Functional magnetic resonance imaging to evaluate pancreatic cancer

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In an effort to develop new therapies for pancreatic cancer, models of this disease must be created and characterized. A recent study from United States found that advanced magnetic resonance imaging methods could be used to differentiate living from dead tumor cells in a rabbit model of pancreatic cancer, thus providing a more in-depth understanding of this model of pancreatic cancer as well as the imaging methods employed.

Pancreatic ductal adenocarcinoma (the disease commonly referred to as pancreatic cancer) carries the worst prognosis of any cancer. As current treatments offer minimal benefit, entirely new approaches are needed. Given the success of local therapies, as opposed to intravenous systemic therapies, for liver diseases (such as hepatocellular carcinoma), it is thought that similar local therapies may benefit patients with pancreatic cancer. To develop such therapies, it would be useful to devise targets that are easy to obtain and can indicate the efficacy of these new therapies in models of pancreatic cancer.

This research, led by Dr. Robert Lewandowski and colleagues at Northwestern University's Feinberg School of Medicine and recently published on July 14, 2010 in the World Journal of Gastroenterology, addresses this need. Using a rabbit model of pancreatic cancer that allows for arterial catheterization, the authors aimed to test the hypotheses that advanced functional magnetic resonance imaging (MRI) could be used to assess regional differences in tumor function in this model. It was found that the two types of functional MRI studied

(diffusion-weighted MRI and transcatheter intraarterial perfusion MRI) could be used to differentiate living tumor cells from dead tumor cells and thus can be used to assess tumor viability.

Numerous models of pancreatic cancer currently exist, but this research is the first to assess functional MRI in the VX2 rabbit model of pancreatic cancer studied in this work. Using these findings, it may be possible in the future to assess therapeutic efficacy in this animal model using functional MRI as opposed to more invasive techniques such as biopsy or necropsy.

More information: Lewandowski RJ, Eifler AC, Bentrem DJ, Chung JC, Wang D, Woloschak GE, Yang GY, Ryu R, Salem R, Larson AC, Omary RA. Functional magnetic resonance imaging in an animal model of pancreatic cancer. World J Gastroenterol 2010; 16(26): 3292-3298 www.wjgnet.com/1007-9327/full/v16/i26/3292.htm

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