A Rare Case of Persistent Atrial Fibrillation due to Atrial Myopathy: Not Amenable to Catheter Ablation and Cardioversion

Introduction: Atrial myopathy forms the substrate for atrial fibrillation (AF) and underlies the potential for atrial thrombus formation and subsequent stroke. The degree of fibrosis in atrial myopathy has therapeutic implications and associated with the successful outcome of catheter ablation for treatment of AF.

Methods: A 53-year-old man presented to outward patient clinic with palpitation and hypertension. There was neither history of infection nor routine medication use in this patient. Upon ECG examination, it was revealed that the patient had persistent atrial fibrillation. Echocardiography showed normal right and left ventricular function and dimensions, and normal heart valves. Coronary CT angiography revealed non-significant stenosis. The patient underwent radiofrequency catheter ablation using 3D-Ensite Precision 2 System. Surprisingly, the voltage mapping in both left and right atrium showed huge scar area in the entire atria. The only region with normal voltage was the LAA area. Circumferential pulmonary veins isolation could not terminate the AF. Therefore, several attempts of pharmacological plus electrical cardioversion were performed, but no single sinus beat was recorded. Then, the procedure was stopped. One month later, LAA closure was performed to prevent thromboembolism in this patient.

Result: Atrial myopathy has been defined as the any complex of structural and electrophysiological changes affecting the atria with the potential to produce clinically-relevant manifestations. Atrial myopathy has been occurred as the result of atrial remodeling process, resulting in atrial myocyte abnormalities and causing fibrosis in patients with AF. Hypertension, diabetes, heart failure, myocarditis, and conditions like ageing and endocrine abnormalities are known to contribute to an atrial myopathy. The extent of atrial myopathy in persistent AF is associated with the successful outcome of catheter ablation for treatment of AF.

Conclusion: We have reported a case of a 53-year-old man with persistent atrial fibrillation. Voltage mapping indicated the presence of huge scar regions in the entire atria suggesting an atrial myopathy. Radiofrequency catheter ablation, pharmacological and electrical cardioversion failed to convert the rhythm.