Comparison of Non-Invasive Peripheral Vascular Function to Invasive Measures of Coronary Function in Patients with Suspected Coronary Microvascular Dysfunction

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Introduction: The purpose of this study is to compare non-invasive vascular assessments to invasive gold standard measures of coronary flow and resistance in patients with suspected coronary microvascular dysfunction (CMD), a condition driven by systemic endothelial dysfunction. We hypothesize that non-invasive measures will be associated with both coronary flow and resistance following pharmacological hyperemia. **Methods:** Forty-one patients with suspected CMD attended the Cardiovascular Integrative Physiology Clinic at Southlake Regional Health Centre. Patients underwent finger-based arterial tonometry (RHPAT) to non-invasively quantify microvascular endothelial function (EndoPAT). A subset of participants (n=15) also concurrently completed flow mediated dilation (FMD) of the brachial artery to assess conduit artery endothelial function. Briefly, a standard blood pressure cuff was positioned on the right arm of patients, distal to the elbow joint. Baseline recordings preceded 5 minutes of forearm ischemia, and was followed by cuff deflation, eliciting reperfusion. Within 4 months, patients underwent coronary reactivity testing using the Doppler guidewire method. Specifically, the coronary flow reserve (CFR), and the index of microvascular resistance (IMR) were calculated during pharmacologically-induced hyperemia using adenosine, then dobutamine. **Results:** RHPAT was negatively correlated to the IMR during dobutamine ($r=-0.39$, $p=0.04$), but not the CFR ($r=0.14$, $p=0.49$). FMD was negatively correlated to the IMR during adenosine ($r=-0.64$, $p=0.01$), but not the CFR ($r=0.29$, $p=0.30$). **Conclusion:** These preliminary results suggest that measures of non-invasive peripheral vascular function can predict pharmacologically induced changes in coronary resistance, but not coronary flow.