GNYACSM Abstract

Blood Pressure and Aortic Stiffness in Young Adults with History of ACL Injury

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ABSTRACT

Anterior cruciate ligament (ACL) injuries are prevalent in sports, affecting approximately 100,000 to 200,000 athletes each year. Notably, one in three individuals with an ACL injury develop osteoarthritis within a decade. In addition to knee cartilage deterioration, osteoarthritis is linked to a heightened risk of hypertension and aortic stiffness, risk factors associated with the development of cardiovascular disease (CVD). However, it remains unclear whether an ACL injury directly contributes to increased blood pressure and aortic stiffness. **PURPOSE**: Assess brachial blood pressure and carotid-femoral pulse wave velocity (cfPWV) as a proxy measure of aortic stiffness in young adults with a history of ACL injury and in young adults without a history of ACL injury. **METHODS**: Brachial blood pressure and cfPWV were assessed in 19 participants (women=13, age=21 years, body mass index [BMI]=23.9 kg/m^2) with previous ACL injury (ACL group) and 22 control participants (women=9, age=22 years, BMI=24.0 kg/m^2) without previous ACL injury (CON group). Brachial blood pressure was measured in the left arm with an oscillometric blood pressure cuff. cfPWV was measured using applanation tonometry. Independent samples *t*-tests were used to compare brachial blood pressure and cfPWV in the ACL and the CON groups. Data are presented as mean ± standard deviation. **RESULTS**: There were no differences in systolic blood pressure (SBP) or diastolic blood pressure (DBP) between the ACL and CON groups (SBP ACL: 120±11 mmHg, SBP CON: 120±11 mmHg, p=0.42; DBP ACL: 73±7 mmHg, DBP CON: 71±7 mmHg, p=0.25. There were no differences in cfPWV between the ACL and CON groups (ACL: 5.5±0.8 m/s, CON: 5.6±1.2 m/s, p=0.46). **CONCLUSION**: Blood pressure and aortic stiffness was similar between young adults with a history of ACL injury and young adults without a history of ACL injury. Unlike osteoarthritis, which has been shown to increase blood pressure and aortic stiffness, our results suggest that ACL injury may not have these same effects.