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Ventricular tachycardia post catheter ablation in a patient with Wolff-Parkinson-White syndrome: what is the cause and how to manage this complication

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Case presentation: A 20-year-old female with a past medical history of ablated Wolff-Parkinson-White (WPW) presented to the ER with heart palpitation, chest discomfort, and shortness of breath. At admission, her ECG demonstrated a wide complex tachycardia of 300 beats per minute (bpm) with a QRS of 230ms, fusion beat suggesting VT, which self terminated by the time of ECG (Figure 1A). Her vital signs are stable. Her baseline ECG showed a normal sinus rhythm with ventricular pre-excitation/WPW concerning for posteroseptal pathway, 60 bpm, PR 117ms, QRS 130ms, and QTc 412ms (Figure 1B). The patient was referred for an evaluation of ablation.

Literature review: Wolff-Parkinson-White syndrome is a clinical condition characterized by arrhythmia symptoms and the pre-excitation sign on ECG, including short PR interval < 120ms, a Delta wave, and QRS complex > 120ms [1]. The WPW prevalence is 2.5 per 1000 [2].

Unique aspects of case: Patients with WPW syndrome could be complicated by severe tachycardia, including AVRT, VF, and VT. In the case of VT defined as an arrhythmia of more than 3 consecutive complexes originating in the ventricles at a rate >100 bpm (cycle length less than 600 ms) [6], DC cardioversion is also the treatment of choice for unstable patients while procainamide can be helpful to terminate VT in stable patients [6]. Electrophysiologic study and ablation are treatments of choice for chronic treatment, with the overall success in curing the accessory pathway being 93% [7]. Medical therapy is more effective in terminating an acute episode of tachycardia than preventing recurrence.

Recommendations

Conclusion: Wolff-Parkinson-White syndrome could induce lethal tachycardia. VT is rare and could be from Re-entry mechanism or scar from prior incomlete ablation. Acute treatments are DC cardioversion and antiarrhythmic drugs. The long-term treatment of choice is ablation to curing the accessory pathway and prevent the recurrence of WPW.

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