

This is a Fresenius Medical Care summary of:

Clinical evidence on hemodiafiltration: A systematic review and a meta-analysis

Mostovaya IM et al. The Netherlands, Semin Dial. 2014;27(2):119-127

Introduction

Three large randomised controlled trials (RCTs) compared mortality in patients on dialysis receiving hemodiafiltration (HDF) with patients on conventional hemodialysis (HD). The primary analysis in CONTRAST and the Turkish HDF trial showed no statistically significant benefit for HDF on mortality, whereas the ESHOL trial showed a risk reduction for all-cause mortality of 30%. Consistently, post hoc analyses in all three trials suggested a dose-response effect: the higher the convection volume, the higher the mortality benefit for patients receiving HDF. To further investigate this finding, the official ERA-EDTA working group EUDIAL performed a meta-analysis based on a systematic literature search.

Objective

The objectives of this meta-analysis were to investigate whether HDF as compared with HD reduces all-cause mortality and cardiovascular (CV) events, and to assess whether there is a dose response relationship between the clinical outcome and convection volume.

Design

In a PubMed database search, RCTs comparing HDF with HD and assessing clinical outcomes including all-cause or CV mortality were reviewed. Six RCTs (including CONTRAST, the Turkish HDF and the ESHOL trial) comparing mortality in HDF with HD met the criteria for analysis.

Results

- Overall, all-cause mortality was significantly lower in the HDF group than in the HD group. The relative mortality risk decreased by 16%.
- The relative CV mortality risk decreased by 27% in the HDF group. For this analysis three of the six trials contributed data.
- Three of the five RCTs included information about the achieved convection volume. Higher convection volumes were associated with a lower risk of mortality, a finding that persisted after various adjustments for potential confounders.

Conclusion

This meta-analysis suggests that post-dilution HDF has benefits in all-cause mortality and CV mortality versus HD.

Furthermore, the data support a dose-response relationship between the mortality benefit and convection volume. The possibility of residual confounding such as that caused by vascular access quality and the possibility of an impact on the blood flow rate is not completely impossible.

According to the authors: "The evidence presented in this analysis supports a wider acceptance of HDF" and "...the larger the convection volume, the better the outcome".