Old drug finds potential new use in treating pancreatic cancer

Friday, May 31, 2013

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Pancreatic ductal adenocarcinoma (PDA) is a particularly deadly form of cancer. Not only is it the fourth leading cause of cancer-related death in the US (lung, breast in women, prostate in men, and colon are the only cancers with higher rates), the mortality rate of PDA within 5 years of diagnosis nears 95%. A chemotherapy (gemcitabine) that kills pancreatic cancer cells is commonly used in patients, however the efficacy of this drug remains, sadly, low and many succumb to the disease.

An exciting study published in Molecular Cancer Research from the laboratory of Dr. Jonathan Brody at Thomas Jefferson sheds new light and new uses for an older drug. Mitoxantrone is an FDA-approved drug used to treat hormone resistant prostate cancer, acute myeloid leukemia, and multiple sclerosis. Emerging data now show that mitoxantrone does indeed kill pancreatic ductal adenocarcinoma cells, and does so more effectively than gemcitabine. Dr. Brody’s group demonstrated that mitoxantrone is especially effective in those pancreatic cancer cells with a high level of USP11 expression, a protein that is involved in DNA repair. It turns out that close to 50% of PDA samples have high levels of USP11, suggesting that mitoxantrone may be an effective new therapy for a significant number of patients. While the mechanism of how this drug is working to kill
pancreatic cancer cells is still under investigation, initial analysis indicates that interruption of this pathway results in cell death.

As mitoxantrone is an FDA approved drug, proceeding towards use of this agent in clinical trials can be faster than new drug development. Mitoxantrone may offer new and more effective options for patients suffering from pancreatic ductal adenocarcinoma.

Photo: J Keen

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