Sudden Cardiac Death Risk Stratification in Anomaly of Right Coronary Artery: When is Implantation Needed?

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**Introduction:** An anomalous origin of the right coronary artery (RCA) from the left sinus is a very rare anomaly, and its incidence is 0.019% to 0.49% on coronary angiography. However, recent angiographic studies have reported a relatively high incidence (5.6%) of coronary artery anomalies and anomalous RCA origins from the left sinus (0.92%). 19-33% of sudden cardiac deaths in the young population is attributable to coronary artery anomalies. ARCA cause fixed obstruction and limits coronary blood flow, causing ventricular ischemia predispose to lethal arrhythmia during exertion.

**Methods:** CASE REPORT 41 y.o male with complain of easily fatigued since 3 years before. Dyspnea on exertion (walking >100 meters, jogging), there was no chest discomfort. Patient was treated with Bisoprolol for 3 years, before discontinued by his initiative. Physical examination is within normal limit. Coronary Computed Tomography Angiogram with contrast and calcium scoring test was done in 2014, suggestive of high riding and anomalous origin of Right Coronary Artery. Calcium Score was normal. Patient underwent Dobutamine Stress Echocardiography without any abnormal wall motion, no abnormal rhythm noted. Ejection Fraction was 68% with good contractility of both ventricles. Medical treatment with B-Blocker was chosen over Implantable Cardioverter Defibrillator (ICD) implantation.

**Result:** Sudden cardiac death is the most feared complication in patient with ARCA. This condition may develop during exertion or heavy psychological stress. Treadmill ECG or Dobutamine stress test may be chosen depending on patient’s condition, to differentiate between a high-risk and low risk patient. If arrhythmia and heart attack occurred during stress test, then Implantable Cardioverter Defibrillator should be considered as sudden death prevention for patient. As from the case, neither abnormal wall motion nor rhythm was noted, conclude that this patient has low risk of sudden death, which mean conservative treatment using Beta Blocker can be used.

**Conclusion:** Although ARCA is rare, its complication is devastating. If not diagnosed and treated carefully, sudden cardiac death may come like a grim reaper. Modalities of therapy should be chosen depending on patient’s risk stratification using stress test which is the most important diagnostic tool.