Reviewer’s report

Title: Circulating levels of lycopene and its possible influence on the oxidative damage and cardiovascular risk in chronic hemodialysis patients

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Reviewer: Douglas M Silverstein

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GENERAL COMMENTS

The manuscript by Roehrs et al describes the prevalence of oxidant species in adult patients receiving chronic hemodialysis (HD). Although some investigators have previously reported the prevalence of these cardiovascular (CV) risk factors, this study contains valuable information.

MAJOR COMMENTS

1) The authors mention that among the 29 HD patients included in the study, only 6 were receiving a vitamin D analog, 17 an erythropoiesis stimulating agent and 11 iron. Since hyperparathyroidism and anemia can impact CV function, my concern is that many of these patients were not optimally treated for CV risk. Please explain the treatment choices.

2) There is no measure of CV function in these patients. It would seem advantageous to have that data.

3) Nutritional intake may have impacted various levels of vitamins and/or lipids. Please provide the following information:
   a. How many patients received a multivitamin
   b. How many were receiving a lipid-lowering agent
   c. How many were receiving nutritional supplementation
   d. Serum Albumin and normalized protein catabolic rates values at the time of the other analyses

4) The authors mention that during two years after the collection of the blood samples 9 (24.1%) patients died, 6 of whom died of CVD. Were the levels of carotenoids and/or anti-oxidants different in this sub-group? The results of that analysis, even if not statistically different b/o small sample size, may be interesting.

5) I assume that the data presented in Figures 1-3 pertains only to HD patients. Is that true? If so, given the “n” values of 49, it would seem that some lab values were measured more than once in certain patients. Please elaborate.

6) Did the authors measure CRP?

7) It would be helpful to provide the “normal” values in the general population for carotenoids and tocopherols levels. Please indicate how many HD patients had
8) Please provide data on hemoglobin, serum calcium, serum phosphorous and PTH. Abnormalities in these indices could have contributed to oxidative stress.

9) Were any patients receiving immunosuppressive medications and/or aspirin during the study period? If so, their data should be excluded or separately analyzed. Similarly, patients with a fever or those using a central venous catheter (even if uninfected by culture b/o risk for inflammation with a catheter) should be excluded.

10) Did dialysis vintage relate to any of the parameters measured?

11) Was there an impact of gender?

12) There are numerous errors in grammar and segments where it is difficult to discern the message. The entire manuscript should be thoroughly reviewed. One example is the first paragraph of the “Background”. The sentence that begins with “Moreover, in CRF patients…” needs complete refining. It is rambling and the message is very confusing.

13) The authors state in the “Discussion” that HD leads to dyslipidemia. Actually, the prevalence of dyslipidemia is reduced in HD compared to CKD. Please consider.

**Level of interest:** An article whose findings are important to those with closely related research interests

**Quality of written English:** Not suitable for publication unless extensively edited

**Statistical review:** No, the manuscript does not need to be seen by a statistician.

**Declaration of competing interests:**

I declare that I have no competing interests' below