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Letter to the Editor

The successful treatment for cardiac tamponade during radiofrequency ablation of hepatocellular carcinoma

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To the Editor:

Hepatocellular carcinoma (HCC) is the second most common cause of cancer-related death worldwide [1]. Repeated liver resection remains a valid and safe curative therapy option for recurrent HCC in a minority of patients, because of multifocal intrahepatic or extra-hepatic recurrence and tumors in unresectable locations [2]. HCC nodules less than 3 cm located in the hepatic dome beneath the diaphragm may represent one of the most difficult sites for resection [3]. Therefore, some local invasive therapies, such as radiofrequency ablation (RFA), microwave ablation, transarterial chemoembolization (TACE) and laser hyperthermia, have been developed and applied in clinical HCC treatment [4]. RFA has high frequency energy which heats the surrounding tissues and causes severe complications such as acute massive hemorrhage, thermal injury to viscera, pneumothorax and cardiac tamponade [5].

We reported a 43-year-old male patient who was admitted to the First Affiliated Hospital of Zhengzhou University (Zhengzhou, China). The patient presented a recurrent HCC, and abdominal magnetic resonance imaging (MRI) showed hepatic alterations post HCC resection. New nodules were found in the right lobe (2×2 mm) and the left medial lobe (4×5 mm) of the liver. The patient underwent CT-guided RFA after he signed an informed consent form. During the operation, we observed that the systolic pressure of the patient was significantly decreased from 130 to 62 mmHg, the diastolic pressure decreased from 72 to 38 mmHg within 10 min, and heart rate decreased from 60 to 50 times/min (Fig. 1A). Immediate CT scan demonstrated pericardial effusion (Fig. 1B) which was diagnosed as pericardial tamponade.

Along the guide wire (Fig. 2A), the 8.5 F external drainage tube was introduced and the hemorrhagic effusion was drained (Fig. 2B). The patient started tachycardia (145 times/min) in 5 min but the blood pressure was increased slowly which suggested an insufficient blood volume. After blood volume expansion, the systolic pressure, diastolic pressure and heart rate were relatively stable. Subsequently, the exploratory thoracotomy was performed. A 3-mm perforation in the right atrium was found and sutured. The vital signs of the patient was stable, and the patient with tracheal intubation returned to the ward intensive care unit. After one month, the patient was discharged from our hospital.

Our case may provide an emergent strategy for the treatment of severe pericardial tamponade during or after RFA.

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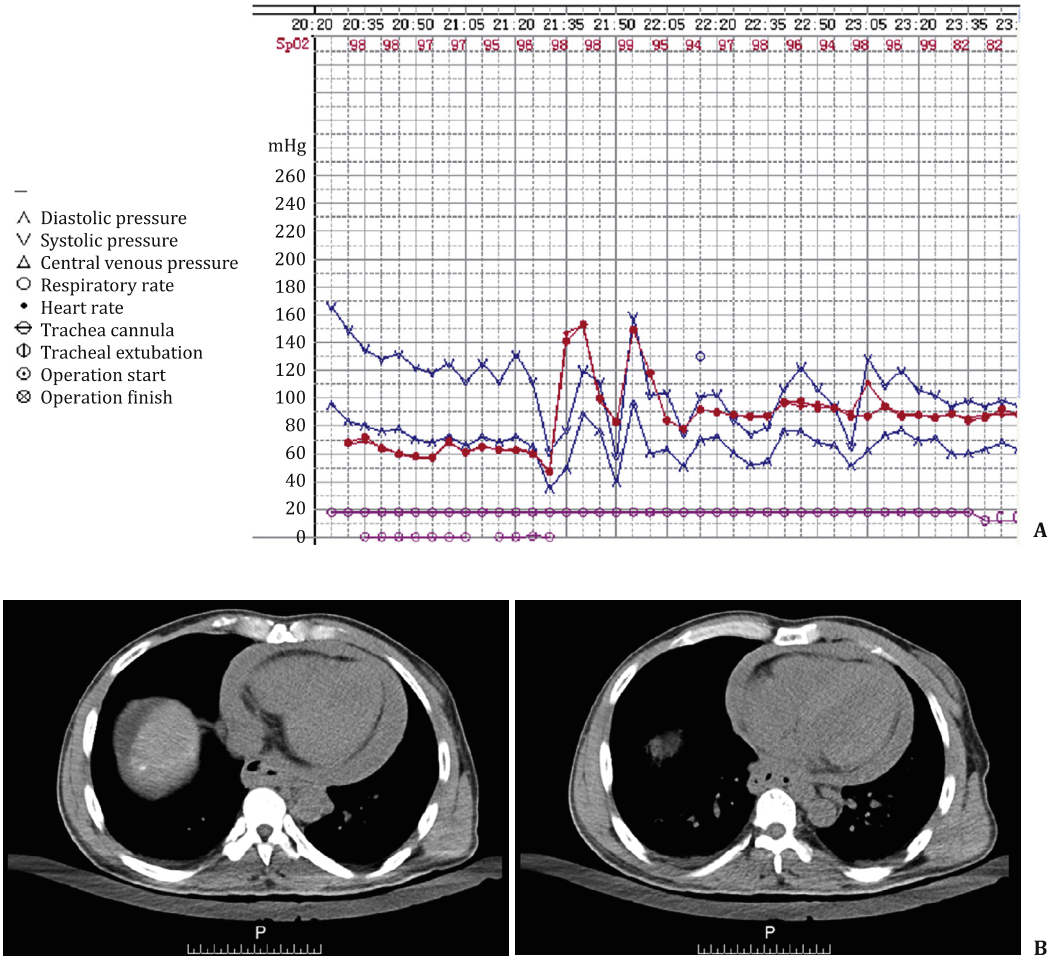

Fig. 1. Acute severe pericardial tamponade. **A**: The systolic pressure, diastolic pressure and heart rate changed during the process of RFA; **B**: The pericardial effusion in CT scan, and a fluid dark area with a circumference of about 1.5 cm between heart and pericardium.

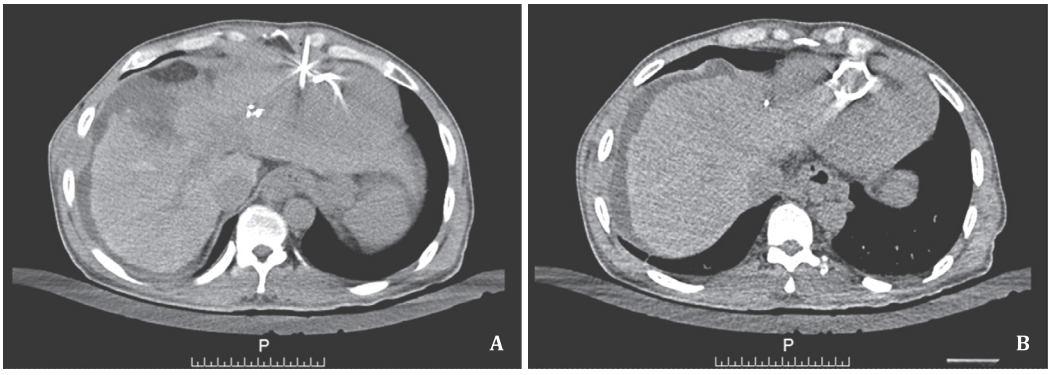

Fig. 2. The pericardial puncture drainage surgery and the emergent autologous blood transfusion process. **A**: The guide wire punctured into pericardium; **B**: The 8.5 F external drainage tube was introduced and the hemorrhagic effusion was drained.

Contributors

XC and RZ wrote the paper. HX performed the operation. HY, SR, LJ and CG collected the data. YZ oversaw the study. All authors approved the final manuscript. YZ is the guarantor.

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Ethical approval

An informed consent was obtained from the patient.

Competing interest

No benefits in any form have been received or will be received from a commercial party related directly or indirectly to the subject of this article.

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