A marker of mayhem: macrovolt T-wave alternans preceding polymorphic ventricular tachycardia

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A 70-year-old male with chronic kidney failure caused by Wegener’s granulomatosis was hospitalized for a respiratory tract infection. During his stay, he experienced sudden loss of consciousness. An electrocardiogram was recorded with a precordial thump and after the intravenous injection of Mg 2+ sulfate. Two other non-sustained episodes were observed. After substituting Mg 2+, K+, and Ca 2+ T-wave alternans disappeared within the hour (Figure 1C). The QT prolongation was acquired. It was induced by a combination of sotalol, moxifloxacin, and haloperidol, all known for prolonging the QT interval, together with a low serum Mg 2+ (1.64 mg/dL), K+ (3.7 mmol/L), and ionized Ca 2+ (1.06 mg/dL). Within 24 h after withdrawal of the drugs, the QTc interval had already drastically shortened (Figure 1D).

This flashlight shows that macrovolt T-wave alternans is a tell-tale of acute arrhythmogenic cardiac distress. It can be easily picked up with the bare eye. This exceptional clinical phenomenon formed the basis of the development of microvolt T-wave alternans as a risk stratifier for sudden arrhythmic cardiac death.

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