Reviewer's report

Title: Characteristics and outcome in patients with non-specific symptoms and signs of cancer referred to a fast track cancer patient pathway; a retrospective cohort study

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Reviewer: Sangchoon Jeon

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The study demonstrates importance of biochemistry factors to diagnostic a haematological or solid cancer among patients referred to the NSSC-CPP with systemic statistical analyses, but failed to show the association of non-specific symptoms with cancer due to the biased samples with severer symptoms from other chronic diseases. Since those referred patients by GP's decisions had a potential to have more chronic problems, the associations of both biochemistry and symptom factors with cancer could be underestimated. I have no major concern about statistical analyses and interpretations, but have some suggestions for minor issues.

1) In Table 1. Age groups and comorbidity groups should be considered as ordinal variables and a trend test (e.g. Cochran-Armitage Trend Test) would be more appropriate than Chi-square test.

2) I don't understand why the biochemistry factors between cancer and non-cancer patients were redundantly compared both in Table 2 and 3 (Unadjusted analysis). What's the difference between two tests?

3) Although comorbidity was not significantly different between cancer and non-cancer patients, it could be associated with non-specific symptoms and chemistry factors. The associations of non-specific symptoms and biochemistry factors in patients without a chronic condition could be different compared to those with chronic conditions.

4) In diagnosis analysis, pre- (prevalence) and post- test probability provide clinically more informative than odds ratio. The likelihood ratio of post-test probability against pre-test probability will provide how much the odds of the disease increase when a test is positive. Also Area under ROC curve (AUC) of multivariate model including all significant biochemistry would provide an important information to measure the discriminability of overall biochemistry factors.
5) More specific description about sensitivity analysis may be necessary. In Table 4, did they run two logistic models of haematological cancer and solid cancer separately? If so, the same comparison group (i.e. non-cancer populations) was used in both models. I would suggest multinomial model with three response levels including haematological cancer, solid cancer, and non-cancer.

**Are the methods appropriate and well described?**
If not, please specify what is required in your comments to the authors.

Yes

**Does the work include the necessary controls?**
If not, please specify which controls are required in your comments to the authors.

Yes

**Are the conclusions drawn adequately supported by the data shown?**
If not, please explain in your comments to the authors.

Yes

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