The Robert M. Berne Cardiovascular Research Center Presents

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Potential mechanisms contributing to radiation-induced heart disease

Epidemiological data indicate that exposure to ionizing radiation increases the risk of cardiovascular mortality and morbidity in a moderate but significant manner. Two main radiation targets have been identified in the heart: the vascular endothelium and the myocardium (heart muscle). Ionizing radiation causes persistent endothelial alterations characterised by inflammation and early senescence in vitro and in vivo. Irradiated endothelial cells communicate with surrounding non-irradiated cells by secreting inflammatory and senescence-associated proteins that trigger activation of STAT-mediated pathways in the bystander cells. In the myocardium, ionizing radiation induces alterations in lipid metabolism, glycolysis, and mitochondrial function (respiration, ROS production). In these energy-related processes a dose- and dose-rate dependent activation or inactivation of peroxisome proliferator-activated receptor alpha (PPAR alpha) plays a central regulatory role. Countermeasures to mitigate negative effects of ionizing radiation to the heart are discussed.

**Thursday November 1st, 2018**
**11:00 AM-12:00 PM**
**MR5 3005**

Hosted by: Weibin Shi, PhD
Refreshments Served