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Researchers present findings on promising biomarker for esophageal cancer

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A new biomarker for esophageal cancer shows promise in improving screening for this deadly disease and its precursor, Barrett's esophagus.

Amitabh Chak, MD, of University Hospitals Case Medical Center's Seidman Cancer Center and Case Western Reserve University School of Medicine, presented findings today at Digestive Disease Week in Chicago in a research forum titled "Aberrant Vimentin Methylation in Esophageal Brushings: A Biomarker for Detecting Barrett's Esophagus and Esophageal Adenocarcinoma".

Dr. Chak and a research team found that a change in the DNA, methylation of the vimentin gene, can be an effective new less-invasive test for detecting Barrett's esophagus (BE). In 117 patients, they examined if a new, non-endoscopic "brushing" of the esophagus is as effective as the more invasive, traditional biopsy.

Affecting up to 6.8 percent of the population, BE is a leading predictor of esophageal cancer. Compared with the general population, patients with BE have an 11-fold higher risk of developing adenocarcinoma of the esophagus.

"Despite the fact that the rates of common cancers have declined in recent years, esophageal cancer has a poor five-year survival rate of less than 15 percent," said Dr. Chak. "Early detection through screening can prevent the development of esophageal cancer. This promising new test has important clinical implications through its potential to improve

screening and decrease mortality from this deadly disease."

The research builds upon previous work by the team that aberrant vimentin methylation is a highly common epigenetic alteration in neoplasia of the upper gastrointestinal tract. In this study, they analyzed esophageal specimens in patients with BE, esophageal cancer as well as control subjects. The data determined that methylated vimentin is a highly sensitive biomarker for Barrett's esophagus and that the less invasive brushing technique can effectively detect these changes in the DNA.

The study is funded through the Barrett's Esophagus Translational Research Network (BETRNet), a $5.4 million grant to Case Western Reserve University School of Medicine. The five-year award supports a research team, led by Dr. Chak, collaborating to develop an understanding of the basis of Barrett's esophagus and its conversion to esophageal carcinoma through genetic, molecular and physiologic studies.

The study is collaborative with the National Cancer Institute's Specialized Program of Research Excellence (SPORE) in Gastrointestinal (GI) Cancers award to the School of Medicine. The $11.3 million SPORE grant, led by Sanford Markowitz, MD, focuses on translational research aimed at reducing the incidence and deaths from colon and esophageal cancers. The study is additionally supported by the NCI's Early Detection Research Network (EDRN) program that is also led by Dr. Markowitz, and is supported by a $1.5 million NCI grant to Case Western Reserve.

"Our team's hope is that the use of molecular markers for non-endoscopic screening will drive down the cost and increase the ease of screening for these early esophageal lesions that can give rise to cancer," said Dr. Markowitz, an oncologist at UH Case Medical Center Seidman

Cancer Center and Ingalls Professor of Cancer Genetics at Case Western Reserve School of Medicine. "Longer term we hope to find additional markers that will allow the same approach to be used in the monitoring of Barrett's patients to detect early progression to more advanced disease."

Senior faculty collaborators on the research team included Dr. Chak, Dr. Markowitz and Joseph Willis, MD, Vice-Chair of the Department of Pathology at UH and the School of Medicine. First author on the report is Helena Moinova, PhD, instructor in the Department of Medicine at the School of Medicine, who was also assisted by James Lutterbaugh and Apoorva Chandar.

"This is true translational research, bringing a discovery from the laboratory to the patient care setting," said Dr. Chak. "This new technique to sensitively detect changes in the DNA may have significant implication for the clinical practice of screening and primary prevention of esophageal cancer."

Provided by University Hospitals Case Medical Center