POSTER SESSION 3
Commons West, Easel 10
2:30 PM to 4:00 PM

The Association Between Intermuscular Fat, Hypertension and Insulin Resistance in Cancer Patients

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Mentor: Kerryn Reding, Biobehavioral Nursing and Health Informatics

Elevated intermuscular fat (IMF) is an indicator of metabolic syndrome and triggers the development of chronic diseases such as diabetes and heart diseases. Metabolic syndrome (MetS) includes insulin resistance, hypertension, dyslipidemia, hypercholesterolemia and abdominal adiposity. A leading hypothesis linking IMF to MetS is because skeletal muscle is the primary site of glucose metabolism. This function is impeded by the presence of IMF due to limited microvasculature perfusion to the muscle. Cancer treatment increases the ratio of intermuscular fat to skeletal muscle (IMF:SM), which indicates an investigation of IMF is warranted in patients treated for cancer. The purpose of this study to investigate the relationship between IMF, diabetes and hypertension in patients treated for cancer. We will perform a secondary analysis to examine IMF composition by magnetic resonance imaging (MRI) leveraging existing data in 143 cancer patients with stage A heart failure. This will inform us of the association between intermuscular fat, hypertension and insulin resistance in cancer patients, which is the first study to investigate this research question. Further study is needed to determine whether increased IMF in cancer patients leads to increased risk of MetS or diabetes. Furthermore, this line of work will inform future research into lifestyle interventions capable of reducing intermuscular fat, which has implications for the development of MetS in individuals treated for cancer.

POSTER SESSION 3
Commons West, Easel 9
2:30 PM to 4:00 PM

Describing Changes in Intermuscular Fat in Patients Receiving Chemotherapy

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Cancer is the second leading cause of death in the United States. Advanced treatment techniques and robust research have improved cancer survivorship. However, there is significant cancer treatment related morbidity and mortality with 30% of breast cancer patients presenting with heart failure symptoms that include trouble breathing, poor exercise tolerance, and fatigue. Therefore, research that aims to improve the lives of cancer survivors in this regard is needed. Excess body weight is a significant risk factor for both increased mortality in cancer patients and heart failure symptoms; however, it is unclear how fat is implicated. Intermuscular fat (IMF), fat that is located inside and between muscle groups, is a metabolically active tissue that competes with skeletal muscle for the use of oxygen, blood, and glucose. Elevated IMF has the strongest relationship with breast cancer mortality compared to any other measure of body composition. The purpose of my research is to describe differences in IMF accumulation during treatment in 143 patients receiving chemotherapy for cancer. Abdominal magnetic resonance imaging (MRI) will be used to determine total skeletal muscle, visceral fat, and IMF using Tomovision software. Images will compare total pixel surface area of each tissue to create a ratio of skeletal muscle to IMF at enrollment (0 mos) and end of study (24 mos). I hypothesize that the type of chemotherapy most strongly associated with weight loss will be linked with increased IMF during treatment. The study results will add to one aspect of a larger body of work that aims understand the mechanisms of IMF in cancer patients and its relation to cancer treatment-related symptoms. Future research should investigate interventions that aim to reduce IMF and monitor for reduced fatigue, less severe heart failure symptoms, and improved patient mortality.