

Chemical signature of pancreatic cancer allows doctors to quickly identify cancer cells and predict patient outcomes

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Video Abstract

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Abstract

Of all the forms of cancer, few are as aggressive as pancreatic adenocarcinoma. The discovery of a tumor in the pancreas is often accompanied by an extremely poor prognosis, even when surgery is an option. But a new technique could help doctors design better treatment strategies for patients with this type of cancer. A recent study carried out by researchers from France and the US highlights a promising new approach to rapidly distinguish pancreatic cancer cells from healthy ones and to predict a patient's chances of survival after diagnosis. Such predictive power would allow physicians to better assess a patient's surgical needs and recommend a more personalized treatment plan. Using a high-resolution spectroscopy technique, the research team compared the chemical composition of tissue samples from two types of pancreatic cancer patients: long-term survivors (defined as those living longer than 3 years following diagnosis) and short-term survivors – those surviving less than one year after diagnosis. The investigators found that each group had a unique chemical profile. Among the compounds in this profile, ethanolamine proved the most telling in determining patient outcomes. High levels of this molecule were associated with decreased patient survival. Using the same technique, the researchers were also able to distinguish pancreatic cancer tissue from healthy tissue in as little as 20 minutes. This puts the method well within the timeframe of a surgical procedure, meaning it may be possible for doctors to test tissue samples during surgery as a means to detect lingering cancer cells in near-real time. This on-the-fly chemical fingerprinting is a promising tool for identifying tumor cells and predicting the survival of patients with pancreatic cancer. Such information would allow doctors to accurately and quickly determine the severity of a patient's condition and make important decisions regarding the need for, and extent of, surgical intervention.