Circulating Tumor DNA to Assess Characteristics of Colorectal Cancer and Completeness of Surgical Resection

Erin L Symonds1,4, Susanne K Pedersen2, David H Murray2, Maher Jedi1, Susan E Byrne1, Philippa Rabbitt3, Rohan T Baker2, Dawn Bastin1, Graeme P Young1
1Flinders Centre for Innovation in Cancer, College of Medicine and Public Health, Flinders University of South Australia, Bedford Park, South Australia; 2Clinical Genomics Pty Ltd, North Ryde, New South Wales; 3Colorectal Surgery, Division of Surgery & Perioperative Medicine, Flinders Medical Centre, Bedford Park, South Australia; 4Bowel Health Service, Flinders Medical Centre, Bedford Park, South Australia

RESULTS: ctDNA and risk for residual disease

BACKGROUND

• Following surgery, 74.5% (35/47) of patients who were ctDNA-positive at diagnosis became negative, mostly within 3-4 months (Figure 3).

AIM

To determine how the Colvera™ test results relate to methylation in tissue, cancer characteristics, and completeness of surgical resection.

METHODS

Blood and tissue samples were analyzed in triplicate for methylated BCA1/IKZF1 with real-time PCR. Samples were positive if ≥ 1 replicate was positive for methylated BCA1 or IKZF1. Tissue % methylation was calculated as total mass of BCA1 and IKZF1 / total amount of DNA (ACTB).

RESULTS: Tissue methylation

• 98.9% (90/91) of tumor tissues had methylation of BCA1 or IKZF1.
• Methylation in tumor tissue was greater than that in non-tumor tissue (p<0.05, Figure 1).

RESULTS: Methylation and tumor features

• Tissue methylation was not affected by stage (p=0.05, Fig. 2), but methylated BCA1 was higher in patients ≥65 years (p=0.039) and in proximal tumors (p=0.029).
• ctDNA was detected in 116/187 (62.0%) of cases at diagnosis. ctDNA sensitivity by AJCC stage was: I, 6/40 (15%); II, 35/54 (65%); III, 47/63 (75%); IV, 29/34 (85%), with ctDNA more likely to be detected with later stage of the cancer (p=0.001, Fig. 2).
• ctDNA had a higher positivity rate with increased T stage (p=0.001), N stage and M stage (both p=0.001), increased size (p<0.001), distal location (p=0.011), and lymphatic invasion (p=0.002).

RESULTS: ctDNA test results with cancer features (Chi-square)

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CONCLUSION

• Patients who are positive for ctDNA post-surgery have a higher likelihood of incomplete surgical resection.
• These results from Colvera™ have implications for guiding recommendations for adjuvant therapy and surveillance strategies.

REFERENCES