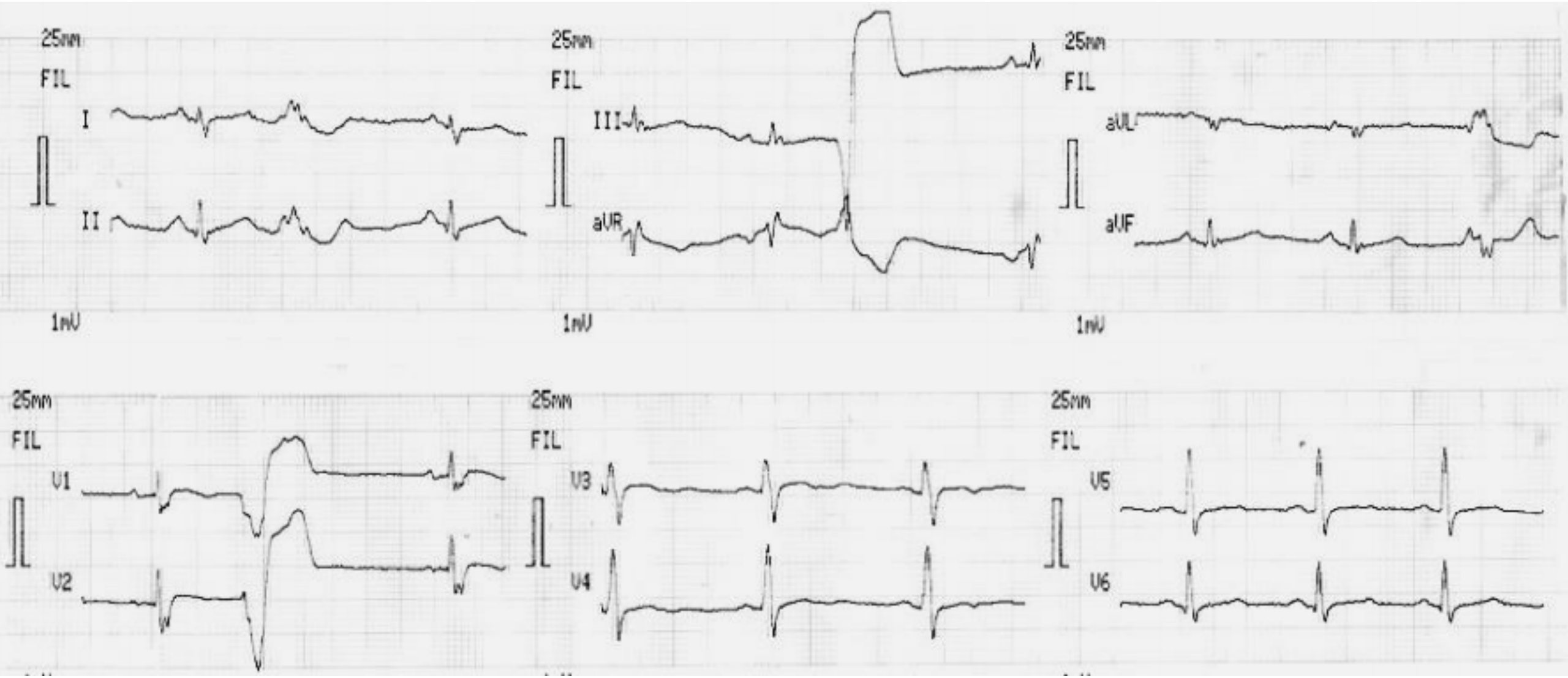
Asymptomatic adolescent for evaluation professional sport activity

Hello everyone. I present the case of a 17 year old boy who consults for a physical suitable for professional tennis. Asymptomatic and without a family history. It presents the following ECG.
What do you think?

Paola Gonzalez MD paogonzaar@gmail.com
Cardiologa Clinica Medica de planta del servicio de Cardiologia del Hospital Ramos Mejía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V2
25mm
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V4
25mm
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V5
V6

Colleagues opinions

That ECG is abnormal and highly suggestive of ARVC. (RV Cardiomyopathy). It should be studied.
Sergio Pinskis
. PINSKIS@CCF.ORG

Hello, ARVC must be excluded – epsilon wave, slow upstroke in S wave in V1-V2? (Right axis deviation also, extrasystole from right ventricle?).

Regards

Kjell Nikus

Tampere, Finland

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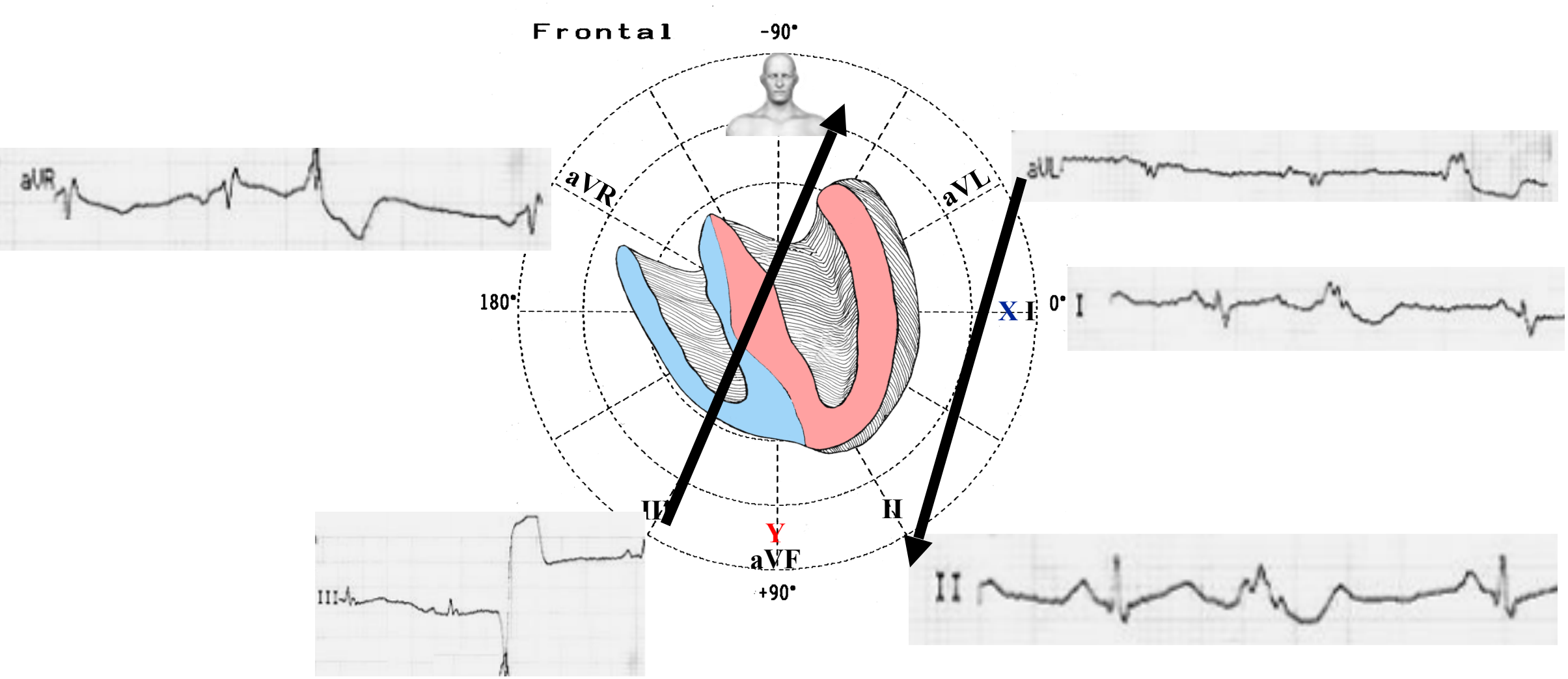
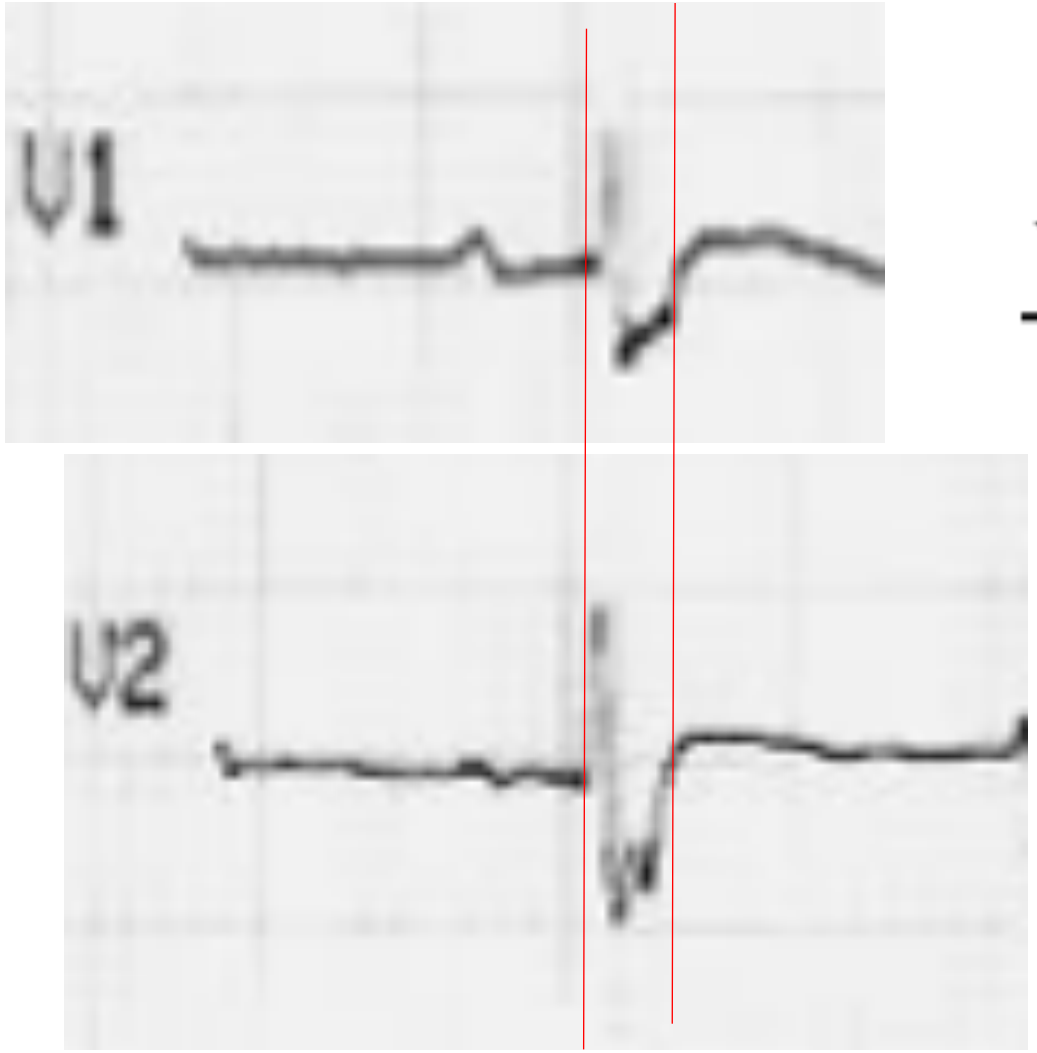
i do not like this ECG at all..or let us say differently..i love this ECG but the patient having this ECG is in trouble..nothing looks good and normal there..not the P wave not the QRS not the uggly VPC.. My feeling is that this young patient has a cardiomyopathy that could be an ARVD....This is my only diagnosis at the present time...The diagnosis should be made by simple echo that should be very anormal... Of course I maybe wrong...Personnally I have not seen such ECG at this age..

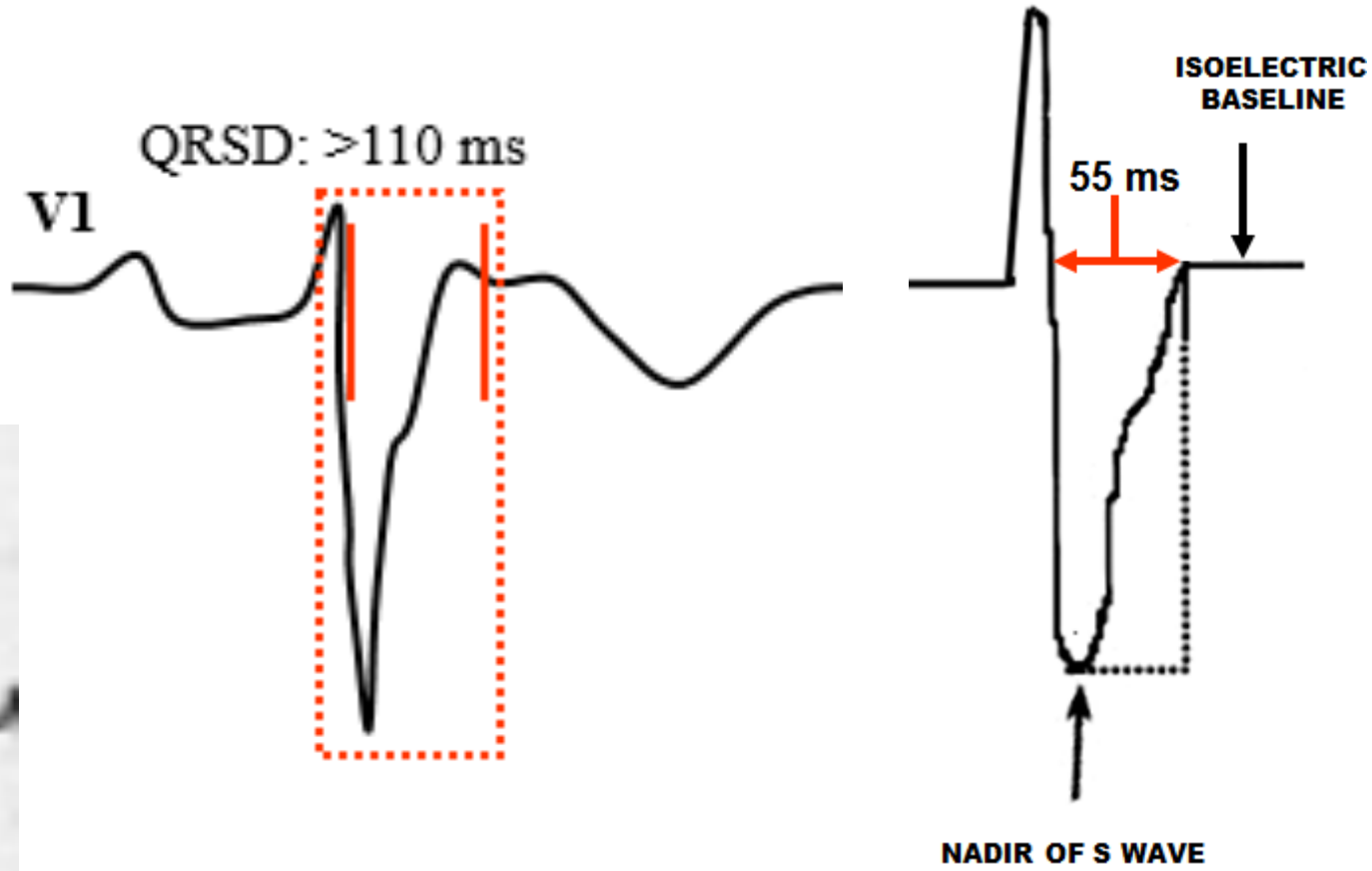
Professor Bernard Belhansen Israel

Premature ventricular contractions (PVCs) with two morphologies



Parietal block on right precordial leads: a delayed S wave upstroke ≥ 55 msec in leads V1 – V3





QRSD of $V_1+V_2+V_3$ /V_4,V_5, V_6 or ≥ 1.2 In ARVC this parameter is positive in 65% of cases. QRS prolongation located in right precordial leads

Fragmented QRS(fQRS) in aVL, V1, V2.

The baseline ECG shows:

I) Premature ventricular contractions (PVCs) with two morphologies:

A) Left bundle branch block-like pattern with positive R wave in leads: III and aVF what suggested PVC arising from RVOT

B) In II we observe a PVC with negative QRS. Consequently, the PVCs are polymorphic.

II) Parietal block on right precordial leads: a delayed S wave upstroke ≥ 55 msec in leads V1 – V3

III) Clear fragmented QRS(fQRS) in aVL, V1, V2. Comments: In ARVD/C fragmented QRS (fQRS) has a high diagnostic value similar to epsilon potentials by a highly amplified and modified recording techniques, such as right precordial leads ECG (R-ECG) and Fontaine leads (F-ECG) (**Peters 2008**). fQRS refers to the 'slurs or notches' appeared on the R or S wave or if the total QRS complex had ≥ 4 spikes. fQRS can be registered as a normal variant mainly in seniors endurance athlete heart if it appeared randomly in just a few leads. fQRS presenting in multiple leads is more likely pathologic. The underlying cause is the regional delay in propagation of ventricular depolarization (**Monta 2008**). fQRS is highly prevalent in ARVC/D patients when applied to amplified and modified ECG recording techniques, including the use of the Fontaine Leads System (**Peters 2008: Hurst 1998**). In real world practice, nevertheless, most ECGs available from ARVC/D patients and family members were obtained by using only the standard ECG recording technique. fQRS is easily recognizable from standard ECGs (S-ECG) and they are much more common in ARVC/D patient when compared with control subjects. Among them a notch before the end of R or S wave is characteristic, seen in 51% of ARVC/D vs 26% in controls. In ARVC/D, fQRS is often seen in multiple leads (**Zhang 2014**). Such changes, however, are common in control subjects as well. In the latter, the QRS complex is wider (**Dechering 2013**). fQRS complex, with various morphology, has been described as a diagnostic criterion of ARVC/D. Since fQRS is also prevalent in other types of cardiomyopathies (both ischemic and non-ischemic) (**Das 206;2010**). fQRS is induced by radiotherapy in patients with breast cancer(**Adar 2015**), and in normal subjects, its use in ARVC/D diagnosis is limited.