High-power and short-duration ablation with titration for premature ventricular contractions: a retrospective analysis

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Introduction: Radiofrequency (RF) ablation is a well-established approach to treat premature ventricular contractions (PVC) and is associated with good outcomes.

Methods: We conducted a retrospective review of 31 patients with premature ventricular contractions in general hospital of Tianjin Medical University from December 2014 to December 2017. Clinical data, the ablation power, the ablation duration and the effective target sites were reviewed in 31 cases. The patients underwent radiofrequency ablation with high-power ablation due to failure to conventional RF applications (30-35W). (High-power ablation includes 50W/8s, 60W/4-6s, 70W/4s, 80W/2s, and 100W/2s) When the power was 50W, each discharge would take 8 seconds and repeated 10 times. If the number of PVCs decreased, PVCs still not disappeared, we would increase the ablation power immediately. Discharge duration would be decreased with the increasing of the power, (4-6 seconds for 60W, 4 seconds for 70W). When the power increased to 80w-100w, the discharge duration would reduce to 2 seconds. It was defined as acutely successful of the procedure that PVCs disappeared after ablation and still did not recur after 20 minutes.

Result: There were no intraoperative complications in the total of 31 cases. Among them, 29 cases were successful with success rate of 93.55%. However there were also 2 cases (6.45%) failed. Of all the cases, the total ablation power was 66.45±20.88 (50-100) W and the ablation duration was 311.65±241.91(80-950)s. Among the 29 patients that were successfully ablated, the effective ablation sites showed as follows: PVCs originated from aortic sinus in 15 cases (51.72%) ; AMC sources were in 9 cases (31.03%); 1 case (3.45%) was ablated successfully in the subaortic region corresponding to the earliest points of aortic sinus; 2 cases (6.90%) were in summit area; 1 case (3.45%) was found in the left posterior papillary muscle region, and 1 case (3.45%) was found at the site of 12 o’clock in the tricuspid annulus. Among the 31 patients, 8 patients (27.59%) were ablated in multiple sites successfully.

Conclusion: High-power and short-duration with titration RF applications can be an effective and safe manner to PVCs, which can increase the success rate of radiofrequency catheter ablation.