

Sodium bicarbonate reduces incidence of contrast-induced nephropathy

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A meta-analysis of 17 randomised controlled trials has shown that pre-procedural treatment with sodium bicarbonate based hydration is the optimal treatment strategy to prevent contrast-induced nephropathy (CIN). The research, published in the open access journal *BMC Medicine*, shows that although the benefit may have been overestimated by previous studies, sodium bicarbonate is clearly superior to normal saline.

Hitinder Gurm from the University of Michigan worked with a team of international researchers to study the results of trials featuring a total of 2633 people to assess the effectiveness of saline versus sodium bicarbonate for the prevention of CIN. According to Gurm, "Contrast agents are administered in millions of procedures annually worldwide. In the USA and Europe, contrast-induced nephropathy (CIN) is the third leading cause of acute renal failure in hospitalized patients, accounting for about 10% of hospital-acquired renal failure. Although CIN is generally limited to a transient decline of renal function, it cannot be regarded as a benign complication - as many as 30% of cases result in lasting [kidney damage](#)".

The authors found that CIN occurred in 109 of the 1327 patients treated with sodium bicarbonate and in 175 of the 1306 patients who received normal saline. The number needed to prevent one case of CIN was 16. The exact mechanism of CIN is still unknown, but sodium bicarbonate is thought to prevent it by increasing the alkalinity of tubular fluid and thereby limiting free radical production. Gurm said, "Six studies

monitored the degree of alkalization and all but one found a significant increase. Interestingly this one study did not find a benefit of sodium bicarbonate. Therefore, it could be hypothesized that the bicarbonate should be dosed to achieve urinary alkalization".

More information: Sodium bicarbonate-based hydration prevents contrast-induced nephropathy: a meta-analysis

Pascal Meier, Dennis T Ko, Akira Tamura, Umesh Tamhane and Hitinder S Gurm

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