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Multimodal magnetic resonance and Near-Infrared-Fluorescent imaging of intraperitoneal ovarian cancer using a Dual-Mode-Dual-Gadolinium liposomal contrast agent

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The degree of cytoreduction at surgery is one of the most important prognosticfactors for ovarian cancer. A multimodality agent that can be used with magnetic resonance (MR) for staging and pre-surgical planning, and with optical imaging to aid surgical removal of tumors, would present a new paradigm for ovarian cancer. We assessed whether a dual-mode, dual-Gadolinium (DM-Dual Gd-ICG) contrast agent can be used to visualize intraperitoneal ovarian tumors by multimodal MR and near infra-red (NIR) imaging. Intraperitoneal ovarian tumors (Hey-A8 or OVCAR3) in mice enhanced on MR two days after intravenous DM-Dual Gd-ICG injection compared to controls. As seen on open abdomen and excised tumors views and confirmed by radiant efficiency measurement, Hey-A8 or OVCAR3 tumors from animals injected with DM-Dual Gd-ICG had increased NIR fluorescence. As controls, increased MR signal was not seen by Gd-chelate alone nor was increased NIR signal seen by ICG alone 2 days after injection at doses similar to those given by DM-Dual Gd-ICG. This suggests clinical potential to localize ovarian tumors by MR for staging and surgical planning, and, by NIR at surgery for resection.

Biography:

Vikas Kundra is Professor and Director of Molecular Imaging in the Department of Radiology, U.T.- M.D. Anderson Cancer Center with joint appointment in the Department of Cancer Systems Imaging. He received his M.D. and Ph.D. from Harvard University and completed his radiology training at Brigham and Women's Hospital. He is a Fellow of the Society of Body Computed Tomography-Magnetic Resonance Imaging and a Distinguished Investigator of the Academy of Radiology Research. Clinical work focuses on Body Imaging particularly in cancer and research focuses on molecular imaging, including imaging of gene expression and nanotechnology

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