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USE OF RADIOFREQUENT ABLATION OF ATRIOVENTRICULAR JUNCTION IN PATIENTS WITH ATRIAL FIBRILLATION

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İlaç tedavisine refrakter paroksizmal atriyal fibrilasyonlu hastalarda atriyoventriküler bileşkenin kateter radyofrekans ablasyonunun (RFA) geç sonuçları yazarlarca tartışılmıştır. RFA'nın pozitif sonuçları, genellikle çarpıntının kaybolmasına bağlı düzelme, ambulans çağırılma sıklığında önemli sayıda azalma, antiaritmik ilaçların kesilmesi şeklinde görülmüştür. Hemodinamik durumdaki önemli değişiklikler (kalp yetmezliği ve angina

pektoris fonksiyonel sınıfı) ve antiaritmik ilaçlar hariç kardiyak ilaçlara olan gereksinim olmamıştır.

Artifisial a-v tam bloklü hastaların %8,9 nun pacemakera bağımlı hale geldiği görülmüştür.

Anahtar kelimeler: Atrial fibrilasyon, Radyofrekans ablasyon

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INTRODUCTION

From the late eighties of last century the considerable changes in treatment of different tachyarrhythmias have been occurred. In general, these changes connect with development of close method of catheter radiofrequency ablation (RFA) of additional (anomalous) conductive tracts, atrioventricular (a-v) junction and "arrhythmogenous" sites in the myocardium¹⁻⁴.

In the department of arrhythmology in the Scientific Institute of Cardiology and Internal Diseases of Kazakhstan the RFA method was being introduced from 2001 year.

In this report the results of study of clinical state patients with paroxysmal atrial fibrillation (refracted to drug therapy) in remote period after radiofrequency ablation of atrioventricular junction are presented.

MATERIALS AND METHODS

88 patients (middle age 56±2,4 years) were included in investigation. Every day paroxysms (from 1 to 5 times) of atrial fibrillation (AF) were in 52 (59,1%) patients, the others 36 (40,9%) patients had a few

paroxysms in week. The duration of paroxysms was varied from 3 to 96 hours (in average 13,5±3,2 hours), it was accompanied by significant weakness, loss ability to work, hemodynamical worsening. AF presence was registered repeatedly in ECG and Holter monitoring. Preventive therapy by antiarrhythmic drugs (both monotherapy and combined therapy) in all patients was ineffective; during of all period of sickness each of them had been taking from 3 to 7 drugs in adequate recommended doses.

As appears from the above, the indications for artificial complete a-v blockade (with subsequent pacemaker implantation) are frequent and prolonged AF paroxysms refracted to drug therapy.

Ischemic heart disease (IHD) with stenocardia of exertion II-IV functional classes (FC) was the base diseases in 82 (93,2%) patients under of which arrhythmia was appeared, including 19 cases in combination with arterial hypertension. 6 (6,8%) patients had been suffering by myocarditis.

Chronic heart failure (CHF) I FC by NYHA was determined in 23 (26,1%), II FC - in 48 (54,5%), III FC in 17 (19,4%) patients.

All patients after a-v radiofrequency ablation were implanted with pacemaker functioned in VVI mode (isolated ventricle stimulation), "on demand", with perma-

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Table 1: The requirement in cardio-drugs before and after a-v RFA

The class of medication	The numerous of patients							
	Before RFA				After RFA			
	Received the drugs		Don't received the drugs		Received the drugs		Don't received the drugs	
	Abs.number	%	Abs.number	%	Abs.number	%	Abs.number	%
Antiarrhythmic	88	100	0	0	3	3,4	85	96,6
Antihypertensive	19	21,6	69	78,4	18	20,5	70	79,5
Antiischemic	82	93,2	6	6,8	74	84,1	14	15,9
For CHF therapy	65	73,9	23	26,1	63	71,6	25	28,4

nent frequency of heart pacing.

RESULTS AND DISCUSSION

Long observation for patients was carried out by as during of 1-2 years after radiofrequency ablation, that is why, all changes, which occurred in that period, were analyzed in detail. The "end point" of estimation of patient's clinical condition was symptoms, which were being observed during of indicated above period. At the same time the attention was given for dynamics of FC of stenocardia and CHF.

As a results of investigation it was revealed, that 68,3% of patients with IHD the FC of stenocardia was not changed in the remote period after RFA, in 24,4% of cases - it was registered the transition to "easier" FC, in 7,3% of cases - it was formed to more severe FC. The functional class of heart failure was not changed in 74 (81,4%) patients, in 10 (11,4%) - it was become worse, in 4 (4,5%) - was formed in lower ("easier") FC.

Above-stated is evidence that most of patients with AF have not dynamics of FC of stenocardia and CHF after artificial complete a-v blockade. The positive outcomes of intervention are general state improvement (due to disappearance of palpitation), significant reduction the events of ambulance call, the stoppage of antiarrhythmic drug receiving (Table 1).

As followed from tabular data, after a-v ablation 96,6% of patients discontinued the receiving of antiarrhythmic drugs and only 3 (3,4%) persons continued to take it due to ventricular extrasystole. The requirement in other suitable drugs (antihypertensive, antiischemic and medications for CHF therapy) was remained such as in before surgery period.

The frequent of spontaneous ventricular rhythm (FSVR) is very significant index after a-v RFA. Under of more proximal injury (AV node and origin part of His' bundle) the FSVR is usually more, than in distal radiofrequent impact, at that, as a rule, the ventricular rhythm is defined by the minimal frequency, quite often with wide QRS-complexes.

The changes of FSVR and time of it recovery

were studied in 56 (63,6%) from 88 patients with stable artificial complete a-v blockade. These indices were defined in the different terms after interventions: in first day after procedure (before pace-maker implantation), in nearest period (after 1 month) and remote period (in average - after $18,5 \pm 2,5$ months) - under of implanted pacemaker (the control pacemaker disconnection was carried out for receiving of studied parameters). Under of satisfactory tolerance of spontaneous rhythm by the patient, the investigation was realized during 10-15 min., that permitted to estimate the increase of frequency of ventricular contractions (the FSVR was estimated just in the end of that period). In the case of asystolia more 4 seconds or raising of equivalents of Morgagni-Adams-Stokes (MAS) syndrome, in infrequent FSVR (appearance of significant dizziness, darkening in eyes) the test was discontinued. This group of patients was described as a pace-maker-dependent.

At first day after a-v RFA in the above-indicated 56 persons the FSVR was in average $36 \pm 1,1$ in minute, the time of recovery of FSVR - 4214 ± 256 ms. More detailed analysis of individual data has shown that after artificial complete transversal blockade of the heart in 49 (87,5%) persons the frequent of ventricle contractions was varied from 30 to 73 in minute (in average $49,3 \pm 1,2$). Those are collected in 1st group. Another 7 (12,5%) patients (2nd group) had ventricle asystolia just after radiofrequent current impact. This asystolia was corrected by the temporary electrostimulation, under of its disconnection the MAS equivalents were appeared. The average frequency of spontaneous rhythm in this group was $26,4 \pm 1,0$ in minute, this patients was described as a pacemaker-dependent.

After month (the nearest period) after ablation (taking into account the indices of all patients, in general) it was noted the reliable increase of FSVR from $36,1 \pm 1,1$ to $45 \pm 1,4$ ($p < 0,01$), comparably with first day. Such level of FSVR is remained in the remote period of observation; even any positive dynamics of it in concern with nearest period ($48,0 \pm 1,8$) was registered.

The differentiated estimation of FSVR changes in patients of 1st and 2nd groups was carried out.

Both, in the 1st group patients (relatively pacemaker-independent) and in the 2nd group (pacemaker-dependent) in nearest period after a-v ablation it is revealed the increase of frequency of spontaneous ventricular activity to $54,2 \pm 1,2$ and $31,8 \pm 0,8$ in minute, correspondingly, in the remote period these average values of FSVR are not changes in both group.

Later 1 month after RFA in 2 out of 7 patients of 2nd group the spontaneous rhythm was increased to 34-35 in minute, temporary pacemaker disconnection was not accompanied with development of MAS-equivalents. These patients had only easy dizziness, which is absolute dependence from pacemaker had been disappeared. Achieved effect was retained in the remote period also. In another 5 patients of this group the pacemaker-dependence was being continued in the all periods of observation (the time of FSVR recovery was more 5 second). In other words, under of its "trial" disconnection the MAS-syndrome equivalents were appeared. In general, in the end of long period of investigation, the FSVR was acceptable in 51 (91,1%) out of 56 patients and only 5 (8,9%) patients had severe dependence from the constant pacemaker.

Thus, catheter radiofrequency ablation of atrioventricular junction is one of the alternative methods of therapy in patients with frequent and prolonged paroxysms of atrial fibrillation, refracted to drug-therapy.

The positive results of RFA are general state improvement (due to stoppage of paroxysms of palpitation), significant reduction the events of ambulance call, the stoppage of antiarrhythmic drug receiving. Significant changes of general circulatory condition (CHF FC), FC of stenocardia and requirement in cardio-drugs (except antiarrhythmical drugs) were not occurred.

It is revealed, that 8,9% of patients with artificial complete a-v blockade of the heart are absolutely depended from pacemaker.

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