

Comment on: A Comparison of the Effects of 20% Mannitol and 3% NaCl on Coagulation Parameters *In Vitro* using ROTEM: A Prospective Randomized Crossover Study

Yorum: %20 Mannitol ve %3 NaCL Solüsyonlarının Koagülasyon Parametreleri Üzerine Etkisinin *In Vitro* Olarak Karşılaştırılması: Prospektif, Randomize Çapraz Çalışma

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Dear Editor,

I read the article titled "A Comparison of the Effects of 20% Mannitol and 3% NaCl on Coagulation Parameters *In Vitro* using ROTEM: A Prospective Randomized Crossover Study" by Ali et al. (1) with great interest. This study analysed the effects of mannitol, hypertonic saline (HS) and hydroxyethyl starch (HES) on coagulation. The methodology was meticulous, and it was designed to simulate clinical situations.

I have some comments on that article.

The concentrations of solutions in the bar diagram (Figure 2 of that article) should be 0.14 and 0.16 instead of 1.14 and 1.16, respectively. This is a typographical error only and can be ignored as the bar diagram correctly depicts the concentrations.

The authors stated in the Discussion section that 'Similar to our study, Luostarinen et al. (2) showed that HS is more problematic than mannitol with respect to coagulation'. However, HS was 'less problematic' than mannitol factually. Luostarinen et al. (2) had compared 0.9%, 2.5% or 3.5% HS with 15% mannitol in a total of 10% and 20 % haemodilutions *in vitro* and concluded that coagulation was impaired more by 15% mannitol than by equi-osmolar 2.5% saline. Although 20% mannitol and 3% saline are almost equi-osmolar (1098 vs. 1024 mOsm/L), as mentioned in the introduction of that article (1), the dilutions were more in the study by Luostarinen et al. (2): 7 or 14% (1) vs. 10 or 20% (2).


I also believe that the references cited for the sentence 'Previous studies showed that HES, 20% mannitol and 3% HS caused coagulation impairment (7, 11, 12)' in the Discussion section are not matching in certain aspects. For example, Wilder et al. (3) concluded that hypertonic glucose, sorbitol, glucose/glycine, glucose/mannitol/glycine and sorbitol/glycine caused a significantly reduced impairment in platelet function and the plasma coagulation system, whereas hypertonic glycine preserved the

function and integrity of the plasma coagulation system. I am not sure about the concentrations of various solutions tested in that study (3), although Ali et al. (1) have mentioned them as 20% mannitol, 3% HS in this sentence.

This sentence correlates with the references regarding HES (4, 5), albeit with the various concentrations.

Casutt et al. (4) compared the effects of *in vitro* haemodilution on blood coagulation with a balanced 6% HES 130/0.42 solution, a saline-based 6% HES 130/0.4 solution, a balanced lactated Ringer's solution and a saline-based 4% gelatin solution and concluded that all colloid solutions produced similar effects on coagulation (4).

Hanke et al. (5) analysed the effects of HES in HS, 7.2% HS, 6% HES and isotonic saline as the control group in various dilutions (5%, 10%, 20%, and 40%) and observed that HES in HS caused more effects on coagulation as the dilution increased. Hence, the type of HES, i.e. HES in HS, and the dilutions played a significant role (5). Furthermore, the concentration of saline used in that study by Hanke et al. (5) was 7.2% and not 3% as mentioned in this sentence by Ali et al. (1).

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Authors' Reply

Re: Comment on: A Comparison of the Effects of 20% Mannitol and 3% NaCl on Coagulation Parameters *In Vitro* using ROTEM: A Prospective Randomized Crossover Study

Yorumu Cevap: %20 Mannitol ve %3 NaCl

Solüsyonlarının Koagülasyon Parametreleri Üzerine Etkisinin *In Vitro* Olarak Karşılaştırılması: Prospektif, Randomize Çapraz Çalışma

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Dear Editor,

We would like to thank Dr. Raghuraman for taking an interest in our manuscript published in the *Türk J Anaesthesiol Reanim*. The primary concern about our study in the letter was the presence of typical errors in the figure and text. As you have mentioned, Figure 2 requires typographical corrections. Luostarinen et al. (1) found that mannitol is more problematic

than HS in terms of coagulation, which was a finding similar to what we observed. It was misrepresented in the text as you have mentioned. In the Discussion section, as you mentioned, we attempted to provide general information about fluid-dependent coagulation impairment and different hypertonic saline concentrations that were used in previous studies. However, our study and previous studies found that mannitol and HS affect fibrinogen–fibrin interaction.

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