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Successful Radiofrequency Ablation for Recurrent Pulmonary Hepatoblastoma

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To the Editor: The optimal treatment of lung metastases in patients with hepatoblastoma is unclear. Minimally invasive surgical techniques are generally safe and effective, but morbidity can be significant and limited prospective data exist.[1] Radiofrequency ablation (RFA) is one of the several minimally invasive thermal-based technologies which have been safely and successfully used to treat primary and metastatic solid tumors.[2] We report here the first successful treatment of pulmonary metastasis in a patient with recurrent hepatoblastoma using RFA.

A 2-year-old Caucasian male was diagnosed with a large, unresectable hepatoblastoma. Serum AFP was 1,885,000 ng/ml (normal range 0–10 ng/ml). Computed tomography (CT) of the chest showed no metastases. He was treated with four cycles of cisplatin, vincristine, and 5-fluorouracil. The tumor decreased in size and AFP decreased to 209,100 ng/ml. However, the tumor remained unresectable, and the patient underwent an unrelated cadaveric liver transplant. No post-transplant chemotherapy was administered due to a perceived high risk to benefit ratio. His post-transplant AFP nadir was 22.1 ng/ml 2 months after transplant, but it rose in the following 6 weeks to 151.7 ng/ml, when CT revealed three pulmonary nodules, all 5mm (one in the right upper lobe and two in the left upper lobe). He was treated with two cycles of doxorubicin and ifosfamide, but the AFP continued to rise. He was then treated with irinotecan, which resulted in the AFP decreasing from 286 to 48 ng/ml, but no change in the size of the pulmonary nodules. He then underwent thoracotomy with right upper lobe wedge resection. His post-operative course was complicated by air leak, atelectasis, and pleural effusions. After surgery, his parents elected against left-sided thoracotomy, and irinotecan was resumed. His AFP level fell to

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31.9 ng/ml, but increased over the next 6 months to 91.8 ng/ml. Follow-up CT revealed a single 7 mm pulmonary nodule in the left upper lobe with no other sites of disease. To avoid another surgery, the patient underwent CT-guided RFA under general anesthesia. The procedure was successful and without complication, and the patient was discharged home the next day. Following RFA the AFP normalized, the nodule disappeared on imaging, and he has been disease free for 37 months.

One pediatric patient with hepatoblastoma and one with liver metastasis from a Wilms tumor have been successfully treated with liver-directed RFA,[3] as has a 2 year old with locally recurrent hepatoblastoma.[4] RFA was unsuccessful in one reported patient with pulmonary hepatoblastoma.[5] A pilot study of RFA in children with recurrent solid tumors demonstrated limited toxicity and possible benefit in selected patients.[6] In our case, the toxicity of RFA was almost nil, and the result has been prolonged disease-free survival.

This report shows that RFA can be a successful treatment modality for pulmonary metastatic lesions from hepatoblastoma. Given its potential efficacy combined with a side-effect profile comparable to or perhaps better than current surgical modalities, RFA offers an alternative to surgery in the treatment of pulmonary metastatic hepatoblastoma.

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