

Dear reviewers,

Thank you for your advices in my manuscript (No. 81695), and I have made revisions according to your suggestions.

### **Reviewer 1**

**Comments:** This manuscript is readable and interesting. The authors explored the feasibility of CT perfusion imaging in quantitatively evaluating hepatic venous pressure gradient, and the blood supply changes in liver and spleen for PH patients, and make correlation analysis between perfusion CT parameters and hepatic venous pressure gradient. The study is well performed and the results are interesting. A minor editing is required.

**Reply:** Thank you for your advice! I will make revisions according to your suggestions.

Thank you again!

### **Reviewer 2**

**Comments:** 1 Title. The title is Appropriate 2 Abstract. Appropriate 3 Key words. The keywords should be different from the title 4 Background. Appropriate 5 Methods. Statistical analysis should contain more detail. Quantitative indices before and after TIPS, including LBV, HAF, LBF, SBV, were compared, and the correlations with HVPG and Child-Pugh stage were analyzed with which tests? 6 Results. The authors used some additional explanations while reporting the results. These kinds of sentences belong to the discussion. Please revise. 7 Discussion. - Clinical implication of these results must be speculated and discusses. - "HVPG is the gold standard for the diagnosis of PH.[1, 4] PH can be divided into two groups depending on the HVPG value (greater than or equal to 10 mmHg), namely CSPH and NCSPH groups. Studies have shown that the proportion of various complications in the CSPH group is significantly higher than that in the NCSPH group.[28] The

results of this study showed that the proportion of hepatic arterial blood supply in the CSPH group was significantly higher than that in the NCSPH group before operation, but there was no significant difference in LBF and LBV, suggesting that the changes of blood flow in the liver parenchyma are not determined by HVPG only, but also affected by other factors when PH occurs, such as venous to venous collaterals in the liver parenchyma, arterio-portal fistula, and even the pathological degree of liver fibrosis. Therefore, HVPG is only a diagnostic index of PH, which cannot reflect the composition ratio and perfusion volume of effective blood flow in the liver parenchyma, nor can be used to evaluate the blood flow changes after TIPS. “ This paragraph contradicts with the following paragraph. They should be reorganized and combined. The stability of the correlation of the parameters after TIPS surgery must be discussed. Should we understand that TIPS does not create any difference in the hemodynamics of the liver?? How the authors explain this result? - Conclusion part should contain some speculations about clinical impacts. 8 Illustrations and tables. Some CT images of the patients, especially the complicated ones with perfusion measurements and color coded maps must be added. 9 Biostatistics. Please see methods section. 10 Units. Appropriate 11 References. Appropriate 12 Quality of manuscript organization and presentation. Average, please see above. 13 Research methods and reporting. Appropriate 14 Ethics statements. Appropriate

Reply: Thank you for your kindly suggestions, and I have made revisions according to your advice in the manuscript, and the explanations were as follows:

1. Key words, the key words were revised according to your advice;
2. Methods. Statistical analysis was added the specific method in the manuscript as follows, Quantitative indices before and after TIPS, including LBV, HAF, LBF, SBV, were compared with pair-sample t-tests, and the correlations with HVPG and Child-Pugh scores were analyzed with pearson correlation analyses, with P value less than 0.05 considered

significant.

3. Results. I have removed the additional explanations in this part of manuscript according to your advice.
4. Discussion. In this paragraph, we discussed the capacity of CT perfusion in discriminating CSPH and NSCPH. After reviewing this part, we found that we haven't expressed our points clearly, and combined the results before and after TIPS surgery in one sentence. Besides, some sentences haven't been correctly written, so it led to the misunderstanding of the meanings. Therefore, we have re-wrote this paragraph according to your suggestions. Thank you for your advice and patience again!
5. Conclusions. We have added the clinical applications in this part.
6. Illustrations and tables. We have added the CT images and color-coded maps in the illustrations.
7. Biostatistics. We have added the methods in this part.

Thank you for your advices again!

Yours sincerely