Narrowing the gap toward precision medicine for pancreatic cancer

January 19 2018, by Laura Oleniacz

University of North Carolina Lineberger Comprehensive Cancer Center's Jen Jen Yeh, MD, is working to understand the complicated relationship between one of the deadliest cancers and the web of connective tissue that can surround the tumors.

In a new study, Yeh helped uncover findings about the role of the matrix of tissue called "stroma" in pancreatic cancer, and in another, she helped identify the role of molecular tumor subtypes in therapy response. Pancreatic cancer's five year survival rate is 8 percent in the United States, and researchers hope to improve that.

One of the challenges in treating pancreatic cancer is that while stroma can block treatment from reaching the tumor, Yeh said it may also prevent the tumor from spreading.

"As many elegant studies have found, stroma in pancreatic cancer is a double-edged sword – it can be both protective and promoting," said Yeh, who is a UNC Lineberger member, a professor in the UNC School of Medicine Division of Surgical Oncology and the vice chair for research in the Department of Surgery.

In a study in *JCO Precision Oncology* that Yeh co-led with Eric A. Collisson, MD, at the University of California, San Francisco, the researchers analyzed levels of stroma surrounding pancreatic cancer tumors, and in distant metastatic sites.

They found the primary tumors had a significantly higher stromal density than the cancer that had spread to solid organs. In addition, patients with a higher stromal density in their primary tumors had longer survival than other patients, a finding that can be analyzed using non-invasive methods, such as a CT scan.

Since they discovered that stroma is important to survival, Yeh said their findings suggest that physicians need to think before taking away the stroma on patients for whom their stroma is protective. That makes detecting stroma density at the outset particularly important.

"The vast majority of pancreatic cancer patients die with metastases, so therapies are targeted to metastatic disease," Yeh said. "The finding that different sites of pancreatic cancer have different amounts of stroma may have therapeutic implications, especially with the increasing interest in stroma-modulating therapies."

In a previous foundational study, Yeh characterized the biologic patterns in pancreatic cancer tumors and in stroma. She found that patients can have different biological or molecular types of tumors as well as stroma, and that both types are linked to outcomes. In a separate, recent *Clinical Cancer Research* study she co-authored, Yeh and colleagues, including those from the Princess Margaret Cancer Centre in Ontario, Canada, found that patients with one subtype of pancreatic tumors were more responsive to treatment than were patients with a different subtype.

"These studies emphasize the potential importance of individualizing therapies for specific tumor characteristics, and the need to develop ways to identify these characteristics with either biopsies or noninvasive imaging approaches," Yeh said.

More information: Robert J. Torphy et al. Stromal Content Is Correlated With Tissue Site, Contrast Retention, and Survival in

Pancreatic Adenocarcinoma, *JCO Precision Oncology* (2018). DOI: 10.1200/PO.17.00121