

Non-invasive cardiac imaging of coronary artery anomalies

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Part **V**

Valorization

Valorization

Possible valorization based on the present research in sudden cardiac death in athletes

In order to decrease the burden of sudden cardiac death in athletes, advances have been made in incorporating a pre-participation screening, including an electrocardiogram (ECG) and a questionnaire in individuals engaged in competitive physical activity prior to commencing sports. Although the ECG is useful in detecting certain underlying cardiac conditions, interpretation of the ECG is examiner and experience dependent. Furthermore, physician involved in sports medicine can be from all different specialties, also some, not involved in every day ECG reading. It would be therefore useful, and in the future hopefully available to read these ECG automatically. This would allow consistency throughout the different readers and all the ECGs information, clinical information and questionnaires could be easily stored and be available for future prospective outcome studies. Furthermore, automated risk calculation for possible presence of coronary artery anomalies would propose downstream imaging testing only in selected athletes depending on clinical data, questionnaire, ECG data, age, gender and sports behavior. The combination of specific patient selection and the new scanning protocols in coronary computed tomography angiography or the use of other imaging modalities such as cardiac magnetic resonance imaging (MRI) would prevent athletes from unnecessary high radiation and contrast agent exposure. Finally, incorporation all the information from the imaging studies, calculation of the risk of sudden cardiac death would be possible and would markedly help the physician in proper sports behavior and surgical correction counseling of patients/athletes.

Future valorization based non- invasive cardiac imaging and anomalous coronary arteries

Non-invasive cardiac imaging is a young sub-specialization of cardiology/radiology/ nuclear medicine and is developing very fast. The future will lead us in the direction of automated reconstruction and analysis tools. Further, radiation dose reduction, reduction of artifacts and evaluation of the different modalities, with the question of which patient with which coronary artery anomaly needs which imaging modality to best guide decision making and treatment will be future research fields. In patients with anomalous coronary arteries, automated reconstruction of coronary computed tomography angiography data with exact, reproducible automated measurements of the anatomic high-risk features would help to maintain a consistency between readers and to avoid inaccuracies. Further, outcome association of different automated measured anatomic high-risk features of CAA's and non-invasive stress imaging testing's of existing registries would be facilitated and would help us in the understanding of this complex entity.