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THE STATE OF CENTRAL HEMODYNAMICS AFTER RADIOFREQUENCY ABLATION OF SUPRAVENTRICULAR ARRHYTHMIA

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СОСТОЯНИЕ ЦЕНТРАЛЬНОЙ ГЕМОДИНАМИКИ ПОСЛЕ РАДИОЧАСТОТНОЙ АБЛЯЦИИ СУПРАВЕНТРИКУЛЯРНОЙ АРИТМИИ

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SUPRAVENTRIKULAR ARITMIYA RADIOTELIK ABLYASIYASIDAN KEYIN MARKAZIY GEMODINAMIK HOLAT

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Цель: *изучение влияния радиочастотной абляции на состояние центральной гемодинамики у пациентов с наджелудочковой тахикардией в краткосрочном и долгосрочном прогнозе.* ***Материал и методы:*** *в условиях ЭФД-лаборатории областного клинического центра города Шымкента в течение трех лет (2010-2012 гг.) была проведена 71 эндо-ЭФД с последующей радиочастотной абляцией у пациентов с наджелудочковой тахиаритмией. Среди обследованных были 35 мужчин и 36 женщин, средний возраст – 46,5±5,4 года. В 1-ю группу включены 35 пациентов (12 мужчин, 23 женщины, средний возраст 49,6±3,3 года) с пароксизмальной атриовентрикулярной узловой реципрокной тахикардией, длительность приступа варьировала от 6 месяцев до 16 лет (в среднем 12,6±7,2 года). 2-ю группу составил 31 пациент с синдромом превозбуждения желудочков (19 мужчин, 12 женщин, средний возраст 36,5±5,6 года).* ***Результаты:*** *у больных с пароксизмальной пароксизмальной атриовентрикулярной узловой реципрокной тахикардией и WPW-синдромом изменений параметров сократимости миокарда не обнаружено. У пациентов с трепетанием предсердий исходно выявлено снижение инотропной функции левого желудочка с положительной динамикой через 6 и 12 месяцев после радиочастотной абляции.* ***Выводы:*** *радиочастотная абляция нижнего перешейка – основной метод профилактики развития сердечной недостаточности у пациентов с различными клиническими формами трепетания предсердий.*

Ключевые слова: *аритмия, аритмология, радиочастотные абляции, суправентикулярная тахиаритмия, центральная гемодинамика.*

Maqsad: *qisqa va uzoq muddatli prognozda supraventrikulyar taxikardiya bilan og'rigan bemorlarda markaziy gemodinamika holatiga radiochastotali ablasyonning ta'sirini o'rganish.* ***Material va usullar:*** *Chimkent shahrining viloyat klinik markazining EFD laboratoriyasida uch yil davomida (2010-2012) supraventrikulyar taxiaritmiya bilan og'rigan bemorlarda 71 ta endo-EFD, so'ngra radiochastotali ablasyon amalga oshirildi. Tekshirilganlar orasida 35 erkak va 36 ayol bor edi, o'rtacha yoshi 46,5±5,4 yoshni tashkil etdi. 1-guruhga paroksismal atrioventrikulyar tugunli reentrant taxikardiya bilan og'rigan 35 bemor (12 erkak, 23 ayol, o'rtacha yoshi 49,6±3,3 yosh) kirdi, xuruj davomiyligi 6 oydan 16 yilgacha (o'rtacha 12,6±7,2 yil) o'zgarib turdi. 2-guruh qorincha giperqo'zg'alish sindromi bilan og'rigan 31 bemordan iborat edi (19 erkak, 12 ayol, o'rtacha yoshi 36,5±5,6 yosh).* ***Natijalar:*** *paroksismal atrioventrikulyar tugunli reentrant taxikardiya va WPW sindromi bilan og'rigan bemorlarda miokard qisqarish parametrlarida hech qanday o'zgarishlar kuzatilmadi. Yurak bo'lmachalari flutteri bilan og'rigan bemorlarda chap qorincha inotrop funktsiyasining dastlabki bosqichida pasayishi kuzatildi, radiochastotali ablasyondan keyin 6 va 12 oy ichida yaxshilanishlar kuzatildi.* ***Xulosa:*** *pastki isthmusning radiochastotali ablasyoni turli xil klinik shakllari bo'lgan bemorlarda yurak yetishmovchiligining oldini olishning asosiy usuli hisoblanadi.*

Kalit so'zlar: *aritmiya, aritmologiya, radiochastotali ablasyonlar, supraventrikulyar taxiaritmiya, markaziy gemodinamika.*

Over the last twenty years clinical electrophysiology from the area of definition of electrophysiological mechanisms and factors, influencing on emergence and maintenance of different forms of cardiac arrhythmia, into a branch of cardiosurgery. Accents transformed into management directions by different types of arrythmia [1-3]. Currently many types of arrhythmia successfully are cured with the help of RTA, it effectiveness is 90-100%, this index doesn't exceed 50-60% at antiarrhythmic pharmacotherapy, at that in 50-70% patients tolerance to a preparation (specimen) is developed [4,5]. At diversity of literary facts in studying of clinical effectiveness of invasive methods of treatment of supraventricular tachyarrhythmia, influence informations of them to a central hemodynamics of patients aren't enough as often as not their results are contradictory [6-8].

Purpose of the study

To study the influence of a radio frequency ablation at the condition of the central hemodynamic at patient with the supraventiricular tachycardia in short – and long – term prognosis.

Material and methods

In the conditions of EFD – laboratory of the regional clinical center (RCC) in Shymkent city during three years (2010-2012 years) was conducted 71 endo – EFD with succeeding RFA at patients with supraventricular tachyarrhythmia.

By methods of Seldingera for invasive researches is used EFD complex CardioLab (PRUKA Engeneering USA, 2011 y.). With the help of ablation apparatus Stoker (Germany) and multiple managing electrodes "Mariner" of the firm Medtronic (USA) were carried on RFA.

With the aim of determining of localization of an arrhythmogen area on the stage of a presurgical EFD endocardial mapping is made. Selection of patients for endo EFD and intervention methods of treatment was conducted according to international standards.

Among examining were 35 men, and 36 women, middle age of them is 46,5±5,4 years.

35 patient (12 men, 23 women, middle age 49,6±3,3 y.) into the I group of research were involved 35 patients, with paroxysmal atrioventricular nodal reciprocal tachycardia (AVNRT), duration of attack manipulated from 6 months till 16 years (on the average 12,6±7,2 y.).

31 patient with syndrome of pre – excitation of ventricles were included into II group (19 men, 12 women, middle age 36,5±5,6 y.).

The III investigation group composed 5 patients (4 men, 1 women middle age 47, 3±5,7 y.) with the typical right – handed (dextral) atrial flutter (AF), 3 of them with paroxysmal and 2 patients with chronic forms of atrial flutter, average length of arrhythmia was 10, 7±6,8 years 20 apparently healthy(18 men and 12 women, middle age 47,3±4,2 y.) were included into a group of clinical comparison.

The methods of radio frequency modulation of slow ways of the atrioventricular conduction were used in the I group. The radio frequency ablation (RFA) of succenturiate atrial – ventricular connection was conducted at the patients of the II group with WPW – syndrome.

At the patients with AF in the III group carried on RFA of a cavo–tricuspid isthmus. The effectiveness of the radiofrequency ablation is determined during conducting of a control electrophysiological research.

Control investigations of the central hemodynamics by methods of a transthoracic echocardiography at apparatus Vivid – 3 and Vivid – 7 of the "GE" firm (USA), carried on through 6 and 12 months after RFA.

The results of the research

Among the patients with WPW – syndrome at 21 (67,7%) was demonstrative and at 10 (32,2%) covert and intermitting forms.

At 21 patients (67,7%) with WPW syndrome is combined with other arrhythmia: with an atrium fibrillation at 2 (6,4%) atrioventricular nodal tachycardia in 9 (29,0%) and with a supraventricular extrasystole in 5 (6,1%) cases. During endo-EFD atrioventricular nodal tachycardia at 7 (22,5%) was diagnosed.

The fibrillation of atrium we distinguish like a secondary in relation to WPW syndrome and a specialized treatment in this connection haven't leaded. In the post-surgical regression period of the paroxysms of atrium fibrillation didn't mention. Among the patients with the WPW syndrome 2 (6,4%) suffered from coronary heart diseases, delayed myocardial infarction, 5 (16,1%) – hypertension, in 24 (77,4%) was an idiopathic variant of arrhythmia, in 12 (38,7%) of them were revealed small heart abnormality: prolapse of mitral valve, essential chords.

Some authors in their researches in patients with so called idiopatic supraventricular tachycardia at echo also revealed unnecessary structural heart disorders.

Among the patients with paroxysmal AVNRT at 4 (11,4%) coronary disease took place, at 2 of them in anamnese transferred myocardial infarction, acquired cardiac anomality – aortic stenosis at 1 patient and at 18 (51,4%) patients was reported an idiopatic form of arrhythmia.

On medical evidence of echocardiography at the parts of them were revealed heart abnormalities such as: PMK at 15 (14,3%)essential chords at 7 (20%) and prolapse of aortic valve at 1 patient. III group (5 people)was more numerous with typical heart fluttering, but all of them had a serious cardiovascular pathology, at 3 of them was hypertension of the second and third degrees, one coronary heart disease (CHD), stenocardia III functional class (FC), and another has arterial hypertension in combination with coronary heart disease, stenocardia III FC.

Comparative analysis of the indexes of central hypodynamic in accordance with any findings of echo-CG in studying groups before 6 and 12 months of operative interference – RFA was made during the research.

Parameters of the central hypodynamics of patients with AVNRT, WPW- syndrome, heart fluttering before operative curing and reciprocal datas of the clinical comparison group are showen from the table 1.

Table 1

Indexes of central hemodynamic of the patients of the I-IV studying group before treatment by method RFA

Echo CG indexes	Clinical comparison group (IV group), n=20	Patients with AVNRT (I group), n=35	Patients with WPW syndrome (II group), n=31	Patients with atrial flutter (AF) (III group), n=5	p (III, IV)
EDD LV, cm	5,3±0,2	5,4±0,4	5,3±0,3	5,9±0,2	<0.05
ESD LV, cm	3,4±0,2	3,4±0,5	3,5±0,3	4,2±0,3	<0.05
EDV LV, ml	129,3±11,8	138,2±22,4	137,3±21,0	176,3±21,4	<0.05
ESV LV, ml	44,2±8,4	45,3±9,1	46,4±10,1	82,3±16,74	<0.05
EF LV, %	67,8±4,1	63,4±5,4	65,7±6,7	56,5±3,6	<0.05
SDS LV, %	38,1±3,1	35,7±6,8	36,1±7,1	30,7±4,3	>0.05
EDD RV, cm	2,4±0,2	2,5±0,2	2,4±0,4	2,7±0,3	>0.05
LA, cm	3,4±0,2	3,6±0,4	3,5±0,5	4,2±0,3	<0.05

Comment

EDD LV – end-diastolic diameter of the left ventricle, ESD LV – end-systolic diameter of the left ventricle, EDV LV end-diastolic volume of the left ventricle, ESV LV – end-systolic volume of the left ventricle, EF LV – ejection fraction of the left ventricle, SDS LV- systolic-diastolic shortening of the left ventricle, EDD RV – end-diastolic diameter of the right ventricle, LA – left atrium [9,10].

As is seen from the table, average indexes of the parameters of the central hemodynamic at the patients with paroxysmal AVNRT and WPW syndrome before an operative interference were contrast with the indexes of the comparative group, without accurate differences, that can evident about deficit of serious structural heart changes with abnormality of miocard shortening at this category of sick.

By contrast, in the III group of research at patients with paroxysmal and chronic forms of atrial flutter, practically all characteristics of the left ventricle exept the indexes of the middle – diastolic diameter shortening (SDS LV) and the end- diastolic diameter of the right ventricle (EDD RV) were really lower than in the clinical comparison group. If it is remembered, that all the patients of this small group had a chronic cardio-vascular pathol-

ogy, as discussed above, it's necessary to take into consideration features of breakdown of the central dynamic's indexes, representing serious structural miocard abnormalities and that deposit, which contributes this type of arrhythmia into development and progression of myocard disfunction [11,12]. Dynamic control for central hemodynamics condition at the patients after made RFA through 6 and 12 months by EchoKG at the patients of the I and II studying groups with AVNRT and WPW syndrome essential changes, in comparison with intact characteristics didn't determine (Table 2).

Table 2

Indexes of the central hemodynamics at the patients with AVNRT and WPW syndrome after treatment by RFA method

Echo KG intexes	Patients with AVNRT		Patients with WPW – syndrome	
	Through 6 months	Through 12 months	Through 6 months	Through 12 months
EDD LV	5,4±0,4	5,5±0,3	5,2±0,3	5,4±0,3
ESD LV	3,4±0,2	3,5±0,3	3,4±0,2	3,5±0,4

Further researches in this direction with enhancement of a number of observing patients with atrial flutter and/or atrial fibrillation will give more accurate results.

Conclusions

Radio frequency ablation of supraventricular arrhythmia: atrioventricular nodal reciprocal tachycardia, WPW syndrome is a smalltraumatic method, doesn't promote disorders of local and general myocardium contractility.

EchoKG diagnosed small heart abnormalities at the patients with AVNRT and WPW syndrome in 37,9%.

RFA of the low isthmus- a main method in prevention cardiac failure developing at patients with different clinical forms of atrial flutter.

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Objective: *To study the effect of radiofrequency ablation on the state of central hemodynamics in patients with supraventricular tachycardia in the short-term and long-term prognosis.* ***Material and methods:*** *In the EFD laboratory of the regional clinical center of the city of Shymkent over a period of three years (2010-2012), 71 endo-EFD followed by radiofrequency ablation were performed in patients with supraventricular tachyarrhythmia. Among the examined were 35 men and 36 women, the average age was 46.5±5.4 years. Group 1 included 35 patients (12 men, 23 women, average age 49.6±3.3 years) with paroxysmal atrioventricular nodal reentrant tachycardia, the duration of the attack varied from 6 months to 16 years (average 12.6±7.2 years). Group 2 consisted of 31 patients with ventricular hyperexcitation syndrome (19 men, 12 women, mean age 36.5±5.6 years).* ***Results:*** *No changes in myocardial contractility parameters were observed in patients with paroxysmal atrioventricular nodal reentrant tachycardia and WPW syndrome. Patients with atrial flutter showed a decrease in left ventricular inotropic function at baseline, with improvements observed 6 and 12 months after radiofrequency ablation.* ***Conclusions:*** *Radiofrequency ablation of the inferior isthmus is the primary method for preventing heart failure in patients with various clinical forms of atrial flutter.*

Key words: *arrhythmia, arrhythmology, radiofrequency ablations, supraventicular tachyarrhythmia, central hemodynamics.*

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