



Exercise Testing in ARVC

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Exercise testing in ARVC is commonly performed to induce catecholamine related ventricular arrhythmias from the affected right ventricle. Given the eclectic nature of ARVC, broad testing is normally performed to derive as many supportive or refuting diagnostic tests in arriving at a clinical judgment regarding disease presence. The McKenna criteria include non-sustained and sustained ventricular tachycardia on exercise testing as a minor criterion supporting the diagnosis of ARVC¹.

Exercise testing is usually performed in a supervised setting with one of several protocols. At our institution, a modified Bruce protocol is used. 12 lead ECG (as opposed to simple rhythm strips) should be performed frequently to documenting ventricular ectopic or tachycardia morphology that has a left bundle branch block QRS configuration with variable frontal plane axis, reflecting a potentially broad distribution of RV pathology. It can be challenging to differentiate ARVC related ectopy or tachycardia from right ventricular outflow tract PVCs, which have a left bundle, inferior axis QRS that is often relatively narrow. Exercise testing is clearly only one of many steps in evaluating a potential ARVC patient.

Several initial descriptors of ARVC emphasized the frequency of events including sudden death during physical activity, suggesting a role for exercise testing^{2,3}. Thirteen of 98 affected ARVC patients had exercise related arrhythmias in one series by Nava et al³. Patients in this series were restricted from physical activity after diagnosis. Hamid et al found ventricular ectopy or tachycardia on exercise testing in 19% of ARVC patients, but only 2 of 29 (6%) of affected family members⁴. This suggests that the finding is helpful in identifying cases (potentially specific), but not sensitive. Lastly, a recent paper by Tabib et al⁵ has called into question the association of ARVC and exercise related arrhythmias. The authors identified the circumstances of death in 200



patients with autopsy proven ARVC who suffered fatal cardiac arrest. Only 3.5% of cases occurred in the context of physical exertion. The differences between cases series is likely explained by case selection, though the large number of cases in the latter series suggests that fatal ARVC events are unlikely to be exercise related.

These data suggest that exercise testing should be performed amongst a battery of non-invasive tests in patients suspected to have ARVC. Detection of left bundle QRS ectopy or tachycardia supports the diagnosis, though it is detected infrequently.

Bibliography

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