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Acute kidney injury: diuretics are effective in prevention but not in treatment

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CONTEXT

Acute kidney injury (AKI) significantly affects patient morbidity and mortality. The prevalence of AKI ranges from 2% to 10% among hospitalised patients. Diuretics have demonstrated beneficial effects on kidney function by effectively reducing the energy demands of renal tubular cells. They may have benefits in the prevention and management of AKI.

CLINICAL QUESTION

What are the benefits and harms of administering diuretics compared with placebo, standard care, or no treatment for preventing AKI in patients undergoing surgery, radiological procedures, or requiring admission to an intensive care unit? What are the benefits and harms of administering diuretics in the treatment of patients with AKI?

BOTTOM LINE

In the prevention of AKI, diuretics may reduce the risk of AKI in at-risk patients **(low-certainty evidence)**. They probably reduce mortality and the need for kidney replacement therapy **(moderate-certainty evidence)**. Evidence suggests that diuretics may result in little or no difference in the need for permanent dialysis **(low-certainty evidence).**

Regarding adverse effects, the use of diuretics may result in little or no difference in the occurrence of hypotension or hypokalaemia **(low-certainty evidence)**. The evidence is very uncertain regarding the occurrence of arrhythmias **(very low-certainty evidence)**. Diuretics may result in little or no difference in changes in serum creatinine at 30 days **(low-certainty evidence).** The evidence is very uncertain regarding the effect of diuretics on changes in urine output **(very low-certainty evidence).**

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In the treatment of AKI, evidence suggests that diuretics may result in little or no difference in mortality or the need for kidney replacement therapy **(low-certainty evidence).**

Regarding adverse effects, the use of diuretics may increase the risk of hypotension **(low-certainty evidence)** and probably increases the occurrence of arrhythmias **(moderate-certainty evidence).** In contrast, diuretics may result in little or no hypokalaemia **(low-certainty evidence).** The evidence is very uncertain regarding the effect of diuretics on changes in urine output **(very low-certainty evidence).**

CAVEATS

Furosemide and natriuretic peptides were the most frequently studied diuretic treatments. The level of evidence for the main outcomes was considered low because of a high risk of bias in most studies and heterogeneity in several analyses, sometimes greater than 50%, related to the diversity of therapeutic scenarios studied. The population selected in this meta-analysis to assess the effects of diuretics on the prevention of AKI was restricted to at-risk patients, limiting the generalisability of the review conclusions.

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Author contributions

All authors contributed equally and validated the final version of record.

Declarations

Conflicts Of Interests

The Authors declare that there is no conflict of interest.

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Registration

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Data availability statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.

Ethical approval

Ethical approval for this study was not required.