Commentary: Preoperative carcinoembryonic antigen levels matter in patients with colorectal metastases

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Central Message

Liver metastases from colorectal cancer are not a contraindication for resection of lung metastases, in particular in patients with normal CEA levels who can undergo complete resection.

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Thoracic surgeons routinely resect pulmonary metastases following the principles outlined by Martini and McCormack¹; specifically, the primary site is free of disease, there is no disease outside the primary site or the lungs, patients are medically fit for surgery, the surgeon can achieve a complete resection, and there is no other available effective therapy. Colorectal metastases to the liver and lung potentially defy Martini and McCormack's criteria, and surgical resection of 2 metastatic sites may be beneficial. Medical therapy for lung and liver metastases is rarely curative, and there are multiple retrospective series suggesting a benefit of surgical resection of both the liver and lung metastases.^{2,3}

Shimizu and colleagues⁴ report the experience of 46 Japanese centers in treating patients with lung and liver metastases from colorectal cancer. One hundred sixty patients had resection of colorectal lung metastases after resection of hepatic metastases over a relatively short period (2004 to 2008). The authors excluded patients who had an incomplete resection of the pulmonary metastases. The majority of patients had unilateral disease and fewer than 3 pulmonary lesions. The median time between the liver and the pulmonary resection was 13.8 months, and 83% of patients had metachronous lesions. The 5-year overall survival was a respectable 65%, and the disease-free survival was 33.5%. Multivariable analysis identified age and preoperative serum carcinoembryonic antigen (CEA) level as factors influencing overall survival. High serum CEA level was also associated with shortened disease-free survival. Patients with normal CEA levels had an overall 5-year survival of 76.4%, whereas those with serum CEA levels above 5 ng/mL had a significantly worse 5-year survival of 47.6%. Although CEA levels have been previously shown to be an important prognostic factor in patients undergoing resection of both liver and lung metastases from colorectal cancer,² Shimizu and colleagues⁴ also show an important association with disease-free survival.

The present study is well executed and well analyzed. However, the exclusion of patients who had incomplete resection is a major shortcoming that may preclude broad generalization. More than 10% of patients in the series by Brouquet and colleagues² and McCormack and colleagues⁵ had incomplete resection. The survival in patients with incomplete resection was only 9 months.⁵ The influence of including patients who had an incomplete resection in the series by Shimizu and colleagues⁴ is unknown, but more than likely would have reduced the exceptional 5-year survival of 65%. Another relevant finding is the correlation between high CEA levels and worse overall and disease-free survival. CEA is likely a marker of occult disease burden and may serve to stratify patients for resection.

The work by Shimizu and colleagues⁴ is important and demonstrates that liver metastases should not be a contraindication for pulmonary metastasectomy. In particular, if complete resection is possible, patients with low tumor burden and normal preoperative CEA levels will have a very respectable 5-year survival of 76% and 5-year disease-free survival close to 50%. Randomized trials comparing surgical and medical therapy of patients with lung metastases from colorectal carcinoma are unlikely to be completed in the near future. Surgeons will have to continue to rely on retrospective data such as those presented by Shimizu and colleagues,⁴ Brouquet and

colleagues,² and McCormack and colleagues,⁵ all suggesting that resection of lung metastases is beneficial for patients with colorectal cancer.

References

1. Martini N, McCormack PM. Evolution of the surgical management of pulmonary metastases. *Chest Surg Clin N Am*. 1998;8:13-27.
2. Brouquet A, Vauthey JN, Contreras CM, Walsh GL, Vaporciyan AA, Swisher SG, et al. Improved survival after resection of liver and lung colorectal metastases compared with liver-only metastases: a study of 112 patients with limited lung metastatic disease. *J Am Coll Surg*. 2011;213:62-9; discussion 69-71.
3. Shah SA, Haddad R, Al-Sukhni W, Kim RD, Greig PD, Grant DR, et al. Surgical resection of hepatic and pulmonary metastases from colorectal carcinoma. *J Am Coll Surg*. 2006;202:468-75.
4. Shimizu K, Ohtaki Y, Okumura T, Boku N, Horio H, Takenoyama M, et al. Outcomes and prognostic factors after pulmonary metastasectomy in patients with colorectal cancer with previously resected hepatic metastases. *J Thorac Cardiovasc Surg*. 2019;157:2049-57.e1.
5. McCormack PM, Burt ME, Bains MS, Martini N, Rusch VW, Ginsberg RJ. Lung resection for colorectal metastases. 10-year results. *Arch Surg*. 1992;127:1403-6.