MedicalXpress

New research finds markers for esophageal cancer before it develops

November 3 2008

Rhode Island Hospital researchers have identified genetic proteins, also known as biomarkers, capable of distinguishing changes at the microscopic level that can signal a precancerous condition in the esophagus. These markers may help identify patients who are likely to progress to esophageal cancer. This first of its kind study is published in the journal *Clinical Cancer Research*.

Barrett's esophagus (BE) is a common precancerous condition of the lower esophagus. Patients with BE need to be screened by endoscopy and biopsied at frequent intervals in order to detect premalignant changes at the microscopic level. The presence of BE increases the risk of developing esophageal adenocarcinoma (EAC), the most common form of esophageal cancer.

Lead author Murray Resnick, MD, comments, "Identification of biomarkers capable of distinguishing the grade of Barrett's esophagus-associated dysplasia, as well as identifying patients who are most likely to progress to cancer, would be extremely valuable tools for both surgical pathologists and gastroentorologists."

The progression of BE to EAC occurs in a series of steps from low-grade dysplasia (earliest morphological sign of precancer) to high-grade dysplasia (HGD). Approximately half of all patients who experience HGD will progress to EAC. Several genetic abnormalities have been identified that support the transition from HGD to EAC. Currently morphological analysis of esophageal biopsies by light microscopy is

considered the gold standard for identifying HGD, thereby guiding a treatment plan for these patients. Distinguishing between LGD and HGD, however, can be challenging for pathologists to detect using light microscopy alone.

Resnick says, "As pathologists, our primary goal was to identify candidate biomarker proteins suitable for the generation of specific antibodies that could detect these proteins using immunohistochemical diagnostic techniques that are readily available in all pathology departments."

With that in mind, researchers at Rhode Island Hospital's Molecular Pathology Core Facility and the Division of Gastroenterology, along with researchers at the Oregon Health and Science University, and Massachusetts General Hospital, set out to identify biomarkers that could distinguish between low-grade and high-grade dysplasia.

Using state-of-the-art molecular techniques, including laser capture microdissection followed by gene expression analysis, the researchers identified a number of potential biomarkers. Resnick concludes, "Using this process, it is the first study of its kind to differentiate genes expressed in HGD versus other grades of BE-associated dysplasia. While additional studies on a larger series of cases is required, this study provides promise for our future ability to identify which patients have the potential to develop esophageal adenocarcinoma and to provide an appropriate treatment plan."

Source: Lifespan