

**Coronary artery anomalies: the experience of the sports medicine and physical exercise unit of treviso.**

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Introduction: Several clinical studies have shown that the anomalous origin of the coronary arteries, especially the origin of a coronary from the "wrong" sinus, is associated with an increased risk of sudden death during exertion. Therefore, early detection of such abnormalities is critical in preventing sudden death during sport. Case studies: from 2011 to the present, we identified, by echocardiography (Echo), 22 coronary anomalies. In particular: - 7 major anomalies: including 4 anomalous origin of the right coronary artery from the left sinus, 1 right coronary artery from the pulmonary artery, 1 left coronary artery from the right coronary artery, and 1 case in which both coronaries originated from a common coronary ostium above the sinotubular junction. - 15 minor anomalies: 13 anomalous origin of the circumflex artery from the right sinus or right coronary artery with retroaortic course, and 2 cases of high origin (high take-off) of the right coronary artery. Only in one case (right coronary artery from the left sinus with intramural course) was reported chest pain during exertion. In the remaining cases the diagnosis was the result of a screening performed for ventricular premature beats, axial deviation, family history of hypertrophic cardiomyopathy, etc. Therefore, almost all of the athletes were asymptomatic and with negative maximal exercise stress test. All athletes with coronary abnormalities (major and minor) have been declared not eligible for competitive sports according to Italian cardiological guidelines. Athletes with anomalous origin of the circumflex were subjected to our study protocol which provides Holter ECG, contrast-enhanced cardiac MRI plus coronary MR angiography (for confirmation of the diagnosis and analysis of coronary course) and exercise Echocardiography. In all cases, the MRI was negative for late enhancement and the exercise Echocardiography didn't show inducible ischemia. These subjects were allowed to practice non competitive sport activities even at high intensity. In a follow up of almost 3 years, there haven't been no events and/or appearance of symptoms.

Conclusions: Our series: 1) draws attention to the lack of symptoms in the majority of athletes with congenital anomalies of the coronary arteries and little or no diagnostic capability of conventional screening systems in Sports Medicine (ECG and exercise stress test); 2) highlights the diagnostic potential of Echocardiography, reiterating that the origin of the coronary ostia should be investigated in each Echo performed in athletes. While there is broad consensus on major abnormalities and on their incompatibility with competitive sports, doubts remain about minor anomalies. Our follow-up of almost three years showed no cardiac events in athletes with anomalous origin of the circumflex and retroaortic course that continued to practice non competitive sports.