Selective ablation or isolation of all pulmonary veins in atrial fibrillation – when and for whom?

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Abstract

Introduction: Targeted treatment of atrial fibrillation (AF) involves circumferential isolation of all pulmonary veins (PV) or isolation of electrical connections within their ostia. Only in some cases are the real localisation and number of triggering foci, the anatomy of venous ostia as well as the form of AF (paroxysmal, persistent, chronic, primary or secondary) taken into consideration.

Aim: To compare the results of selective electrical isolation (1-3 PV ostia or ablation of a single focus in other veins or atrium) versus isolation of all pulmonary veins.

Methods: RF ablation was performed in eighty patients (51 men, 29 women) with symptomatic, drug-refractory AF. Fifty-nine patients had paroxysmal AF (PAF), 16 persistent (AFpers), and 5 chronic AF (AFchro). Selective ablation was carried out in those patients who had detectable AF triggers during sinus rhythm – supraventricular extrasystolic beats (SVEB) of 1 to 3 morphologies (group I). Extended ablation – isolation of all 4-5 PV – was performed in patients with multiple SVEB morphologies and heterogeneous electrical connections within all PV (group II). Group I consisted of 60 patients (22 females) aged 46±14 years, whereas group II comprised 20 patients (7 females) aged 52±13 years. In 24 patients (18 from group I and 6 from group II) with concomitant typical atrial flutter, an ablation line in the cavo-tricuspid isthmus was also performed. Long-term results were assessed 17±15.6 (4-105) months after the procedure based on routine ECG, ambulatory 24-hour ECG monitoring, clinical evaluation and regular phone calls. In patients with PAF, left atrial diameter <4.2 cm and evidence of successful ablation, antiarrhythmic agents were withheld. In patients with AFpers and AFchro, antiarrhythmic drugs were discontinued 3 to 6 months after successful ablation.

Results: Complete procedural success was achieved in 61 (76%) patients, and significant clinical improvement was observed in another 9 (11%) patients. Effective ablation significantly improved quality of life. In group I the procedure was entirely successful or a marked improvement was reported (single, transient palpitation episodes and/or atrial tachyarrhythmias lasting up to 30 seconds) in 54 (90%) patients. Among 48 (80%) patients with complete success, 25 (42%) did not receive any antiarrhythmic drugs during follow-up, 12 (20%) with arterial hypertension received β-blockers, and 11 (18%) continued β-blocker + class I antiarrhythmic drug. In another 6 (10%) patients a significant clinical improvement in arrhythmia control was observed. In Group II the procedure was fully effective or a significant improvement was observed in 16 (80%) patients. Among 13 (65%) patients with complete success, 5 (25%) did not require any antiarrhythmic drugs, 4 (20%) who had hypertension continued β-blockers, and another 4 (20%) continued β-blocker + I class antiarrhythmic drug. A significant clinical improvement of arrhythmia control was observed in another 3 (15%) patients.

Conclusions: In patients with a limited number of triggering foci and limited AF substrate, selective ablation effectively eliminates AF with a low risk of complications. Detailed electrophysiological assessment (standard ECG, 12-lead Holter ECG monitoring and endocardial mapping) allows precise identification of this group of patients. In patients with chronic and persistent AF benefits occur with some delay which is associated with a delayed reversal of atrial remodelling.

Key words: atrial fibrillation, ablation

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from its beginning, fibrillation is a kind of gusty, electrical storm for the atria, devastating even in a period of limited clinical symptoms

Introduction

Atrial fibrillation (AF) can appear in each decade of life. Predisposing and underlying triggering factors, maintenance and self-termination of the arrhythmia change with age and other circumstances. There are various AF triggering factors – primary or secondary, and focal or non-focal. Impulses initiating AF can be generated in the pulmonary veins (PV), in other veins draining to the atrium or within the atria (focal or triggered by anatomical or functional reentrant loop).

Various triggering mechanisms have been shown to contribute to the development of focal AF (micro-reentry, pathological automaticity or triggered activity). Initiating electrical impulses usually originate from 1-3 centres, less frequently from four or more sites [1-13]. Paroxysmal AF is most commonly initiated by triggers from more than one PV; however, there is also evidence that only a single triggering focus may be found in PV or in another vein draining to the atrium.

Rapid development of interventional procedures for AF treatment was stimulated by the limited efficacy and side effects of pharmacotherapy. Currently, the most promising technique is radiofrequency (RF) ablation. This method consists of electrical isolation or ablation of triggering foci (triggers or drivers) which produce anisotropic conduction in limited areas, leading to symptomatic AF. Other, non-focal triggering factors such as typical atrial flutter, may also exist.

At present, isolation of all PV and performing additional ablation lines, regardless of the actual localisation and the number of triggering foci as well as the type of arrhythmia substrate, is the most widely used approach. However, the question arises in which AF patients can the procedure be limited to a single or a few PV or two different veins, in whom it is really necessary to isolate all PV, and who needs additional ablation lines. Accordingly, the aim of the present study was to compare the results of selective versus non-selective ablation of triggering foci in patients with AF.

Methods

Patients

Eighty patients with highly symptomatic, drug-refractory AF underwent RF ablation. Fifty-six had paroxysmal atrial fibrillation (PAF), 16 persistent AF (AF pers), and the remaining 5 chronic AF (AF chro). In 65 patients no obvious structural heart disease could be detected, 23 patients had hypertension, and 8 had coronary artery disease (CAD). Patients with hypertension and CAD were treated with β-blockers, ACE-I and statins both before and after RF ablation. Two of these patients underwent coronary angioplasty with stent implantation.

Based on standard ECG recordings, 12-lead ambulatory 24-hour Holter ECG monitoring, long-term ECG recordings using computerised ECG systems (Bard or EP-MED) as well as electrophysiological testing with isoproterenol and adenosine, a selective (Group I) or extended (all PV – Group II) ablation procedures were performed.

Group I consisted of 60 patients (45-PAF, 12-AFpers, 3-AFchro) aged 46±14 years (22 women, 38 men). Mean left atrial (LA) diameter was 3.7±0.6 cm, and left ventricular ejection fraction (LVEF) was 64±10.1%.

Group II consisted of 20 patients (14-PAF, 4-AFpers, 2-AFchro) aged 52±13 years (7 women, 13 men). Mean LA diameter was 3.9±0.5 cm and LVEF was 65±5.9%.

All patients received prolonged anticoagulation for at least three months, which was discontinued three days before the procedure and replaced by enoxaparine administered in a dose of 2 mg/kg. In patients with PAF all antiarrhythmic drugs were withdrawn. Spiral CT and transoesophageal echocardiography were performed before the procedure in order to visualise and measure PV. Patients with enlarged LA received ACE-I after the ablation.

RF ablation

Electrodes/ablation catheters were introduced to LA by transseptal puncture or through the patent foramen ovale. This was usually performed under fluoroscopic guidance; however, in six patients intracardiac echocardiography (ICE) was used and in one patient with atypical septum anatomy transoesophageal echocardiography was performed. Next, a heparin bolus was given, followed by repeated doses injected at one hour intervals during the procedure. In all patients, PV venography was performed. In patients with sinus rhythm, an electrophysiological study was performed directly before the procedure, including programmed, incremental and rapid pacing (up to the coupling intervals below refractory periods) from the coronary sinus (CS), LA appendage (LAA) and venous ostium or its proximal segment (PV or superior vena cava (SVC)).

The ablation procedure was performed using Haissaguerre's method. RF applications, lasting 30-120 seconds, were delivered proximal to the lasso electrode which was situated in the venous ostium. The nominal RF generator settings were: temperature of 50-55°C and RF energy of 30-35 W for upper PV and 25 W for inferior PV. Electrical isolation was confirmed after the procedure using the above-described pacing protocol. In the last 30 patients the end point was the inability to

Table I. RF ablation sites, electrical connections between veis and atria, and other foci

Ablation site	Group I			Group II
	1 focus	2 PVs	3 PVs	4 PVs
	17 pct	22 pct	19 pct	20 pct
		SVC+CS 1 pc	2PVs+SVC 1 pc	
	21%	29%	25%	25%
		75%		
PV with electrical connection to LA	7 pct	23 pct	20 pct	20 pct
RUPV	3			
LUPV	2			
LIPV	2			
RUPV with electrical Connection to LA and SVC	2 pct			
LoM	1	+1	+2	+3
SVC	2	+4	+3	+7
RA (CT, S)	3	0	0	0
CS	2	+2	+2	0
RA isthmus	+3	+7	+8	+6
LA	0	+1	+1	+5

PV >LA – connections between the pulmonary vein and left atrium, RUPV <> LA and SVC – connections between the pulmonary vein and left atrium and vena cava superior borderline with Wright atrium, LUPV – upper left pulmonary vein, LIPV – inferior left pulmonary vein, LoM – Marshall ligament, RA (CT, S) – right atrium (crista terminalis, septum), SVC – superior vena cava, RA isthmus – right atrium isthmus
LA – left atrium

induce AF lasting >30 seconds by rapid pacing from three sites (CS, LAA or high right atrium (HRA)), both from the lasso electrode and from the electrode located in the proximal part of PV or SVC.

In selected patients (usually AFpers or AFchrono) electroanatomic mapping was performed using the CARTO system.

In 20 patients (Group II) extended ablation was performed (4-5 PV, fifth – middle cardiac vein or accessory vein) – all of them presented heterogeneous electrical connections in all PV.

In 60 patients (Group I) selected ablation was performed (in 20 patients – 3 PVs, in 23 – 2 PVs, in 9 – 1 PV, in 5 – focal isolation or ablation in another single vein (CS, SVC or ligament of Marshall (LoM)) and in the remaining 3 – single focal isolation in the atrium).

Follow-up

Long-term results of RF ablation were assessed 17±15.6 (4-105) months after the procedure based on routine ECG recording, ambulatory 24-hour ECG Holter monitoring, clinical evaluation and regular phone calls.

Results

In group I a single ablation session was performed in 39 patients, two sessions in 16 patients and at least three sessions in another five patients. In group II a single session was effective in 13 patients, 2 sessions in 5 patients, and at least 3 sessions in 2 patients. Moreover, in 18 patients from group I and 6 patients from group II the ablation lines in the cavo-tricuspid isthmus were performed. In 5 patients from group II and in 1 patient from group I an additional application (including lines) in the LA roof was performed.

Isolation of connections in the SVC orifice (15 patients) or direct ablation of the focus (1 patient) was performed in 16 patients – 9 from Group I (a single focus in two of them) and 7 from Group II.

In Group I the procedure was fully effective or a significant improvement was reported (single, transient palpitation episodes and/or atrial tachyarrhythmia onset lasting up to 30 seconds) in 54 (90%) patients. Among 48 (80%) patients with a completely effective procedure, 25 (42%) did not require any antiarrhythmic drugs following ablation. Twelve (20%) patients with hypertension continued β-blockers, and 11 (18%) β-blocker + class I antiarrhythmic drug. In another 6 (10%) patients a significant clinical improvement in arrhythmia control was observed. None of the patients with a single focus required pharmacotherapy; in two of them the follow-up period reached 9 and 7 years.

In group II the procedure was fully effective or a significant improvement was achieved in 16 (80%) patients. Among 13 (65%) patients with complete effectiveness, 5 (25%) did not require any antiarrhythmic drugs after ablation, whereas 4 (20%) with hypertension continued β-blockers and another 4 (20%) β-blocker + I class antiarrhythmic drug. In one patient isolation of all 4 PV did not change the frequency of persistent AF. The arrhythmia was cured by subsequent isolation of flutter focus (cycle length 100 ms) in the LA roof. A significant clinical improvement of arrhythmia control was observed in another 3 (15%) patients.

In total, the rate of failed procedures was 13% (10 patients): in group I, 10% (6 patients); in group II, 20% (4 patients). Three or more ablation sessions were required only in the first thirty patients.

Complications

Significant (≥70%), symptomatic stenosis of PV was detected in 2 left upper PV and in 2 right upper PV after ablation. Also, one asymptomatic stenosis of the left

Table II. Ablation sites (other than PV) according to AF form

AF		PCT	Isthmus RA	*LA*	LoM	SVC	IVC	CS
Group I	paroxismal	44	12 pct 27%	1 pc 2.4%	3 pct 7%	8 pct 18%	0	5 pct 11%
	persistent/chronic	16	6 pct 37%	1 pc 6%	1 pc 6%	1 pc 6%	0	1 pc 6%
Group II	paroxysmal	15	2 pct 13%	1 pc 7%	1 pc 7%	5 pct 33%	0	0
	persistent/chronic	5	4 pct 80%	4 pct 80%	2 pct 40%	2 pct 40%	1 pc 20%	0
Pct		80	24	7	7	16	1	6
%		100	30	8.75	8.75	20	1.25	7.5

Abbreviations: as in Table I.

upper PV was found. Three patients developed transient haemoptysis. Because of effective ablation, in two patients chronic anticoagulation therapy was discontinued prematurely by the attending physician without consulting electrophysiologists. In none of the patients in whom the ablation in PV antrum was performed with the additional use of intracardiac echocardiography could PV stenosis be detected.

There were no cases of cardiac tamponade, atrio-oesophageal fistula, ischaemic stroke or peripheral embolism.

Discussion

The results obtained in the present study confirmed that in some patients with focal AF ablation may be limited to a single focus, localised in PV or in another structure (SVC, LoM, CS, crista terminalis or septum). In our group of patients, a single focus was found in 21% of cases, two foci (usually both in PV) in 29% of cases, and three foci (all in PV or two in PV and one in SVC) in 25% of cases. Atrial fibrillation was maintained by SVC foci in 14 patients, and by IVC focus in one patient. The SVC was the only source of AF in two patients. Patients with AFparox were usually younger than patients with more chronic forms of AF, and had no signs of advanced atrial, PV, CS or SVC/IVC remodelling.

Selective ablation or complete isolation of all pulmonary veins?

In the presented group, detailed assessment of 12-lead Holter monitoring recordings and selective pacing appeared to be useful for identification of patients who might benefit from selective ablation. To date, only a few studies have examined the value of selective ablation performed using the Haisseguerre method. Assuming that foci are most frequently localised in the upper PV, Katritsis et al. in a randomised study did not observe any significant differences between selective ablation of the upper PV versus complete isolation of all PV. Reduction of the ablation extent led to the reduction of fluoroscopy time, the number of RF applications and procedure duration. In the group with upper PV ablation no PV stenosis was observed, whereas in patients in whom all PV were targeted two patients developed PV stenosis, detected by echocardiography. This method did not take into account the actual localisation of PV foci or the potential presence of other foci. Similar findings were reported by Dilling-Boer et al. [16], who also detected a higher complication rate following extensive rather than targeted PV ablation. They also demonstrated that ablation of all PV was not associated with a higher success rate than selected PV isolation.

Circumferential isolation of PV vs isolation of electrical connections within PV antrum

Mansour et al. compared the results of anatomically-guided ablation (isolation of the left and right PV using the CARTO system) and electro-anatomical ablation assisted by ICE [17]. The end point in both groups was electrical isolation of all four PV. No significant differences in the efficacy of these two

Table III. Results of RF ablation in relation to type of procedure (selected isolation – Group I or ablation of all PV – Group II)

Group	Group I	Group II
Successful ablation	**80%** (48 pts)	**65%** (13 pts)
Without AF (No AA)*	42% (25 pts)	25% (5 pts)
Without AF (β-blocker – HT)*	20% (12 pts)	20% (4 pts)
Without AF (AA gr. I + β-blocker)*	18% (11pts)	20% (4 pts)
Significant improvement after RF	**10%** (6 pts)	**15%** (3 pts)
Unsuccessful ablation	**10%** (6 pts)	**20%** (4 pts)

Figure 1. During RF application the frequency of pulsating focus (cycle ~100 ms – ultra fast driver) gradually decreased, then stopped and sinus rhythm was restored. The isolation of 4 pulmonary veins, performed earlier, did not change the frequency of constant AF episodes. The focus was localised in a narrow recess in LA roof

approaches were reported. In a randomised trial which enrolled 100 patients aged 58±9 years, Schmitt et al. compared the efficacy, procedure duration and complication rate of segmental versus circumferential PV ablation. During segmental ablation, a special mapping catheter (Lasso) was used, whereas during PV circumferential ablation the lines around left and right PV as well as the inferior line (LLPV-mitral annulus) were performed using the CARTO system. In 93 patients the efficacy of procedure during six-month follow-up was estimated. In the Lasso group, 89% of patients remained free from arrhythmia recurrences compared with 80% of patients in whom CARTO-based ablation was performed (NS). Of note, highly symptomatic LA flutter was observed in 13 patients who underwent anatomically-guided ablation versus

Table IV. Ablation efficacy in relation to AF type

Group % (pct)	Total 100% (80)	AF paroxysmal 74% (59)	AF chronic and persistent 26% (21)
RF ablation effective	**76% (61)**	**85% (50)**	**53% (11)**
Without AF (No AA)*	37% (30)	42% (25)	24% (5)
Without AF (β-blocker – HT)*	20% (16)	26% (15)	5% (1)
Without AF (AA gr. I + β-blocker)*	19%(15)	17%(10)	24%(5)
Improvement after RF	**11% (9)**	**8% (5)**	**19% (4)**
RF ablation unsuccessful	**13% (10)**	**7% (4)**	**28% (6)**

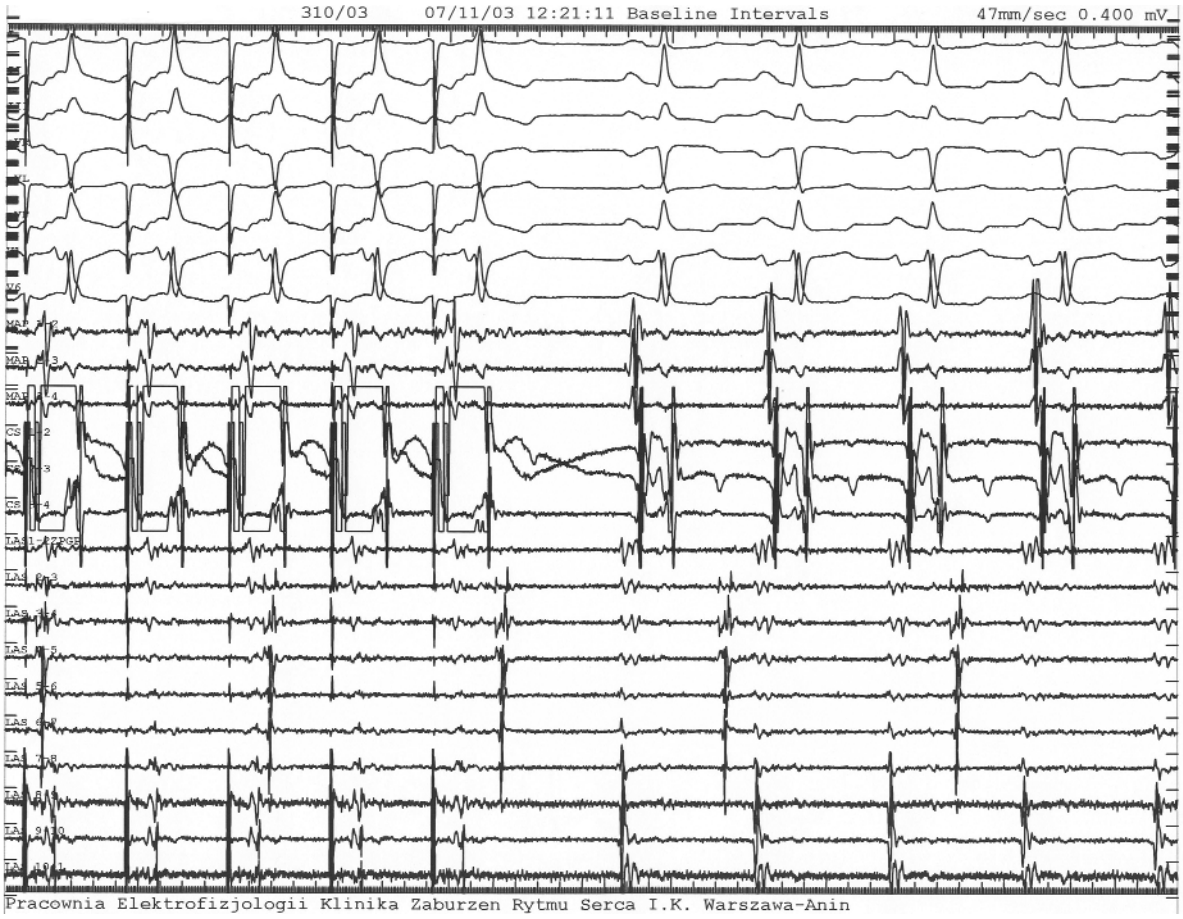

Figure 2. Intracardiac recordings during pacing and during sinus rhythm document the presence of bi-directional block between pulmonary vein and left atrium (successful isolation of focus in PV)

only 2 patients in whom segmental, Lasso-based ablation was applied (p=0.002).

In another study, Oral et al. demonstrated a higher efficacy of an anatomical approach compared with electro-anatomical ablation (88% *vs* 67%) [19]. However, anatomical ablation was performed using an 8 mm tip ablation electrode, and electro-anatomical ablation with a 4 mm tip. Of note, in 13 of 40 (32%) patients who underwent the anatomical method, additional applications to disconnect PV from LA were performed, and two additional ablation lines (in the mitral isthmus and posterior LA wall), connecting circumferential lines, were also made. These lines were not performed in patients who underwent segmental isolation of PV. Moreover, RF applications were delivered at a target temperature of 52°C with RF energy output of 35 W for 20 to 45 seconds, whereas Haissaguerre et al. often extend application duration from 30-60 seconds to 60-120 seconds at the site were conduction block is achieved [20]. We also use this approach.

Data reported in literature on efficacy of anatomically or electro-anatomically-guided ablation are discrepant. The AF recurrence rate depends not only on the actual occurrence of AF episodes but also on the method used for AF detection. For example, in the studies published between 1999 and 2003, Pappone et al. ignored AF recurrences lasting <10 min, whereas Wnuk-Wojnar et al. excluded only short AF episodes, lasting not longer than 30 seconds. Thus, results reported in literature do not allow to estimate which ablation method is better and safer. Nowadays, in the case of persistent and chronic AF, Haissaguerre et al. proposed as a principle to perform lines between inferior left PV and mitral annulus [20].

Complications

From the complication rate point of view, the Pappone method seemed to be safer because it avoids the risk of PV stenosis [21]. However, these encouraging results were not confirmed by other studies [22-24]. In addition,

a life-threatening complication of circumferential PV ablation – an atrio-oesophageal fistula with subsequent multiple stroke and sepsis – was reported by two very experienced centres. As a result, the strategy of the procedure was changed – energy and temperature settings were decreased and RF application at the sites in close proximity to the oesophagus was abandoned [25].

Both methods carry the risk of atrial wall perforation during transseptal puncture (1-6% of cases) which may be complicated by cardiac tamponade, requiring immediate decompression, and sometimes even cardiac surgery [26-28].

One of the main tools to prevent PV occlusion is the possibility to use ICE, which visualises the border between the atrium and vein, as well as indicating the possible risk of microembolisation [10].

Assessment of ablation efficacy and asymptomatic episodes of AF

As in the present study, long-term evaluation in the majority of studies is based on the evaluation of clinical symptoms (palpitation confirmed by ECG as AF and rehospitalisation rate) as well as routine 24-hour Holter ECG monitoring. Before ablation all patients suffer from highly symptomatic, long-lasting episodes of atrial tachyarrhythmias. After ablation, there is usually a significant decrease in the AF burden. However, the real risk of asymptomatic AF recurrences is definitely underestimated. For example, Schmitt et al. showed that the proportion of AF-free patients is significantly lower when 7-day Holter ECG monitoring is used, compared with a standard 24-hour Holter. In that study, the percentage of AF-free patients decreased from 89 to 52% in the segmental ablation group and from 80 to 47% in the anatomically-guided ablation group [18]. Thus, it is very likely that the AF recurrence rate (especially of asymptomatic episodes) is in fact higher than that usually reported.

An opposite opinion was presented by Oral et al. [29]. They studied 60 patients who had a mean of 19±13 AF episodes before ablation and assessed AF recurrence rate 6 months after ablation, using a 30-day transtelephonic ECG. The recorder was activated by a patient every day at various times and always when symptoms suggesting AF were present. During this period, 7 (12%) patients experienced palpitations, which were identified by ECG recordings as AF episodes. The mean number of AF episodes per month decreased from 19±14 preablation to 3±1 postablation. Among the 53 asymptomatic patients following ablation, only two episodes of AF were captured in 1 (2%), which prompted the authors' conclusion that asymptomatic episodes of AF after apparently successful RF ablation are infrequent.

Wnuk-Wojnar et al. analysed 20 highly symptomatic patients, who underwent ablation according to the Pappone technique. Six months after the procedure, asymptomatic patients (11 – 55%) did not present episodes of AF in either test. Among 9 (45%) symptomatic patients, in 5 (25%) an episode of AF was captured in 24-hour Holter monitoring, and in another 4 (20%) between the 2nd and 7th day of monitoring [30]. Evidently, the number of AF episodes and AF burden were higher in the 7-day Holter recordings, respectively: 2±3.4 *vs* 22±40 ($p < 0.005$) and 2.6±4 h *vs* 37±29 h ($p < 0.005$).

In a selected group of 297 patients, Pappone et al. evaluated the incidence of AF episodes (lasting at least 30 s – symptomatic and asymptomatic) during one-year follow-up using 48- Holter monitoring performed monthly and transtelephonic ECG tracings carried out four times daily [31]. Asymptomatic episodes of AF were documented in 29 (9.6%) patients. In 15 of them, symptomatic AF episodes were also observed (50%). None of them presented an asymptomatic AF episode in transtelephonic ECG tracings. Thus, the authors suggested that individual asymptomatic AF episodes are infrequent (14 patients; 5%). This issue, however, requires further studies [32-33]. Asymptomatic AF episodes are observed mainly during sleeping hours or during activity in patients with depressed AV conduction when the ventricular rate does not exceed 80-100 per minute. Such a situation is rare in young patients.

High efficacy of selective ablation in patients with paroxysmal AF is mainly achieved in patients with single or two triggering foci (outside PV in some patients). Immediately after the procedure, the majority of them do not require antiarrythmic agents. We anticipate a decrease in antiarrhythmic drug usage in our patients – currently we continue antiarrhythmic therapy after ablation in patients with chronic or persistent AF during the early remodelling period [4, 6, 34-38].

Limitations of the study

In the first 21 patients we had no access to the Lasso catheter. Post-ablation assessment of conduction between LA and PV, CS and SVC/IVC was performed only in the last 40 cases. We did not perform 7-day Holter recordings. In the first patients we ablated only arrhythmogenic foci, whereas later on we changed our strategy and started to isolate electrical connections in the PV ostia. In selected cases we performed ablation of extra-PV foci as well as RF applications in the sites of anisotropic conduction (fibrinogenic nests).

Conclusions

1. RF ablation is an effective method of treatment of focal AF, and its efficacy depends on the number and

localisation of foci, operator experience and techniques available for direct assessment of the efficacy of ablation.
2. A careful analysis of ECG and 12-lead 24-hour Holter monitoring recording as well as selective pacing allow localisation of high-activity foci, responsible for AF initiation.
3. In selected patients (approximately 20% of AF patients) only one triggering focus is present, which allows selected isolation of the focus without the need for extensive, potentially risky anatomical ablation.
4. Atrial flutter – an additional trigger and driver of AF – coexisted in 30% of our patients.
5. The superior vena cava was the site responsible for AF maintenance in 17.5% of patients, and in 2.5% was the only triggering focus.
6. Arterial hypertension is one of the most frequent factors predisposing to AF and needs to be well controlled after ablation in order to prevent the development of new AF foci and substrate.

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Wybiórcza ablacja a izolacja wszystkich żył płucnych w migotaniu przedsionków – kiedy i komu?

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Streszczenie

Wstęp: W przyczynowym leczeniu migotania przedsionków (AF) stosuje się zwykle z założenia izolację okrężną wokół wszystkich żył płucnych (PV) lub izolację elektrycznych przepustów w ich ujściach. Tylko w pojedynczych przypadkach uwzględnia się faktyczną lokalizację i liczbę ognisk wyzwalania, liczbę i osobniczą anatomię ujść żył płucnych oraz charakter AF (napadowe, przetrwałe czy przewlekłe oraz pierwotne czy wtórne).

Cel: Porównanie wyników ablacji u pacjentów, u których wykonano wybiórczą izolację przepustów w ujściu 1–3 PV lub ablację ogniska poza PV (grupa I) oraz u chorych, u których wykonano izolację przepustów w ujściu wszystkich żył płucnych (grupa II).

Metodyka: Ablacji poddano 80 chorych (51 mężczyzn, 29 kobiet) z objawowym, opornym na leczenie farmakologiczne AF. Napadowe AF (PAF stwierdzano u 59 chorych), przetrwałe AF (AFpers.) – u 16 osób, a przewlekłe AF (AFchro) – u 5 osób. Ablację wybiórczą wykonano u chorych z ekstrasystolią nadkomorową (SVEB) od 1 do 3 morfologii (grupa I). Ablację rozszerzoną (4–5 PV) wykonano u chorych ze SVEB o mnogiej morfologii i niejednorodnymi przepustami we wszystkich PV (grupa II). Do grupy I włączono 60 chorych w wieku 46±14 lat (22 kobiety), a do grupy II – 20 chorych w wieku 52±13 lat (7 kobiet). U chorych z napadami typowego trzepotania przedsionków wykonano również linię ablacyjną w cieśni dolnej – w grupie I u 18 chorych, a w grupie II u 6 pacjentów. Wyniki odległe oceniono na podstawie holterowskich zapisów EKG, wizyt oraz rozmów telefonicznych w okresie 17±15.6 (zakres 4–103) miesięcy od ablacji. U chorych z PAF, wymiarem lewego przedsionka <4.2 cm oraz parametrami wskazującymi na skuteczność ablacji nie powracano do leków antyarytmicznych. U chorych z AFpers lub AFchro leki antyarytmiczne odstawiano 3–6 miesięcy po skutecznej ablacji.

Wyniki: Zabieg był w pełni skuteczny u 61 (76%) chorych, a znaczna poprawa nastąpiła u dalszych 9 (11%) chorych. Skuteczna ablacja wpływała istotnie na poprawę jakości życia.

W grupie I zabieg był w pełni skuteczny lub ma miejsce znaczna poprawa u 54 (90%) pacjentów. Wśród 48 (80%) osób bez nawrotu AF podczas obserwacji długoterminowej, 25 (42%) chorych nie przyjmowało leków antyarytmicznych, 12 (20%) chorych z nadciśnieniem tętniczym otrzymywało β-bloker, a 11 (18%) chorych nadal leczonych było β-blokerem i lekiem antyarytmicznym klasy I. Istotną poprawę kontroli rytmu obserwowano u 6 (10%) pacjentów. W grupie II zabieg był skuteczny lub ma miejsce znaczna poprawa u 16 (80%) chorych. Wśród 13 (65%) chorych z pełną skutecznością ablacji, 5 (25%) osób nie przyjmowało leków, 4 (20%) chorych z nadciśnieniem otrzymywało β-bloker, a pozostałych 4 (20%) chorych kontynuowało β-bloker i lek antyarytmiczny klasy I. Istotną kliniczną poprawę kontrolę rytmu obserwowano u 3 (15%) pacjentów.

Wnioski: U chorych z ograniczoną liczbą czynników wyzwalania i ograniczonym podłożem podtrzymania AF, wybiórcza ablacja RF jest wystarczającym, skutecznym i zmniejszającym ryzyko powikłań zabiegiem eliminującym AF. Szczegółowa ocena elektrofizjologiczna (EKG, Holter 12-odprowadzeniowy i maping stymulacyjny) pozwala dokładną identyfikację tej grupy chorych. U chorych z przetrwałym i przewlekłym AF korzystny wynik pojawia się z opóźnieniem związanym z regresją przebudowy mięśnia przedsionków.

Słowa kluczowe: migotanie przedsionków, wybiórcza ablacja RF

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