

Single Case

Multidisciplinary Treatment of Advanced Hepatocellular Carcinoma

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Keywords

Hepatocellular carcinoma · Multidisciplinary treatment · Case report

Abstract

Current strategy for treatment of hepatocellular carcinoma (HCC) based on Barcelona-Clinic Liver Cancer (BCLC) criteria dictates that patients with advanced-stage HCC are to only receive treatment with tyrosine kinase inhibitors. However, they prolong overall survival just by slightly more than 6 months. In this article, we present a patient with HCC diagnosed at an advanced stage who received multidisciplinary treatment consisting of transarterial chemoembolization, hepatic resection, pulmonary resection, radiofrequency ablation, tyrosine kinase inhibitors, and radiotherapy, and has survived for more than 2 years since diagnosis and counting.

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Introduction

Hepatocellular carcinoma (HCC) is the 4th leading cause of cancer death in the world, largely owing this rank to its high incidence in Asian countries such as China [1, 2]. HCC is often associated with chronic diseases, most notably hepatitis B and C virus infections [3]. Improvement of diagnostic modalities and advances in treatment for HCC led to a greatly increased survival rate in the past decades [4], but it remains rather low in patients who were diagnosed at later stages, one of the reasons being the limitations of the treatment strategies.

Case Presentation

A 46-year-old male came to our hospital with abdominal pain on exertion for 1 month. There were no other symptoms present. Abdominal CT scan showed cirrhotic liver, splenomegaly, and multiple lesions (the biggest – 15 × 13 cm) in segments V and VI (Fig. 1a); no metastases were found on chest/abdominal-pelvic CT. Laboratory data showed that anti-HBc, HBeAg, HBsAg were positive, AFP was elevated (2,025 ng/mL), and other tumor markers (CEA, CA125, CA19-9) and bilirubin levels were within normal ranges. His past history and family history were unremarkable. In spite of seemingly big tumor burden, the patient was classified as Child-Pugh A with ECOG-PS 0, placing him in the advanced-stage group (Barcelona-Clinic Liver Cancer [BCLC] C). Nonetheless, because of preserved liver function and good performance status, a decision to perform hepatectomy with application of TACE was made by an institutional multidisciplinary board.

During the hospital stay, the patient had tumor rupture that was treated with bland transarterial embolization (gelatin sponge administration) (Fig. 1b). He was also prescribed entecavir because of HBV infection. The patient underwent partial hepatectomy 2 months after transarterial embolization. In addition, due to tumor invasion to surrounding organs, enterotomy of approximately 10 cm was made in the colon, and cholecystectomy was performed (Fig. 1c). The pathology result showed poorly to moderately differentiated HCC without microvascular invasion; no signs of metastases were found in harvested lymph nodes. The patient then received 2 cycles of transarterial chemoembolization (TACE) consisting of oxaliplatin and epirubicin-lipiodol emulsion, 2 and 5 months after hepatectomy.

Shortly after the 3rd TACE, chest CT revealed 2 nodules in the left lung (Fig. 2a, b), which were subsequently removed via thoroscopic wedge resection. The pathology confirmed those nodules to be HCC metastases. After 1 month, blood test showed elevated AFP level (249.6 ng/mL), and a small mass (diameter – 1 cm) was discovered near the caudate lobe of liver and resected using a laparoscopic approach. TACE (oxaliplatin and epirubicin-lipiodol emulsion) was performed 2 weeks after that. Three months later, chest CT showed a solitary nodule in the right lung (Fig. 2c) that was treated with radiofrequency ablation (Fig. 2d). After 2 months, as AFP and PIVKA-II levels were elevated (5,763.2 ng/mL and 62 mAu/mL, respectively), ¹⁸F FDG-PET/CT was performed. It revealed metastases in the left hilar lymph nodes (SUV_{max} – 7.25, diameter – 25 mm; Fig. 3a, b). The patient had begun receiving sorafenib after discharge, but it was changed to regorafenib 2 months later due to tumor progression; he had also soon received radiotherapy (5,000 cGy/25f, 200 cGy/f, 5 f/w). Two months after the end of radiotherapy, CT scan showed no signs of metastases (Fig. 3c), and both AFP and PIVKA-II levels normalized (Fig. 4). The patient reported his condition as fine and did not complain of any discomfort.

Discussion

While BCLC treatment strategy states tyrosine kinase inhibitors (sorafenib, regorafenib, and lenvatinib) as sole treatment for advanced-stage HCC [5], the incorporation of different treatment modalities advances. HCC can be treated with multimodal approach with the application of treatments ranging from surgery to radiation oncology in order to increase survival rate.

Hepatectomy is a primary treatment option in case of resectable metastatic tumor, though associated with high risk of postoperative liver failure and poor clinical outcome because of

usually preexisting chronic liver disease [6]. However, surgery alone is not enough for treatment of advanced-stage HCC and must be combined with other treatments. According to a recent meta-analysis, postoperative TACE for advanced HCC was shown to increase overall survival rate [7]. Furthermore, another study found that male patients with cirrhosis, age <60 years, tumor >10 cm, and resection margin <2 cm may derive a greater survival benefit from adjuvant TACE [8].

Tyrosine kinase inhibitors are crucial in systemic treatment of HCC as they hinder tumor progression and improve overall survival rate [9]. Some studies have concluded that sorafenib also may enhance tumor sensitivity to radiotherapy [10]. Patients with metastases from HCC can benefit from radiotherapy in terms of prolonged survival [11]. Our patient showed good response to the treatment: both AFP and PIVKA-II levels normalized, and mediastinal lymph nodes reduced in size.

Tumor stage, liver function, and the patient's general condition all affect the choice of the combination of treatments for a patient to receive. Although our patient was diagnosed with metastatic HCC, he has survived for more than 2 years, which significantly exceeds advanced-stage HCC life expectancy.

Statement of Ethics

Informed consent was obtained from the patient.

Disclosure Statement

The authors have no conflicts of interest to declare.

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Author Contributions

Z.Y. was the doctor in charge of the patient and revised the manuscript, B.A. wrote the manuscript and analyzed the data, S.W. was the assistant doctor, Q.-F.X. was responsible for resources, S.-S.Z. proposed the study. S.-S.Z. is the guarantor.

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Fig. 1. Coronal CT scan of the abdomen on admission (a), after TAE (b), and after hepatectomy (c).

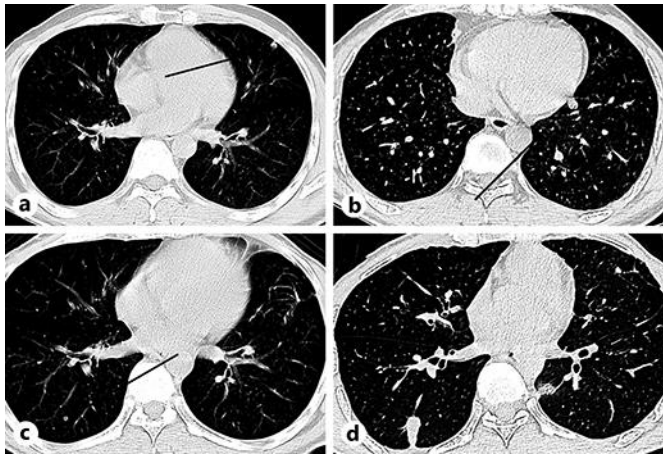


Fig. 2. Chest CT demonstrating a nodule in the superior lingular segment of the left upper lobe (a), a nodule near the left oblique fissure (b), a nodule in the right lower lobe before RFA (c), and an ablation zone after RFA (d).



Fig. 3. a, b ¹⁸F FDG-PET/CT shows increased uptake in the left hilar lymph region. c Chest CT scan after radiotherapy.

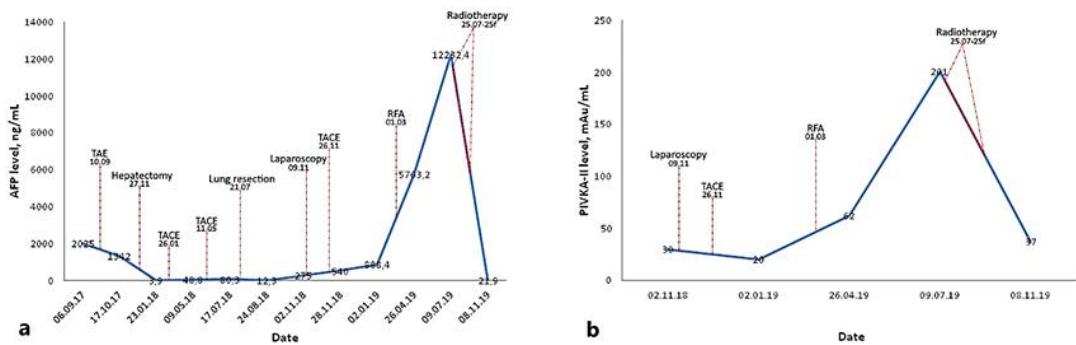


Fig. 4. Changes of AFP level (a) and PIVKA-II level (b) since admission.