



Spontaneous rupture of hepatocellular carcinoma trans-arterial embolization or hepatectomy?

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Spontaneous rupture and hemorrhage of hepatocellular carcinoma (HCC) is one of the serious complications leading to death in patients with primary liver cancer. Approximately 9–10% of those patients with liver cancer die of from spontaneous rupture and hemorrhage, which is often accompanied by abdominal metastasis and seriously affects their prognosis (1). The current treatment strategies for patients with spontaneous HCC rupture remains controversial. According to previous studies, those primary liver cancer patients suffering spontaneous rupture bleeding frequently have poor liver reserve function as well as combined liver cirrhosis. Thus, it is not recommended to perform an emergency hepatectomy on patients with spontaneous rupture of HCC as it may result in liver failure or even death. Recently, the management of spontaneous HCC rupture has changed significantly. Currently, HCC patients with spontaneous rupture bleeding can undergo surgical treatments such as emergent liver resection or liver resection after trans-arterial embolization (TAE).

The article by Wang *et al.* (2) using propensity score matching (PSM) studies 325 patients with spontaneous rupture of hepatocellular carcinoma (RHCC) and explores the optimal treatment and the factors affecting overall survival (OS). The results revealed that among TAE, one-stage hepatectomy (OSH) and TAE plus two-stage hepatectomy (TTSH), TTSH provides a median OS and disease-free survival (DFS) of 28 and 10 months respectively, might be the optimal treatment for RHCC patient. However, there are some limitations may temper its conclusions.

First of all, this article has an obvious typographical

error. In the summary section, they claim that RHCC has a hospital mortality rate of 0.8%. However, in the results section, RHCC has a hospital mortality rate of 0.9%.

Second, the study found that age, alpha-fetoprotein (AFP), hemoglobin, Child-Pugh classification, microvascular invasion (MVI) and maximum tumor diameter were independently associated with the OS of RHCC. As results show in the present study, there was no significant difference between the patients underwent TTSH or OSH in terms of OS for RHCC patients before PSM ($P=0.758$). After PSM analysis, the OS and DFS time from TTSH were significantly longer than that from OSH and TAE only ($P<0.05$). In this study, age, AFP, tumor size, MVI, Child-Pugh classification and hemoglobin were all independent prognostic factors. Therefore, the consistency of these variables between the two groups after PSM greatly impacted the results. We wondered whether these variables were consistent between the two groups after PSM. Moreover, the parameter of RHCC patient underwent OSH, TTSH or TAE didn't show in the article after PSM. Researchers should provide these details in supplementary materials.

Third, only 30 cases with RHCC underwent TTSH, so the quality of evidence for the main outcomes was low or very low due to very small sample size and serious risk of bias. It would be helpful to list the details of these RHCC patients underwent TTSH in terms of age, AFP, Child-Pugh classification, tumor size, and general condition. So the readers can better understand the patient's information, to provide reference for clinical treatment. Additionally, we disagree that tumor rupture does not aggravate the

progression of HCC because there is no significant difference in OS between RHCC and non-ruptured HCC patients undergoing conservative treatment. Most of the HCC patients treated conservatively are patients with poor general condition, extrahepatic metastasis or liver failure. Thus, it is extremely crude to conclude that tumor rupture has no effect on prognosis based on a comparison of conservatively treated HCCs and RHCC. Aoki *et al.* analyzed 1,106 patients with RHCC and found that tumor rupture had a negative impact on patient survival (3). A meta-analysis of high-quality PSM studies revealed that, in comparison with non-ruptured HCC, DFS and OS were significantly shorter in the RHCC group (4). Therefore, tumor rupture is detrimental to the prognosis of HCC patients. Efforts should be made to seek the most effective treatment for patients with RHCC in order to prolong their survival time.

As described by the authors, age, hemoglobin, tumor size, MVI, Child-Pugh classification and AFP were independent prognostic factors for spontaneous rupture HCC. Therefore, for the patients with RHCC, we should focus on these indicators and establish a standard for the treatment of RHCC. Patients with different types of RHCC should choose different treatment regimens to prolong the survival time and improve the survival rate, instead of simply concluding that TAE plus secondary surgery is the best treatment plan. To sum up, RHCC treatment strategies require more robust data to establish a patient-centric framework for optimal treatment. The management of RHCC must take into consideration both the general condition and the tumor condition. Critical and operative decisions can be taken more effectively if the patient's general condition and tumor condition are fully grasped. The treatment algorithm must differ between RHCC patients with different conditions.

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Footnote

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