Reviewer’s report

Title: Preoperative Prostate Health Index predicts adverse pathology and Gleason score upgrading after radical prostatectomy for prostate cancer.

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Reviewer's report:

The current article demonstrated that the utility of PHI in predicting aggressive PCa and GS upgrading using logistic regression analysis. The high association between PHI and pathological outcomes was interesting and these results impended the usefulness of PHI in determining treatment options in patients with clinical localized and low risk PCa. Nevertheless, there are some concerns.

1. The study cohort consisted of patients with clinically localized PCa and there is no description of pelvis imaging. However, there are some patients who have biopsy GS 7 or greater. They were classified intermediate risk group and usually recommended to perform the imaging studies. How did the authors assess the clinical stage of these patients? If only DRE was performed, there was a possibility to include patients with locally advanced PCa.

2. The authors used clinical stage as variable to make base multivariable model. Similar to the above-mentioned issue, assessment of clinical stage is not provided in the method and the proportion of clinical stage is not shown in the results. If only patients with clinically localized PCa were included in the cohort, how did the clinical stage work as a variable in the analysis?

3. The study cohort consisted of patients who underwent open or laparoscopic RP, and the surgical margin status was included in the pathological variables. However, there are some studies that show that the rate of PSM is significantly different according to the surgical techniques of RP. It is reasonable that the type of surgical techniques is included as a variable in the analysis.

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- Are the statistical test(s) used in this study appropriate and well described?

- Is the exact sample size (n) reported for each experimental group/condition (as a number, not a range)?

- Are the description of any error bars and probability values appropriate?

- Are all error bars defined in the corresponding figure legends?

- Has a sample size calculation been included, or a description and rationale about how sample sizes were chosen?

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