

Transferrin-based positron emission tomography detects MYC-positive prostate cancer

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Background: Non-invasive biomarkers that detect the activity of important oncogenic drivers could significantly improve cancer diagnosis and management. The goal of this study was to determine if ⁶⁸Ga-citrate (which binds avidly to circulating transferrin) can detect MYC positive prostate cancer tumors, since the transferrin receptor is a direct MYC target gene.

Methods: Paired imaging with ⁶⁸Ga-citrate and molecular analysis of preclinical models, human cell free DNA and clinical biopsies were conducted to test whether ⁶⁸Ga-citrate can detect MYC-positive prostate cancer.

Results: ⁶⁸Ga-citrate detects human prostate cancer models in a MYC dependent fashion. In patients with castration resistant prostate cancer, analysis of cell free DNA showed that all patients with ⁶⁸Ga-citrate avid tumors had gain of at least one MYC copy number. Moreover, biopsy of two PET avid metastases showed molecular or histological features characteristic of MYC hyperactivity.

Conclusions: These early data suggest that ⁶⁸Ga-citrate can target prostate cancer tumors with MYC hyperactivity. A larger prospective study is ongoing to demonstrate the specificity of ⁶⁸Ga-citrate for tumors with MYC hyperactivity.

Conflicts of Interest: The authors have no conflicts of interest to disclose.

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