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Cancer Epidemiology, Biomarkers & Prevention

Letter to the Editor

Vimentin in Upper Gastrointestinal Pathologies—Response

Helen Moinova[1], Rom S. Leidner[1], Lakshmeswari Ravi[1], James Lutterbaugh[1], Jill S. Barnholtz-Sloan[3], Yanwen Chen[3], Amitabh Chak[1,3], Sanford D. Markowitz[1,3,4], and Joseph E. Willis[2,3,4]

We have with interest read the letter from G. Lind and colleagues about our recent description of high levels of vimentin (VIM) exon-1 methylation in Barrett's esophagus and in cancers of the upper gastrointestinal tract (1). We agree with Lind and colleagues that, taken together with our group's previous findings of high levels of VIM methylation in colon cancers (2), and with the findings of Lind and colleagues of high levels of VIM methylation in bladder cancers (3), that VIM methylation seems to be a very common concomitant of neoplasias arising in many, although not all, tissues in the human body. We agree with Lind and colleagues that VIM methylation may provide a powerful biomarker for early detection of neoplasia in tissues that can be directly sampled through collections such as feces, urine, or esophageal brushings. Lind and colleagues also raise the question of whether the potential for VIM methylation to arise in neoplasias of several different tissues would lead to difficulties in interpreting assays of VIM methylation conducted in other types of body fluids. In this regard, we and collaborators have assessed the results of testing for VIM methylation in blood of colon cancer patients using Methyl-BEAMing, as an assay that detects as low as 1 molecule of methylated DNA per 2 mL of blood (4). We found that Methyl-BEAMing detection of VIM methylation in blood was nearly 4-fold more sensitive for detection of colon cancer than was carcinoembryonic antigen (CEA; 52% vs. 14%, respectively), and was slightly more specific (93% vs. 91%, respectively). These findings suggest that there would be value in assessing the utility of assaying VIM DNA methylation in blood as a method for postoperative monitoring of colon cancer patients for detection of residual disease and/or relapsed disease, determinations for which CEA monitoring is currently the standard of care. Similar opportunities may exist in the setting of other diseases, in which the requisite sensitivity, specificity, and cutoff needed for calling a test positive, required for monitoring individuals with a cancer history will differ from that required for cancer screening of a general population.

Authors' Affiliations: Departments of [1]Medicine, [2]Pathology, and [3]Case Comprehensive Cancer Center, Case Western Reserve University, and [4]Case Medical Center, Cleveland, Ohio

H. Moinova and R.S. Leidner have contributed equally to this work.

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References

1. Moinova H, Leidner RS, Ravi L, Lutterbaugh J, Barnholtz-Sloan JS, Chen Y, et al. Aberrant vimentin methylation is characteristic of upper gastrointestinal pathologies. Cancer Epidemiol Biomarkers Prev 2012; 21:594–600.
2. Chen WD, Han ZJ, Skoletsky J, Olson J, Sah JF, Myeroff L, et al. Detection in fecal DNA of colon cancer-specific methylation of the nonexpressed vimentin gene. J Natl Cancer Inst 2005;97:1124–32.
3. Costa VL, Henrique R, Danielsen SA, Duarte-Pereira S, Eknaes M, Skotheim RI, et al. Three epigenetic biomarkers, GDF15, TMEFF2, and VIM, accurately predict bladder cancer from DNA-based analyses of urine samples. Clin Cancer Res 2010;16:5842–51.
4. Li M, Chen WD, Papadopoulos N, Goodman SN, Bjerregaard NC, Laurberg S, et al. Sensitive digital quantification of DNA methylation in clinical samples. Nat Biotechnol 2009;27:858–63.

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