Reviewer’s report

Title: Outcomes and factors influencing the survival in cases with spontaneous rupture of hepatocellular carcinoma: a multicenter study

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Reviewer: Sven Wallerstedt

Reviewer’s report:

The manuscript “Outcomes and factors …” by Doctor Kirikoshi et al. provides a lot of interesting and valuable information about a rare but serious complication in cirrhotic patients with HCC. There is however a lot of details that need explanations and/or corrections before a possible publication. However, I do not think that this will be a big problem for the authors.

Major Compulsory Revisions

1. The study only comprises cases with cirrhosis, and this should be clearly declared both in the title and in the abstract. Otherwise one can believe that the paper also deals with HCC in non-cirrhotic patients, in which hepatic resection is one of the best treatments. I propose that the word “cirrhotic” should be inserted i) before the word “cases” in the Title, ii) after the word “54” in the Methods part in the Abstract and iii) after the words “treatment strategy” in the Conclusion part in the Abstract.

2. In this retrospective study some of the 38 patients in the ConT group (or all?) were non-suitable for TAE. Of course it would be of interest to know how many patients that belonged to this group. It is not correct to compare the results of TAE in a group of patients suitable for this procedure with patients who were not suitable for TAE.

3. Apparently the patients in the ConT group were sicker than those in the TAE group with a significantly higher Child-Pugh score, including a higher bilirubin value and more frequent ascites. Thus, the two groups differ in a significant way, and then comparisons between the two groups must be performed carefully. For example it should not be surprising that a group of patients with an advanced liver disease had a worse prognosis than patients with a less advanced disease.

4. The authors divide the initially successfully treated TAE group, comprising of 15 of 16 cases, in two parts according to the size of the largest tumour without any comment of their choose to use 7 cm as a limit.

5. The authors have observed that a bilirubin level exceeding 50 mmol/L is a useful marker of treatment success in patients treated by TAE and report that patients who died within one month had higher bilirubin value than the other patients. This finding was apparently (please, declare if this interpretation is correct) a result from an analysis of the whole material, but it would be of interest
to know how many of the TAE cases who had a bilirubin value exceeding 50 mmol/L.

6. The authors should report if an OLT was performed or not in the follow-up of the patients in the TAE group, which may influence the survival figures. One can for example speculate that TAE makes it possible to get time to find a donor within the first month after rupture.

7. The authors should clearly state the limitations of the work.

Minor Essential Revisions

1. Abstract, Results:
   a) The sentence “Both the MST …” ought to be eliminated (see point 3 above).
   b) In the last sentence the word “initially” should be inserted before the word “successfully” and the words “the size of the tumors as” should be replaced by the words “a size of the largest tumour not exceeding 7 cm was”.

2. Abstract, Conclusions:
   Please, remove the word “very” (two times).

3. Background:
   Please, remove the words “, and often have large and/or multiple tumors” in the 5th sentence, since they are unnecessary when talking about advanced HCC.

   a) Please, give the number of patients from each of the three hospitals in the 1st para.
   b) Please, remove the word “radiological” in the 2nd para.
   c) Please, present the degree of the drop of the haemoglobin level to be used as indicator of an intraabdominal bleeding and please, state that if other explanations for this drop had been excluded.
   d) Please, remove the words “, and the hepatic function was evaluated” in the 3rd sentence in the 3rd para.
   e) Please, explain the reason for using the word “however” in the sentence “An attempt was made …”.
   f) I think that the statement of non-suitability for TAE should be inserted in this part of the manuscript.

5. Results
   a) Please, remove the 3rd and 4th sentences in the 2nd para (“The survival …” and “The 30-day …”), since the information is also given below.
   b) Please, insert “acute” before “hemorrhage” in the 2nd sentence in the 3rd para.
   c) Please, insert the word “initially” before the word “successfully” and the word
“inverse” before the word “independent” in the 1st sentence in the 4th para.
d) In the 5th para, which could follow directly after the text in the 4th para I do not understand the figure “62.5%” in the last sentence, since the authors consider just six patients with a tumour >7 cm. Moreover I think that the use of tenths should be avoided when dealing with groups of six and nine patients, respectively.

6. Discussion
a) In the 1st para the figure “5%” is hard to understand. Please, give an explanation and please, insert the word “initially” before the word “successfully”.
b) Please, remove the word “very” in the last sentence in the 2nd para.
c) In the 4th para the text “(244.8 days …” and the following two sentences, both beginning with “The cumulative survival …” should be removed, since all this information has already been presented in the 3rd para in the Results part.
d) Please remove the three last sentences in the 4th para, since they do not add any new information and are not discussed.

7. Conclusion
In the 3rd sentence the authors must insert “in cirrhotic patients” after the word “HCC”.

8. Figure 1 legend.
The text is too long (all figures are already presented in the text in the Results part) and I recommend the authors to remove it in favour of the following sentence: “Cumulative survival rate in the ConT (conservative treatment) group and in the TAE (transcatheter arterial embolization) group”.

9. Figure 2 legend.
The text is too long (all figures are already presented in the text in the Results part) and I recommend the authors to remove it in favour of the following sentence: “Cumulative survival rates in patients according to the size of the largest tumour”.

10. Table 3.
The authors must be aware of if the figures stand for survival or mortality for the interpretation, which now is difficult, at least considering “Size of the largest tumor =>7cm”.

11. Figure 2.
I do not think that the dotted curve is correct. My impression from the figure is that this deals with 5 patients instead of the stated 6 patients.

Discretionary Revisions
* The affiliation of the authors should be mentioned.
* Non-significant P-values (p>0.05) are unnecessary and could be erased in
Tables 1 and 3.
* The word “NS” in Table 1 and Table 3 ought to be explained.

**Level of interest:** An article of importance in its field

**Quality of written English:** Acceptable

**Statistical review:** No, the manuscript does not need to be seen by a statistician.

**Declaration of competing interests:**

I declare that I have no competing interests.