ADVOS
by HepaWash

LITERATURE-SERVICE 12 | 18

Dear Sirs and Madames, Dear ADVOS users and interested persons,

we are pleased to present another edition of our monthly ADVOS Literature-Services today. Each month, we select one or more papers from international journals that may be of interest to you in context of the ADVOS procedure.

A PILOT STUDY EVALUATION THE EFFECT OF COOLER DIALYSATE TEMPERATURE ON HEMODYNAMIC STABILITY DURING PIRRT IN AKI.

FY Edrees et al.

Background
Hemodynamic instability is a common complication of RRT in critically ill patients, which leads to increased vasopressor use, inadequate delivery of prescribed therapy, and decreased ultrafiltration during RRT with resultant volume overload.

Cooler dialysate (35.5 – 36°C) temperatures, as compared to 37°C, have been associated with hemodynamic stability during hemodialysis in patients with End Stage Renal disease (ESRD). The objective of this pilot study is to evaluate the efficacy of lower dialysate temperature in the prevention of intradialytic hypotension (IDH) in critically ill patients with AKI undergoing prolonged intermittent RRT (PIRRT).

Methods
This was a prospective, randomized cross-over trial to evaluate the effect of a cooler dialysate temperature on the hemodynamic stability of critically ill patients with AKI who required RRT. Patients assigned to group A started the first PIRRT session with dialysate temperature of 37°C followed by a session with lower dialysate temperature (35°C) and alternating thereafter for a maximum of eight sessions or discontinuation of PIRRT. Patients in group B started with lower dialysate temperature (35°C) for the first session followed by 37°C dialysate temperature and alternating treatments.

PIRRT is dosed to achieve a standard weekly Kt/V of 2 – 4 using the NxStage System One with blood flow of 300 mL/min and dialysate flow of 2 – 8 L/hr. The Primary endpoint was frequency of IDH, which was defined as decrease in systolic blood pressure by greater than or equal to 20 mm Hg or a decrease in MAP by greater than or equal to 10 mm Hg or the need for intervention (such as IV fluids, initiation or increase of vasoactive drugs, decrease of ultrafiltration rate, or termination of dialysis) to maintain a blood pressure target prespecified by the ICU team.

Results
A total of 10 patients in group A and 11 patients in group B underwent a combined 78 PIRRT treatments and were included in the analysis. The rate of hypotensive events more than doubled during PIRRT sessions with dialysate temperature of 37°C compared with 35°C. Treatment sessions with cooler dialysate were more likely to achieve target ultrafiltration goals (83.8% vs. 92.5%, p = 0.04).

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The use of vasopressors at the time of enrollment and at the start of the PIRRT session were significantly associated with increase in number of hypotensive events. Higher mean diastolic blood pressure prior to initiation of therapy, sepsis, and liver disease were associated with decrease in hypotensive events. However, patients with sepsis and liver disease were more likely to have hypotensive events with dialysate temperature of 37°C, but the difference was not statistically significant.

The authors conclude:

The use of cooler dialysate is an effective way to decrease the frequency of IDH during PIRRT. Prevention of hemodynamic instability during RRT can help to achieve the desired ultrafiltration goals in patients with AKI. Patients with sepsis and liver failure patients may require even lower dialysate temperature to show an effect.

We think that:

It is very commendable to the authors to address the issue of blood pressure stability in hemodialysis treatment in intensive care patients. Prevention of hypotension during extracorporeal support is essential in preventing adverse outcomes. To achieve this goal, a lower dialysate temperature may be helpful. In fact, this study showed that lowering the dialysate temperature to 35 ° C reduced the number of hypotensive events.

The problem here is that the already existing catabolism can be enhanced by the backlash of the body against the hypothermia. In chronic kidney dialysis, patients actually get chills, depending on the dialysis temperature. This leads to an increase in calorie consumption. How far this plays a role in intensive care patients, since opiates prevent this effect, for example, is unclear. How far this is an acceptable side effect or in which patients the lowering of the dialysate should possibly be used most sensibly must therefore be assessed individually yet.

Especially in the proposed patient group with sepsis and liver disease, catabolism is also a big problem. Patients with decreased body temperature also have an increased risk of infection. Which method is optimal in which patient group: slow ultrafiltration with extended dialysis times or shorter dialysis times is not yet clear enough in our opinion.

Enclosed you will find the abstract of this study. If you have further questions or suggestions or are you interested in the fullversion of this study - please contact us at marketing@hepawash.com.

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