Reviewer's report

Title: Determination of Iron Sucrose (Venofer) or Iron Dextran (DexFerrum) removal by hemodialysis: An In-Vitro Study

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Reviewer: D Schneditz

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In their manuscript entitled "Determination of iron sucrose (Venofer) or iron dextran (Dexferrum) removal by hemodialysis: An in-vitro study" the authors H.J. Manley and D.W. Grabe report that the loss of iron from a simulated blood system (SBS) dialyzed for a duration of 4 hours with conventional or high efficiency dialyzers was essentially insignificant, whether simulations were accompanied by ultrafiltration or not. The manuscript is clearly written and the result is of timely interest.

However, some questions remain to be clarified.

Major:

1) The most important point to be clarified relates to the analysis of mass balance of iron during the in-vitro test (Results, pages 11 and 12; Discussion, page 14). For example, the authors observed loss of iron from the SBS without any appearance of iron in the dialysate. More interestingly, the authors also observed a gain in iron in the SBS in other tests. Could it be that the gain of iron measured as an increase in iron concentration in the SBS was due to ¿hemoconcentration¿ caused by uncontrolled ultrafiltration from the SBS? And could it be that the loss of iron in the other experiment was due to uncontrolled "backfiltration" and volume gain in the SBS thus diluting the iron concentration? It is very probable that these paradoxical findings have their origin in volume changes in the SBS: Even with a volumetrically controlled machine such as the 2008H the dialysate flow into and out of the dialyzer is subject to some "balance chamber error". Typically, this error is in the range of 0.3 parts per thousand, thus 4 h of dialysate flow at 800 mL/min will lead to a typical volume shift into (or out of) the SBS of approximately 60 mL, i.e. 1% of the SBS in this study. In the in-vitro system (with untypical line pressures) the error could be larger. The question thus arises, did the authors measure the balancing error or correct for unwanted volume changes in the SBS system?

2) Introduction, page 4: Sucrose is a disaccharide so it is not really clear where the molecular weight of 34000 to 60000 comes from in Venofer? Furthermore, sucrose is be easily dialyzed. Please, clarify.

3) Are the solutions of iron stable in normal saline and in dialysate or do they form the typical Fe(OH)3 gels?

4) Materials & Methods, page 5: Which base was used in the dialysate bath, acetate or bicarbonate? Would the different solubility of iron-acetate or iron-carbonate play a role in the result of the experiment?

5) Page 19, Table 1: It is not clear which experiments were done twice and which were re-run. Please, clarify (in the Table and in the Materials & Methods section) whether the re-run was also done in duplicate or whether the re-run was part of the duplicate measurements.

Minor:
6) Abstract, page 2, line 5 from bottom: change "effect" to "affect".

7) Materials & Methods page 6, last paragraph: use uniform abbreviations and change "cc" to "ml".

8) Page 9, line 5 from top: change "1% x 100" to "1% / 100"

Advice on publication: Unable to decide on acceptance or rejection until the authors have responded to the major compulsory revisions

Level of interest: A paper whose findings are important to those with closely related research interests

Quality of written English: Acceptable

Declaration of competing interests:

None