## G20 Sudden Death in a Calipatria State Prison Inmate With a Single Coronary Artery

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After attending this presentation, attendees will understand how to determine the presence of a "true" single coronary artery and to utilize this cardiac malformation as the cause of sudden and unexpected death in the absence of other pathophysiology.

This presentation will impact the forensic community and/or humanity by demonstrating the pathophysiology with a single right coronary artery, and by classifying the finding of a "true" single coronary artery as a pathological entity of functional significance potentially leading to sudden death in the absence of other cardiac malformations.

This presentation is the case of a 31-year-old black man who had been incarcerated for approximately six years prior to his death. The decedent was an inmate at the Calipatria State Prison located in Southern California. He was in the midst of doing exercises in the exercise yard when he suddenly collapsed. He was subsequently taken to the prison infirmary and transferred to a local hospital for treatment, however, was pronounced dead despite resuscitative efforts. The decedent had no significant past medical history and no history of any drug usage. Postmortem examination revealed a slightly enlarged heart with a single right coronary artery and complete absence of the left coronary artery and corresponding circulation. Gross and microscopic evaluation of the heart revealed subendocardial fibrosis of the anterior and anteroseptal left ventricle characteristic of chronic myocardial ischemia. Also grossly and microscopically evident was superimposed acute myocardial infarction in the same region of the heart. Changes consistent with poor vascularization, lack of blood flow and oxygenation of the myocardium of the heart in the distribution of the absent left anterior descending coronary artery were identified.

A brief review of congenital malformations of the coronary artery circulation will be presented, including criteria for a true single coronary artery. A single coronary artery without other cardiac malformations should be considered as a pathological entity potentially leading to sudden death. Training and experience have demonstrated that this entity is usually of no functional significance unless the single artery becomes occluded. This is usually reported as an "incidental" finding, not contributing to death. This rare pathological entity may in itself lead to acute and chronic myocardial ischemia, myocardial infarction and sudden death. In this particular case, the decedent had a six-year history of incarceration during which time he had a history of chronic exercise, which apparently exacerbated the cardiac ischemia and ultimately resulted in acute myocardial infarction with sudden death.

**Single Coronary Artery, Sudden Death, Myocardial Ischemia and Infarction**

 ** Presenting Author*