injury in this patient group."

More information: Haase M, Haase-Fielitz A, Plass M, Kuppe H, Hetzer R, et al. (2013) Prophylactic Perioperative SodiumBicarbonate to Prevent Acute Kidney Injury Following Open Heart Surgery: A Multicenter Double-Blinded Randomized Controlled Trial. PLoS Med 10(4): e1001426. [doi:10.1371/journal.pmed.1001426](https://doi.org/10.1371/journal.pmed.1001426)

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