Ventricular tachycardia or artifact?

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Abstract: Electrocardiographic artifacts are extracardiac signals that may alter the electrocardiogram (ECG) generating false diagnoses. These artifacts may simulate pathologies on ECG's in healthy patients and result in long-term unnecessary or even deleterious treatments. On the other hand, to consider an arrhythmia as an artifact, may carry even worse consequences.

Keywords: Electrocardiogram (ECG); artifact; ventricular tachycardia; pulse waves

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Clinical vignette

It is well known that artifacts generated by voluntary or involuntary movements during an electrocardiogram (ECG) recording may simulate cardiac arrhythmias (1) and lead to unnecessary therapeutic interventions (2). On the other hand, unawareness of a true serious arrhythmic event, by confusing it with an artifact, would carry dramatic consequences, especially if the event in question is asystole or a malignant ventricular arrhythmia (2).

ECG description and discussion

We present the case of a 68-year-old male admitted to intensive care unit, after cardiac surgery with a temporary pacemaker implantation, who suddenly developed an episode compatible with a wide-QRS tachycardia of helicoidal appearance, preceded by a junctional rhythm at 60 beats per minute with ventricular-atrial dissociation and narrow QRS on continuous monitoring (*Figure 1*). However, the ECG recording generated debate within the medical team, due to the appearance within a rhythm suggestive of polymorphic ventricular tachycardia, of spike complexes at regular intervals (arrows), which may indicate the presence of an underlying rhythm within an altered recording.

In this particular case, the surface electrocardiographic record could be correlated simultaneously with an invasive (radial) blood pressure curve in a multiparameter monitor, showing no pulse wave and an abrupt systolic arterial pressure drop to zero, thus confirming the diagnosis of polymorphic ventricular arrhythmia with mechanical asystole (*Figure 2*) (3).

Points to ponder

Both the invasive pressure curves and the oximetry pulse curves, as well as the subjective perception of the arterial pulse (carotid, radial, brachial, etc.) are extremely useful when defining whether an electrocardiographic alteration is artificial or, on the contrary, a true arrhythmic event, thus enabling an appropriate assessment of its hemodynamic impact.

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None.

Footnote

Conflicts of Interest: The authors have no conflicts of interest to declare.

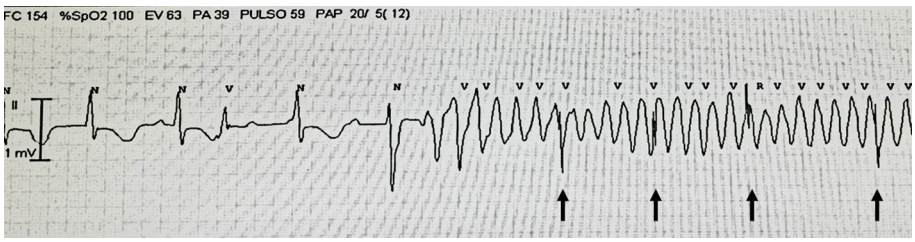

Figure 1 Sudden occurrence of a high-frequency oscillating register. Arrows: spike complexes at regular intervals.

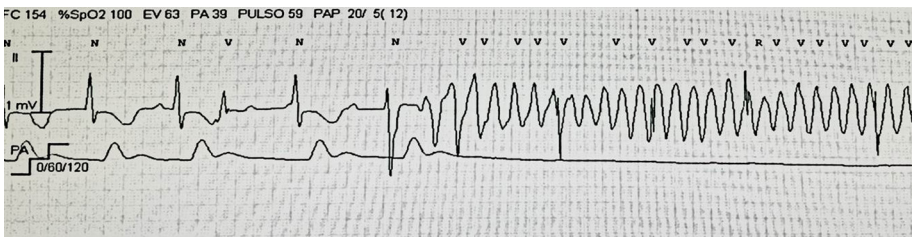

Figure 2 Confirmation of polymorphic ventricular tachycardia "torsades des pointes" type due to the absence of arterial pulse and an abrupt drop in systemic arterial pressure.

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