Reviewer’s report

Title: High-throughput sequencing analysis of intestinal flora changes in ESRD and CKD patients

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Reviewer: Olga C. Balafa

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The relation between CKD and the gastrointestinal (GI) microbiota is an emerging area of investigation. Several studies reveal profound GI microbiota alterations in CKD and ESRD patients, which can impair localized GI function and contribute to increased systemic inflammation. In a recent review (Chung SY, Adv Nutr 2019) only six relevant studies in ESRD patients are published, and only one of these (Wang IK, Appl Environ Microbiol 2012) was performed in PD patients. So, studies like this one is welcome and commendable. Moreover, one main advantage of this study is the correlations between microbiota data with lab data eg albumin levels.

My main comments are

1. In general - from a clinical point of view - this study found that PD patients had a "microbiota profile" much more uremic and pro-inflamed comparing to HD patients, while HD population was nevertheless like CKD population. Two possible clinical reasons - dialysis vintage and lower albumin levels in PD patients - could explain these findings. Now, in CKD populations albumin levels are correlated with systemic inflammation and PD patients in this cohort seem "more inflamed" than HD population (ILs levels, CRP levels etc). Possible reasons for this in this specific cohort could be a) different primary renal diseases. In 24.5% of PD patients, hypertensive nephropathy was the cause of CKD, while in HD was 0%. b) different co-morbidities eg Cardiovascular disease (there is no reference to comorbidities between groups). I suggest that the authors should compare PD - HD populations with same comorbidities and dialysis vintage in order to conclude if the type of dialysis defines the microbiota.

2. The discussion section seems deficient. There is no reference to relevant studies in HD and PD populations (eg Wang IK, Appl Environ Microbiol, 2012), while the authors refer to one Chinese study only (there is a more recently one published Feng Xia Li et al, Front Cell Infect Microbiol, 2019). The authors should compare and mention their findings in relation to published ones and comment on differences or similarities. Finally, they should propose specific aims in future studies.
3. Heymann nephritis (in table 1 and in text) is an experimental type of glomerulonephritis. Which primary renal disease do you mean?

4. In dialysis vintage, you write "h". What is the time unit? hours? or months?

5. In the abstract, you should mention the number of patients included in each group.

6. Why the authors state "in elderly" hemodialysis patients? The mean age in each group is &lt;60 years old.

7. The title should change.."in ESRD and CKD patients" instead of "elderly hemodialysis".

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