

Peer Review File

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Reviewer A

<1> The authors should describe the definition of chronic liver disease (CLD) in more detail.

Our response:

In the revised methods section, we added the following sentence:

“CLD was defined as a condition in which hepatitis was confirmed to persist for more than 6 months.” (Please see line 96-97)

<2> In addition to chronic liver disease, sarcopenia can be related to other medical conditions such as malignancy, heart failure, or malnutrition. Did the authors exclude these comorbidities?

Our response:

In the revised methods section, we added the following sentence:

“Patients with far advanced HCC, other advanced malignancies, severe heart failure, sever ascites or severe malnutrition were not included.” (Please see line 104-105)

<3> In the multivariate analysis, male gender is one of the significant factors that were associated with OS. Did the authors have any specific explanation?

Our response:

Thank you for your valuable comments. In the revised discussion section, we added the following sentences:

“Male was an independent adverse predictor in our analysis. One possible reason for these is that the prevalence of HCC at baseline between male and female was significantly different (5.2% (16/309) vs. 1.9% (6/322), $P=0.0290$).” (Please see line 293-295)

<4> Discussion, Line 241-243: Advanced age was not a significant factor linked to the OS, whereas the it is mentioned that skeletal muscle atrophy undoubtedly occurs with ageing in the text, please explain these discrepant results.

Our response:

Thank you for your valuable comments. In the revised discussion section, we added the following sentence:

“These results may be attributed to the impact of secondary sarcopenia caused by CLD itself on OS rather than age-associated primary sarcopenia.” **(Please see line 259-260)**

<5> Discussion, Line 284-286: It is concluded that the favorable HRs in patients with viral causes compared with non-viral causes seemed to be attributable to the advancement of antiviral therapies. However, in this study, a significant proportion of chronic hepatitis B patients were not under antiviral agents. Moreover, etiology of CLD itself may be related to HR. Therefore, the authors should modify these statements.

Our response:

Thank you for your valuable comments. In most of our patients with viral causes (**HBV** or HCV), antiviral therapies were performed, and most patients had well-controlled viral status, potentially leading to favorable clinical outcome. Thus, we believe that revision will not be necessary. You said, “in this study, a significant proportion of chronic hepatitis B patients were not under antiviral agents.”, but this is not true. Thank you for your warm understanding.

<6> Discussion, Line 278-283: The description is not coherent and should be rephrased.

Our response:

We rephrased as you suggested. **(Please see line 295-300)**

<7> The results need to be externally validated by another cohort.

Our response:

We added the following phrase in the discussion section as a limitation:

“external validation will be needed in future studies” **(Please see line 316-317)**

Thank you for your understanding.

<8> The following reference can be cited.

Hsu CS, Kao JH. Sarcopenia and chronic liver diseases. Expert Rev Gastroenterol Hepatol. 2018 Dec;12(12):1229-1244.

Our response:

We did as you recommended **(please see Ref no.10).**

<9> The English needs attention.

Our response:

We did throughout the paper and adequately revised.

Reviewer B

<1> The study is a retrospective study. The study design is not very straightforward since it is not clear when the measurements are done during the follow-up that covers seven years.

Our response:

In the revised methods section, we revised to “Data for muscle strength as evaluated by GS and muscle mass using bioelectrical impedance analysis (BIA), and data for body composition (CC and WC) at baseline (i.e., at the beginning of the follow-up) were collected.” **(Please see line 97-100)**

<2> Moreover, the part of the results is quite confusing, reporting a lot of results not always useful. This reflect the lack of clearness of the study design (e.g., Are BIA measurements considered the gold standard and the other model are validated on this basis? Why did they compare several combined models including all the possible combination between the measurements?). Additionally, the authors applied several different statistical approaches. My advice is to simplify the structure of the manuscript choosing just the information they want to share and reduce the impact of useless analysis. Indeed, the majority of the KM curves cross, meaning some confounding factors are not taking into account. Moreover, the sub-analyses performed are often redundant. Same considerations are also valid for the ROC curves. Statistical approach needs to be clarified.

Our response:

Thank you for your valuable comments. Our responses are as follows:

[1] We clarified in our main body that GS and SMI have been adopted in the current guidelines and are established prognostic markers. **(Please see line 112-113, 167-168)**

[2] We corrected subheading numbers (3.5.1.-3.5.4. in the revised ver.) to clarify that these are subgroup analyses. **(Please see line 180, 193, 205, 217)**

[3] The purpose of the analysis and the methods of the analysis were clearly stated. **(Please see line 182-183, 226-227, 231-233)**

[4] We clarified that many results have been described in our results and that we consider each to be meaningful. **(Please see line 248-249)**

Thank you for your warm understanding.

<3> On the other hand, also the definition of the population needs further attention. Indeed, sarcopenia has a completely different impact in cirrhosis and HCC compare to

chronic liver disease. Using WC measurements is inappropriate in patients with cirrhosis that maybe could be decompensated with ascites.

Our response

Thank you for your valuable comments. In our cohort, patients with severe ascites that could influence the assessment of WC were not included. Also, patients with severe edema caused by severe heart failure that could influence the assessment of CC were not included. Thank you for your warm understanding. **(Please see line 104-105)**

<4> Lastly, English needs to be improved in order to enhance the readability of the manuscript.

Our response

We carefully read the paper and adequately revised.