Reviewer's report

Title: Long-Term Survival and Predictors for Mortality among Dialysis Patients in an Endemic Area for Chronic Hepatitis: A National Cohort Study in Taiwan

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Reviewer: Bernard Jaar

Reviewer's report:

I read with interest the manuscript by Chien et al., assessing long-term survival and predictors for mortality in dialysis patients living in an endemic area for chronic hepatitis. The authors used the Taiwan National Health Insurance Claim Data to identify 11293 incident HD patients and 761 incident PD patients. Patients had a high prevalence of liver cirrhosis at 6.16%. The authors reported that liver cirrhosis and dementia were independent predictors of mortality but that hypertension was inversely correlated with mortality.

Please find below more specific comments:

Major Compulsory Revisions

Introduction:
- Overall, the introduction is a bit confusing and needs more focus. Are the authors assessing the risk of death between HD and PD in a special population or are they assessing the impact of liver cirrhosis on mortality in that population.

Methods:
- The data source seems good as it reportedly covers almost 99% of inpatient and outpatient claims. Any data on sensitivity and specificity of the underlying diagnosis codes captured by this national database?
- Patients were enrolled if they had survived the first 90 days on dialysis. What was the rationale for this choice? Please clarify. Authors might be missing early mortality related to liver cirrhosis.
- It is surprising that only 86 patients had multiple switches between dialysis modalities. In other prospective cohort studies these numbers are higher.
- It’s unclear if authors maintain in the dataset patients who had only one switch. Please clarify.
- Again, provide rationale why selected comorbidities had to be coded 3 times in the year prior to dialysis when analyzing ambulatory visits. Doesn’t this process decreases your sensitivity for capturing comorbidities?
- Already, using this billing data, there are limited comorbidities, no data on body mass index, on severity of comorbidities, on actual blood pressure values. No data on laboratory values which can affect survival particularly in patients with liver cirrhosis, such as serum albumin. No information on type of vascular access
in use for the hemodialysis patients. No information on medication use, such as blood pressure medications, use of erythropoietin stimulating agents, vitamin D analogs, ...

- One of the main risk factors analyzed was liver cirrhosis. How was this defined? Is it only by ICD-9 codes? If this is the case, this can lead to some significant misclassification as patients might have the disease, maybe subclinical prior to dialysis, maybe not coded during outpatient ambulatory visit or hospitalization. Do you have information about Hepatitis B or C positivity? Maybe interesting to look at data by viral hepatitis positivity and mortality rather than liver cirrhosis.

- From the statistical standpoint, was this an “intention-to-treat” type analyses were switching of dialysis modalities were not considered?

- Proportionality assumption was likely not met as the mortality risk between PD and HD changed overtime.

Results:
- Overall, well presented.
- First paragraph under “demographics”; would be best to report percentage of patients transferred from PD to HD as a percentage of the total PD population, rather than the whole population. Same comment for patients who switched from HD to PD.

Discussion:
- Again, need more focus in term of the goals of the study; are we comparing HD vs PD or looking at the impact of liver cirrhosis in that population?

Minor Essential Revisions

Discussion:
- Would add in limitations, that there is residual confounding as with all observational studies. That there is no causality between these risk factors and mortality. Observational studies report only association and not causation.

Discretionary Revisions

None.

Overall, the current study as presented, does not add much to the current scientific literature. Using this dataset, there is a unique opportunity to assess the impact of chronic liver disease (defined as hepatitis B, C and liver cirrhosis) on dialysis patients’ survival, hospitalization rate, access to kidney transplantation. This could be the focus of a revised manuscript.

Hope these few comments will help the authors improve on their interesting manuscript.

Bernard G. Jaar
Level of interest: An article whose findings are important to those with closely related research interests

Quality of written English: Acceptable

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.