

## Alternans st-Elevation

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An 89-year-old Caucasian woman, presenting signs and symptoms leaning in favor of an acute coronary syndrome (ACS), involving the inferior and posterior walls (epigastric pain, localized echocardiographic alterations and enzyme dispersion) had also an altered ECG. At a more accurate evaluation, ischemia was not involved and the ECG anomalies were caused by ectopic beats, occurring within a prolonged QTc, due to the intake of ciprofloxacin and sotalol.

An 89-year-old Caucasian female, known for hypertension and dyslipidemia, hospitalized in our Institute for hematuria, presented epigastric pain and bradycardia. She was known for persistent atrial fibrillation and coronary artery disease with hypokinesia of proximal and middle segments of the inferior and posterior walls, causing a moderate reduction of left ventricular systolic function (LVEF:40%). The ECG showed a sinus rhythm with persistent ST-segment elevation in inferior and lateral leads only during ectopic beats (frequently in bigeminism) (Figure 1A). An ECG of 10 minutes before, revealed the absence of ectopic beats, diffuse ventricular repolarization alterations and a very prolonged QTc (Bazett formula: 596 msec) (Figure 1B). ECG registered in the previous days showed atrial flutter with diffuse aspecific alterations of ventricular repolarization, while patient was asymptomatic (Figure 1C).

Laboratory findings showed normal moderately reduced levels of hemoglobin (9.6 g/dL), normal levels of electrolytes (Na<sup>+</sup> 141 mmol/L; K<sup>+</sup> 4.09 mmol/L; Ca<sup>2+</sup> 2.35 mmol/L) and mild dispersion of Troponin T (serial analyses, performed every three hours, showed: 0.064, 0.060 and 0.053 mcg/L respectively), with normal levels of CPK (92, 89 and 84 U/L). A mild dispersion of serum creatinine (1.30 mg/dL) was also present.

Considering the pharmacological treatment, patient was on chronic

anti-arrhythmic therapy with propafenon (300 mg/day). Three days before our evaluation for ST-segment elevation, drugs were changed by stopping propafenon and introducing, in the following day, an association of ciprofloxacin (500 mg/day) and sotalol (160 mg/day).

After one day from the therapeutic change (two days before our evaluation), the ECG started to reveal a QTc interval prolongation (Figure 1D).

The case is very interesting and unique because, considering the symptoms and echocardiographic signs of the patient, the abnormal ECG findings could have misled the diagnosis towards an ischemic etiology. However, in this specific case, myocardial ischemia could have been ruled out considering the minimal troponin dispersion (compatible with mild chronic kidney injury) in absence of CPK dispersion. Therefore, the association of a brady-tachy syndrome with two QTc interval prolonging drugs was, instead, the true responsible for this peculiar ECG finding.

In reference to the prescribed drugs before our evaluation, the association of ciprofloxacin with sotalol is usually not to recommend considering the possibility of QTc prolongation with these pharmacological agents. Secondly, our patient was known for previous ischemic disease with segmental left ventricular kinesis alterations and a mild reduced systolic global function. In this situation it would have been better not to administer propafenon, started initially, due to its intrinsic negative inotropism.

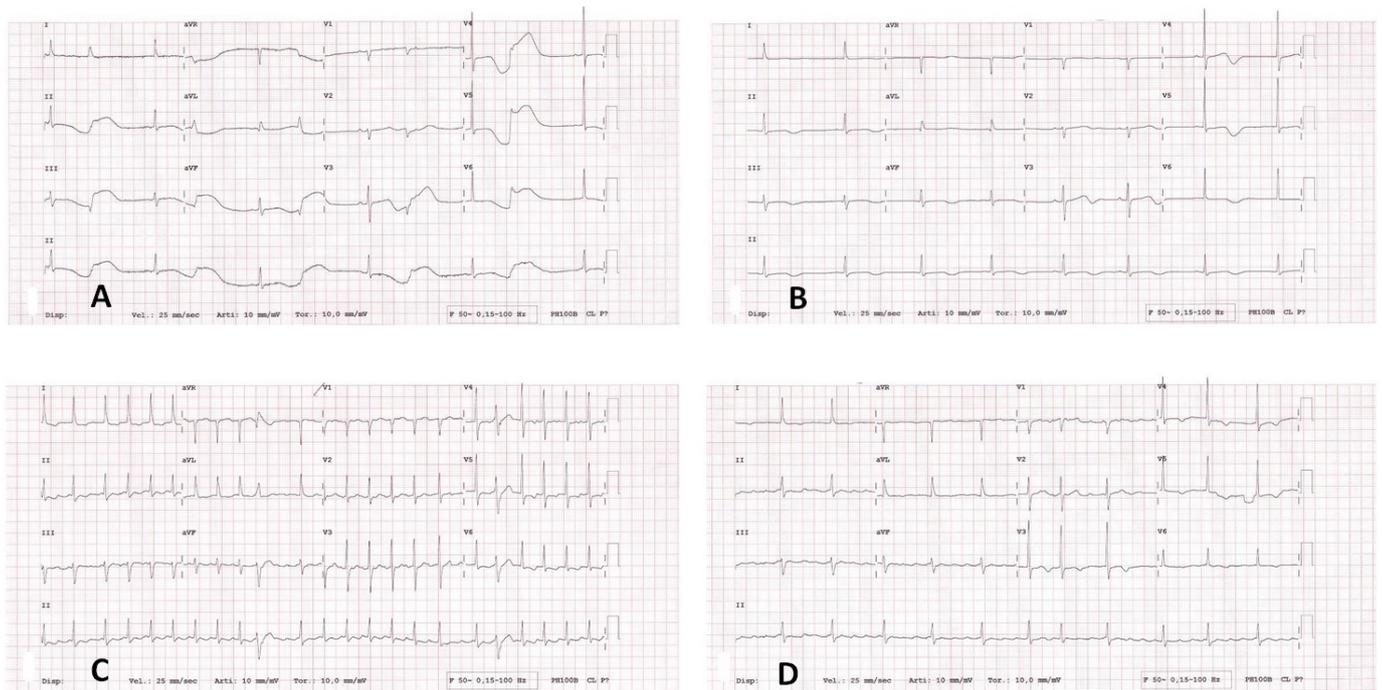
Such example ought to encourage clinical practitioners to a more careful assessment of QTc interval duration and clinical history: in particular, special attention should be given to the patients' concomitant medications, which might be helpful to sort out differential diagnoses in the most complex cases.

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**Figure 1:** A: Sinus rhythm with persistent ST-segment elevation in inferior and lateral leads only during ectopic beats (frequently in bigeminism). B: ECG performed 10 minutes earlier showed absence of ectopic beats but diffuse repolarization anomalies and QTc=596 msec. C: In the previous days, ECG presented only diffuse aspecific alterations of ventricular repolarization. D: QTc interval prolonged one day after changing treatment.