Reviewer's report

Title: Osmotic and acid-base changes due to acute hyponatremia after cardioplegia by histidine-tryptophane-ketoglutarate - a retrospective study

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Reviewer: Nikolaus NK Kneidinger

Reviewer's report:

In the present study Lindner and coworkers investigated the effect of histidine-tryptophane-ketoglutarate (HTK) solution for cardioplegia on the electrolyte and acid-base state of patients who underwent surgery for minimally invasive aortic valve replacement. They found that all patients experienced rather high declines of serum sodium of about 15 mmol/L after the administration of HTK. However, the authors report that hyponatremia is isotonic and should therefore not be corrected in order to avoid adverse effects of hyperosmolarity. Although there is one study (Kim et al Ann Thoracic Surgery 2011) which reported the incidence of hyponatremia after HTK administration in a pediatric collective, the present work is the first presenting data on measured osmolalities. The findings of Lindner and coworkers are contrary to those of Kim insofar, as the authors come to the conclusion that a correction of hyponatremia occurring after the administration of HTK would result in hyperosmolarity and related adverse events. Although the number of recruited patients is rather low, the data supporting their conclusion is strong and their point is made clear in the discussion section. Additionally, I am not convinced that more than the present number of patients would result in any benefit as far as a research question such as the present is concerned.

The main finding of the study, namely that the hyponatremia which occurs after the administration of HTK solution is isotonic and not hypotonic and should therefore not be corrected is of utmost importance to the clinician. Thus, I only have some minor comments:

1.) The title of the study is long and difficult to read. It should be simplified and shortened.

2.) The results and discussion section is too long and could be shortened.

3.) Discussion – Limitations: “Additionally, measured serum osmolalities were only available for 7 patients. On the other hand, the study is intended to create awareness for the phenomenon of acute isotonic hyponatremia after infusion of HTK solution for cardioplegia.” The fact that measured osmolalities were available for 7 patients only IS a limitation and should not be put into perspective. Please remove this sentence.

Level of interest: An article of importance in its field
Quality of written English: Acceptable

Statistical review: Yes, but I do not feel adequately qualified to assess the statistics.