Reviewer's report

Title: Intrahepatic blood flow assessment by Doppler ultrasonography: relationship among hepatic vein, portal vein, hepatic artery and portal pressure intraoperatively measured in patients with portal hypertension

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Reviewer: Seyed-Mohammad Fereshtehnejad

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Dear editor of BMC Gastroenterology;
I reviewed the manuscript titled: "Intrahepatic blood flow assessment by Doppler ultrasonography: relationship among hepatic vein, portal vein, hepatic artery and portal pressure intraoperatively measured in patients with portal hypertension".

It seems that the manuscript contains some interesting and new information for both radiologists and gastroenterologists. However, in my opinion some major revisions are needed. My recommendations and questions are listed as follow:

Abstract
• In addition to the patients, the presence of a control group must be also mentioned in the "Methods" section of the abstract.

Introduction
• In regard to the focused subject of BMC Gastroenterology journal, it is better to mention some evidences in relation with hepatic diseases as well as radiologic aspects of this subject in the "Introduction" section of the manuscript.

Methods
• More detailed information of patients and control groups should be stated in the "Patients" section of "Methods". This could be included patients diagnosis and selection, full eligible criteria of both case and control groups, source of control selection, sample size calculation, etc.

• Evaluating the factors which are considerably related to baseline characteristics like age, gender, etc need to be matched between patient and control groups regarding these potential confounding factors. Was it considered in this study? If yes, please mention the details in the "Patients" section of "Methods".

• As some measurements are not performed in controls, it is recommended to more clearly declare which indexes are measured in each groups of the study.

Results
• Please add the baseline characteristics of the control group to Table 1, and compare the differences of these factors between two groups of the study.
• Please mention the measurement units wherever it is needed (e.g. line 13 of
"Results" section).

• How did the authors evaluate the confounding effects of some baseline characteristics (e.g. patients' age) in the relationship found between HV waveforms and PP? Or HAPI and HV waveforms? Are these variables considered in linear regression models?

• It is recommended to add the boxplots for PVVel and HAPI of control group in Figures 2 and 3, respectively; and state the P-value of comparisons with control data as well.

• Although it is previously studied in other manuscripts, it is recommended to evaluate the relationship between histopathological findings (e.g. severity of cirrhosis and grade of fibrosis) and these radiologic indexes in the "Results" section of the manuscript, too. It will help to better understanding of the association between severity of liver disease and hepatic hemodynamic and make it more useful for gastroenterologists.

Discussion

• How did the authors conclude that "Of these parameters, HAPI seemed more sensitive to reflect abnormal HV waveforms."? Considering the statistical approaches, receiver operating characteristics curve (ROC) analysis must be performed to evaluated the diagnostic values (e.g. sensitivity) of different continuous variables to predict a dichotomous outcome (e.g. normal vs. abnormal HV waveform). However, it is recommended to perform ROC statistical procedure in order to estimate and compare the diagnostic values of these indexes to predict abnormal HV waveform or even high grade versus low grade fibrosis. It is also of interest to derive the appropriate cutoff points for each measurement as well.

• As it is declared within the limitations of current study, it is not ethical to rule out possible liver abnormalities in control group by biopsy. Since it is known, normal liver function test is not acceptable enough to evaluate some common conditions like NAFLD. Therefore, was fatty infiltration evaluated in control group using non-invasive methods such as ultrasonography of liver parenchyma?

Best regards
SM Fereshtehnejad M.D. M.P.H.

Level of interest: An article of importance in its field

Quality of written English: Needs some language corrections before being published

Statistical review: Yes, and I have assessed the statistics in my report.

Declaration of competing interests:

I declare that I have no competing interests.