Reviewer's report

Title: Epidemiology and long-term survival in patients with pulmonary arterial hypertension in the Czech Republic: a retrospective analysis of a nationwide registry

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Reviewer: Evan L Brittain

Reviewer's report:

This article by Jansa et al is a well-written description of a national registry implemented in the Czech Republic in 2000. The article reports the usual registry-based data and is a helpful description of PAH in the Czech republic over the last decade or so. The authors provide an excellent and timely update on their previous report from 2000.

There are a few points on which the authors should comment and a few additional data points which should be provided to further improve the manuscript.

Major Compulsory Revisions: none

Minor Essential Revisions: none

Discretionary Revisions:

1. Please comment on the use of different PAH-specific therapies. There is no comment on this in the manuscript. It would be helpful to see trends in medication use over time (e.g. prevalent vs. incident case) and general preferences among the PAH community in the Czech Republic.

2. Why did the survival analysis end in 2010? Inclusion of 2013 data would have allowed calculation of a prospective 5 year follow-up rate for the incident cohort. Are these data not included in the registry through 2013?

3. Why are there so few prevalent cases compared to incident cases? 100 cases diagnosed between 2000-January 2007 and 91 in 2007 alone seems to me an unexpected ratio. Would have expected several fold more prevalent cases than incident. The authors should comment on this discrepancy.

4. Since CTEPH patients were excluded, the authors should specify that their cohort is not "PAH" but "WHO Group I PAH".

5. In the statistical analysis, it is unclear what variables are included in the "multivariate analysis". Are all variables listed in Tables 1 included? If so, the model is overfit and should be limited to a priori variables believed by the clinicians to have the most clinical relevance. In multivariable analysis, each 10-15 cases allows inclusion of 1 variable. At 91 incident cases and 16 variables,
the model is overfit. This may have limited the group’s findings and they should consider reanalysis with 6-8 of the most clinically relevant variables. In the most rigorous analysis, these would be included in the model a priori, not based on forward stepwise regression.

6. On page 12, under "hemodynamic characteristics", the authors assert that the low prevalence of vasoreactivity is related to late presentation - is there data to support this assertion? If so, please provide a reference.

7. On page 13 in the discussion, it may be helpful for the authors to discuss why elevated creatinine is association with worse survival. Is it related to renal vein hypertension and is there an association between high creatinine and right atria pressure?

8. Figure 1B, please make the survival line for APAH-CTD bolder or another color - it is almost imperceptible as is.

9. Based on NYHA class and age, the incident cases would be expected to have more advanced disease but they have less severe hemodynamics. Please comment on this apparent discrepancy.

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 I have no competing interests