Reviewer’s report

Title: A randomized trial of sodium-restriction on kidney function, fluid volume and adipokines in CKD patients

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Reviewer: Nathan W Levin

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This is an important study: in a group of Stage 3 and Stage 4 CKD patients, who have been sodium restricted, compares the effect of continued salt restriction in one subgroup to a second subgroup supplemented with addition of 120 mmol sodium daily. Results are provided for each sub group after run in and washout but baseline data are not given. The paper could benefit by containing a flow diagram as advised by CONSORT.

The results are of great interest, including the lack of effects on inflammatory markers by high sodium intake and the different behavior following salt restriction according to gene polymorphism for angiotensin in regard to various markers.

However, the paper is somewhat confusing: One of the primary aims stated is to assess effects of sodium restriction on kidney function and metabolic markers yet a significant part of the paper deals with sodium loading and the results read as changes in results from the high sodium period to the low sodium period but we do not see results from the low sodium to the high sodium periods, completing the crossover. Actually the study design itself states: “Following a 1-week run-in period, participants were randomized to a high sodium diet (achieved via slow release sodium tablets providing an additional 120 mmol sodium/day) or low sodium diet (placebo) with a 1-week washout” which would not permit comparison of the same subjects under two situations of sodium intake. I am sure that there is an easy answer to this question.

Other aspects: The abstract refers to improvement in kidney function with sodium restriction. Perhaps this refers to reduction in supposed ultrafiltration but is not shown by the GFR measurements as being improved.

The Discussion contains the following: “We also found a significant change in kidney function parameters with a decrease in eGFR mirrored by an increase in creatinine and urate. This is consistent with findings from other studies investigating the effect of sodium load on creatinine clearance showing that a high sodium intake can result in increased creatinine clearance, at least in the short term [24].”

The first sentence surely relates to sodium restriction but is not consistent with the second sentence. Given the many effects occurring it would be useful to give the relevant albumin, protein and creatinine concentrations rather than the ratios only in order to understand what might be changing. The bioimpedance studies
are a little puzzling to have a 0.87 ECF/ICF ratio suggests over hydration even during sodium restriction however the method may have inherent errors.

These are minor criticisms compared to the overall message especially that related to the effect of gene polymorphism's but they should be responded to.

**Level of interest:** An exceptional article

**Quality of written English:** Acceptable

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

**Declaration of competing interests:**

The author could have an opportunity to make this excellent paper publishable.