Incidence of postoperative death and acute kidney injury associated with i.v. 6% hydroxyethyl starch use: systematic review and meta-analysis.


BACKGROUND: Trials suggest that the use of IV hydroxyethyl starch (HES) solutions is associated with increased risk of death and acute kidney injury (AKI) in critically ill patients. It is uncertain whether similar adverse effects occur in surgical patients.

METHODS: Systematic review and meta-analysis of trials in which patients were randomly allocated to 6% HES solutions or alternative i.v. fluids in patients undergoing surgery. Ovid Medline, Embase, Cinhal, and Cochrane Database of Systematic Reviews were searched for trials comparing 6% HES with clinically relevant non-starch comparator. The primary end-point was hospital mortality. Secondary endpoints were requirement for renal replacement therapy (RRT) and author-defined AKI. Pre-defined subgroups were cardiac and non-cardiac surgery.

RESULTS: Four hundred and fifty-six papers were identified; of which 19 met the inclusion criteria. In total, 1567 patients were included in the analysis. Dichotomous outcomes were expressed as a difference of proportions [risk difference (RD)]. There was no difference in hospital mortality [RD 0.00, 95% confidence interval (CI) -0.02, 0.02], requirement for RRT (RD -0.01, 95% CI -0.04, 0.02), or AKI (RD 0.02, 95% CI -0.02 to 0.06) between compared arms overall or in predefined subgroups.

CONCLUSIONS: We did not identify any differences in the incidence of death or AKI in surgical patients receiving 6% HES. Included studies were small with low event rates and low risk of heterogeneity. Narrow CIs suggest that these findings are valid. Given the absence of demonstrable benefit, we are unable to recommend the use of 6% HES solution in surgical patients.