

Karpenko Y., Abramova A., Goryachyi A., Naydenko N.

Odessa Regional Center for Cardiac Surgery, Odessa, Ukraine

Resume

In the structure of cardiovascular mortality arrhythmias take about 30 %. Half of the patients with ischemic heart disease (IHD) die suddenly from acute fatal arrhythmias, especially ventricular arrhythmias (VA): ventricular tachycardia (VT) and ventricular fibrillation (VF). The more fibrous-scar tissue changes in the myocardium of the left/right ventricles the patient have, the higher is the probability of VA on re-entry mechanism. Prophylactic implantation of cardioverter-defibrillators (ICD) is now the standard of care and prevention of VA and SD in developed countries. ICD prevents the SD, but does not change the course of the disease, the majority of patients continued experiencing arrhythmic episodes. The annual mortality rate of patients with implanted ICDs is 6 %.

Until recently, most experts did not give the CRA important role as an alternative to ICD therapy, except for patients with small infarcts and preserved left ventricular function, with mild cases of structural and electrophysiological changes. Taking into account the low effect of prophylactic antiarrhythmic therapy and improvement of the CRA effect, CRA indications expanded. The preventive effect of the CRA for patients with ICD was evaluated in two large clinical trials (SMASH-VT) and (VTACH). According to the study, the effect of ablation of ischemic ventricular tachycardia equals to ablation in paroxysmal atrial fibrillation! In these studies it is clearly demonstrated that after successful ablation of VT the risk of SD is radically reduced. Conducting the CRA is recommended in patients with a planned implantation of an ICD.

Conduction of MRI with computer conversion of scar and areas fibrosis helps to identify patients for whom preventive arrhythmogenic substrate ablation procedure can significantly improve the clinical prognosis. The need of ICD before/after ablation in these patients remains open.

Currently, catheter ablation of VT is the most problematic area of modern arrhythmology, which is constantly updating and developing, basing on the latest scientific technologies. Today it is the most "manmade" area of medicine: three-dimensional reconstruction of the beating heart; the union of computer images and magnetic resonance tomography with electro-anatomical image obtained in the operating room; intracardiac ultrasound throughout the procedure; robotics in managing catheters; intraoperative rotational angiography and other.

Today, there is a clear understanding that VT can be successfully treated by the CRA method with a minimum number of relapses. Given that in most cases VF induced by ventricular tachycardia, massive left ventricular ablation-homogenization should reduce the number of VF episodes and consequently cardiovascular mortality. Basing on recent researches, today we can say that the catheter left and right ventricular modifications of arrhythmic substrate with severe myocardium lesions can fundamentally change the course and prognosis of disease, at least in terms of prevention and treatment of life-threatening arrhythmias and SD.