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Utilization of circulating tumor DNA as a biomarker in patients with resectable colorectal liver metastasis: A case report on oncologic surveillance and detection of disease recurrence

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Full Abstract: Background: The liver is the most common site of metastasis in patients with stage IV colorectal cancer (mCRC). Current guidelines for treatment includes hepatectomy and systemic medical therapy, which results in a 5-year survival rate of approximately 50%, and potential cure rate in up to 25% of the patients. Over the years, studies have highlighted key factors contributing to disease recurrence such as primary lymph node metastasis and mutation status at the time of colorectal liver metastasis (CLM) resection, and while there has been an increasing 5-year survival rate in patients with CLM, there is still an unknown to refining patient selection for those who are at higher risk for disease recurrence during CLM surveillance. There are studies showing that circulating tumor DNA (ctDNA) can reflect disease status and treatment response in patients with mCRC, ultimately serving as a longitudinal biomarker and detection of minimal residual disease (MRD). In patients with CLM, ctDNA positivity has been associated with a significantly increased risk of disease recurrence following resection of both primary colorectal tumors and hepatic metastases. We present a case study that describes the unique role of ctDNA in the post-operative surveillance and clinical management in a patient with CLM. Objective: 1. Discuss the benefits of ctDNA as a biomarker in patients with mCRC and describe its potential use in liquid biopsy platforms 2. Discuss the potential utilization of ctDNA in risk stratifying patients with CLM in the early detection of disease recurrence 3. Summarize the current CLM surveillance guidelines and the potential integration of ctDNA. Description: We present a case of a 39-year-old male with stage IV left sided colon carcinoma with metastasis to the liver and lungs and the role of using ctDNA as an additional biomarker for disease recurrence. The patient was first diagnosed with stage IIIb colon carcinoma in 2018 and had a negative ctDNA after completing systemic medical therapy for CLM. He recurred twice in separate years as shown on surveillance CT scans and both times had positive ctDNA reflecting positive residual tumors. He underwent the appropriate treatment and is currently ctDNA negative with no disease recurrence in the liver. The authors examine the current literature and discuss the benefit of using ctDNA as early detection for identification for patients likely to have disease recurrence. Conclusion: In patients with resectable CLM, ctDNA remains a promising biomarker that may play a role in the early detection of disease recurrence. The addition of ctDNA should be considered for CLM surveillance strategies, as well as the evaluation of disease response (tumor burden) to systemic medical therapy. Advanced practice providers (APPs) play a vital role in the clinical management of patients and are essential in the coordination of care and longitudinal surveillance. Further studies are needed to investigate the utilization of ctDNA detection to guide the perioperative management of patients with resectable CLM.