AVR ST-SEGMENT ELEVATION AS PREDICTOR OF THREE-VESSEL DISEASE IN NON-ST-SEGMENT ELEVATION ACUTE CORONARY SYNDROME

ELEVACIÓN DEL SEGMENTO ST EN AVR COMO PREDICTOR DE ENFERMEDAD CORONARIA DE 3 VASOS EN SÍNDROME CORONARIO AGUDO SIN ELEVACIÓN DEL ST

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Electrocardiogram (ECG) is a useful tool for the diagnosis of acute coronary syndrome (ACS). In recent years, ST-segment changes in aVR have been shown to provide valuable information about coronary anatomy and early risk stratification of ACS[1]. This lead gives information from the upper right portion of the heart including the right ventricle outflow tract and the basal portion of the interventricular septum[2].

aVR ST-segment elevation may be caused by transmural ischemia of the right ventricular outflow tract, by reciprocal changes of the left lateral leads in ECG[1] and by ischemia of the basal part of the interventricular septum due to occlusion of the proximal segment of the left anterior descending artery (LADA)[2-4]. In ACS patients this electrocardiographic finding may be accompanied by a ST-segment depression, usually in precordial leads, having an independent predictive value for global subendocardial ischemia due to occlusion of the left main trunk (LM) or three-vessels disease (3-VD)[1,3,5]. Thus, this change has been associated with a higher mortality, a more extensive coronary involvement in the context of a non-ST-segment elevation ACS[1] and even it correlates with a higher SYNTAX score[3].

A study by Kosugue M et al, found that ST-segment elevation ≥0.05 mm in lead aVR was the strongest predictor of severe LM involvement and/or 3-VD followed by a positive troponin T on admission[5]. Several studies have shown that ST-segment elevation in aVR compared to ST-segment depression in other leads is a better predictor of adverse outcomes in patients with non-ST-segment elevation ACS[1] and anticipates LM and/or 3-VD[3,6].

aVR ST-segment elevation can predict an acute occlusion of the LM, which supplies approximately 75% of the myocardial mass of the left ventricle and therefore its obstruction generates life-threatening hemodynamic deterioration and malignant arrhythmias. Hence a either percutaneous or surgical coronary revascularization should be performed as soon as possible[2,4], so it is essential for doctors to identify these electrocardiographic features in order to establish a proper diagnosis and provide a timely treatment for ACS.

A 69 year-old men patient with medical record of hypertension and diabetes mellitus type 2 under medical treatment without other remarkable morbidities presented at emergency department with 1-hour history of severe uninterrupted epigastric pain radiated to precordial region associated with diaphoresis, asthenia, nauseas and a Killip-Kimball class-2. Troponin I was positive and electrocardiogram on admission showed an aVR ST-segment elevation accompanied of a ST-segment depression in leads II, III and aVF (Figure 1).

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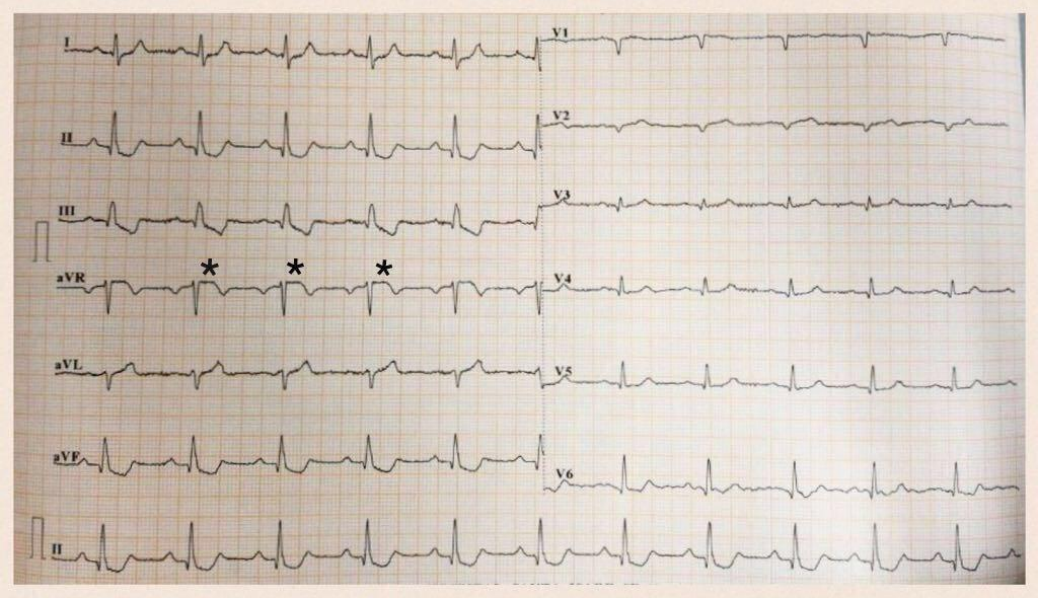

Figure 1. Electrocardiogram showing aVR ST-segment elevation.

A coronary angiography was performed immediately, which revealed 95% stenosis at the proximal-right coronary artery (RCA), diffuse involvement of proximal-mid portion of LADA and a 99% critical occlusion at left circumflex artery (LCA). Percutaneous coronary intervention with stent placement was done in three vessels involved, using two drug-eluting stent in LAD, another one on RCA and a bare metal stent on LCA, restoring completely the flow and getting a TIMI 3 flow (Figure 2).

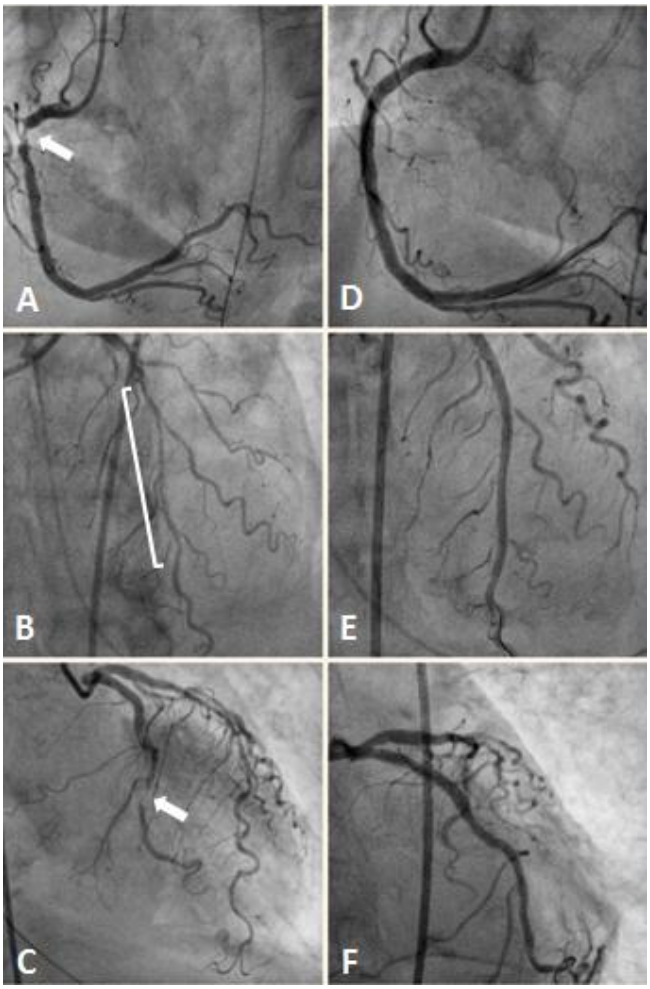

Figure 2. Coronary angiography revealing 95% stenosis at the proximal-right coronary artery (A), diffuse involvement of left anterior descending artery (B) and 99% critical occlusion on mid-left circumflex artery (C). (D), (E) and (F) panels show coronary anatomy after percutaneous coronary intervention and stent placement.

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