Myocardial infarction with use of Cannabinoid in an Adolescent

Jeet Mehta, MD, Arjun Mahendran, MD, Todd Brubaker, DO, Ralph Martello, MD, Pooja Desai, MD, Rishi Adhikari, MD
University of Kansas-Wichita – School of Medicine, Wesley Children's Hospital (KU Pediatrics)

Background:
Studies considering associations between marijuana use and cardiovascular risk factors, such as obesity, hypertension, hyperlipidemia, elevated fasting glucose levels, and insulin resistance have been inconclusive, likely due to confounding comorbid behaviors such as tobacco smoking. However, recent case reports, including our case presentation, should alert clinicians that for adolescent patients with risk factors for ischemic heart disease, marijuana may be harmful, especially in light of evidence showing elevated mortality among cannabis smokers who have had a prior myocardial infarction. We report a morbidly obese pediatric patient who was seen at a regional Children's Hospital with evidence of varying degrees of myocardial injury secondary to the use of marijuana.

Case Presentation:
A 16 year old male presented to an emergency department at an outside hospital due to complaints of sudden onset typical angina. Aspirin and nitroglycerin partially improved patient's chest pain. Initial labs showed elevated troponin, CPK, as well as CKMB without ST elevation on EKG. Patient was transferred to a regional Children's Hospital for concern for acute coronary syndrome.
On further history, patient admitted to smoking a vape pen the day prior to admission for the first time and patient's urinary drug screen on admission was positive for cannabinoids. From initial history, the leading suspicion was acute coronary syndrome secondary to K2 ingestion. K2 assay was, however, negative. Patient's BMI was noted to be 39 with poor dietary history. EKG on admission showed non-specific ST changes with an incomplete right bundle branch block. Transthoracic echocardiogram on admission was normal, however, stress echocardiogram no day prior to discharge showed distal apical and septal hypokinesis consistent with non ST elevation myocardial infarction involving the distal left anterior descending artery. Patient was started on aspirin, clopidogrel, low dose statin, metoprolol and sublingual nitroglycerin as needed for chest pain. Further tests revealed an HbA1c of 5.1% and elevated triglycerides of 181 mg/dL and low HDL at 23.
Troponins was trended throughout hospitalization and decreased to 0.69 at discharge with a peak of 3.32 ng/mL on admission. EKG at discharge showed new T wave inversion consistent with recent ischemic event. Patient was discharged after nutrition consultation for healthy dietary habits and was followed outpatient by cardiology.

Conclusion:
Synthetic cannabinoids have multiple known side effects, and serious events, including ischemic stroke, have been reported. Although there are reports of adverse cardiovascular effects secondary to cannabis or synthetic cannabinoid use, including myocardial infarction (MI), arrhythmias, and sudden death in adults, data on the cardiac effects of cannabinoids and K2 in pediatrics is limited. This case report serves as an alert to pediatricians to be vigilant when encountering a patient with recent cannabinoid ingestion in the setting of chest pain.