Prognostic Multigene Expression Assay for Colorectal Cancer Liver Metastases (CRLM)

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Technology description

Summary of Invention

Liver metastases develop in approximately 50% of patients with colorectal cancer, and are a major clinical concern, often causing death. While surgery offers the only potential for a cure, outcomes after surgery are extremely variable, ranging from long-term cure (15-25%) to death within two years (up to 30%). Commonly used clinical-risk scoring systems to predict which patients with metastatic colorectal cancer are most likely to benefit from surgery have limited clinical utility, with none accurately predicting long-term, disease-free survival after surgery. Further, these clinical risk scores have poor accuracy across institutions and in the setting of chemotherapy.
MSK scientists have generated a 20-gene molecular risk score (MRS), based on mRNA gene expression profiles from 96 patients with surgically resected CRLM at MSK. The MRS has been validated in an external cohort of 119 patients with surgically resected CRLM at two independent clinical sites in Europe. This multigene signature is prognostic of both overall survival (OS) and recurrence-free survival (RFS).

Key Publications

Balachandran VP et al. A Validated Prognostic Multigene Expression Assay for Overall Survival in Resected Colorectal Cancer Liver Metastases.Clin Cancer Res. 2016 Jan 5. (Epub ahead of print) PMID: 26733613

Market Need

Approximately 145,000 new cases of colorectal cancer are diagnosed per year in the U.S. Of these, ~30-40,000 patients present with metastases that are confined to the liver. Assuming ~$4K price per test, this translates into a market opportunity of ~$120M-$160M yearly.

Advantages

The first externally validated multigene expression assay to estimate outcome prognosis after liver surgery to remove metastases for CRLM
The MRS score (unlike other clinical risk scores) is prognostic even in patients who have received chemotherapy, which is clinically relevant as patients frequently receive chemotherapy before surgery for CRLM
Potential to be developed into a clinically applicable PCR assay with relative ease, testing a small number of genes (20)

Institution

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