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Biomarkers in blood show potential as early detection method of pancreatic cancer

January 21 2014

Researchers have identified diagnostic microRNA panels in whole blood that had the ability to distinguish, to some degree, patients with and without pancreatic cancer, according to a study in the January 22/29 issue of *JAMA*. The authors caution that the findings are preliminary, and that further research is necessary to understand whether these microRNAs have clinical implications as a screening test for early detection of pancreatic cancer.

MicroRNAs regulate gene expression and play important roles in the development of tumors and tumor metastasis. MicroRNA panels are a combination of several microRNAs.

Pancreatic cancer is the fourth most common cause of cancer death in the Western world and prognosis is poor, according to background information in the article. Early diagnosis of pancreatic cancer is difficult partly because it is difficult to get useful biopsies of tissue from patients suspected of having pancreatic cancer, so markers of the disease that could help with early diagnosis are needed to improve prognosis. Several specific microRNA profiles (patterns of microRNAs) have been linked to pancreatic cancer tissue. A diagnostic noninvasive blood test for pancreatic cancer would be very valuable, the authors write.

Nicolai A. Schultz, M.D., Ph.D., of Herlev Hospital, Copenhagen University Hospital, Copenhagen, Denmark, and colleagues examined differences in microRNA in whole blood between patients with pancreatic cancer (n = 409) and healthy participants (n = 312) and

patients with chronic pancreatitis (n = 25) to identify diagnostic panels of microRNAs for use in the diagnosis of pancreatic cancer. Serum cancer antigen 19-9 (CA19-9; an antigen that is elevated in approximately 80 percent of patients with pancreatic cancer) was also measured for comparison.

The researchers identified 2 novel panels with the potential for diagnosing pancreatic cancer.

The authors write that the test could result in referral of more individuals with symptoms to imaging. "The test could thereby diagnose more patients with pancreatic cancer, some of them at an early stage, and thus have a potential to increase the number of patients that can be operated on and possibly cured of pancreatic cancer."

They add that the harms of a high number of false-positives in screening for pancreatic cancer using an inexpensive, noninvasive blood sample from individuals with or without symptoms should be quantified in the future.

"Although we validated the panels, our findings are preliminary. … Further research is necessary to understand whether these have clinical implications for early detection of pancreatic cancer and how much this information adds to serum CA19-9."

In an accompanying editorial, Donald J. Buchsbaum, Ph.D., of the University of Alabama, Birmingham, and Carlo M. Croce, M.D., of Ohio State University, Columbus, write that additional research is needed regarding the use of microRNAs for the early detection of pancreatic cancer.

"Even though the study was relatively large, well-conducted, and addressed the important topic of development of noninvasive methods to

detect pancreatic cancer, the authors appropriately acknowledge the exploratory nature of the investigation. … Given the dismal prognosis for patients with pancreatic cancer, it is important that new diagnostic approaches, such as the one used in this study, are sought. However, additional rigorous investigation will be necessary to support and extend these interesting findings."

More information: DOI: 10.1001/jama.2013.284664
Editorial: DOI: 10.1001/jama.2013.284665