First Argentine Catheter Ablation Registry

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SUMMARY

Background
Cardiac electrophysiology has undergone significant advances in the therapeutic strategies of cardiac arrhythmias due to the implementation of invasive procedures as radiofrequency catheter ablation of arrhythmogenic substrates, foci and circuits. The Electrophysiology Council of the Argentine Society of Cardiology decided to create a registry of this procedure with free and anonymous participation of the main electrophysiology laboratories in our country.

Objective
To recognize the number of catheter ablation procedures, epidemiological data of patients, indications, outcomes and complications based on the information provided by the participant centers during the studied period.

Material and Methods
Between February 2000 and May 2008, 13 patients with this diagnosis had an We performed a prospective and consecutive registry of the procedures reported from November 2007 to March 2009 (16 months). A case report form was available at the SAC's website in order to be completed on line.
The information was transmitted through the Internet using optional users' names and passwords to ensure the security and privacy of patients and participant centers. The information could also be submitted via mail or e-mail.

Results
A total of 30 centers provided information about 762 catheter ablation procedures (average: 47 procedures per month). Radiofrequency was used in 98.7% of patients (752/752) and cryothermia in 1.3% (10/162). Eighty four percent of procedures were made by operators who perform ± 50 procedures per year and 67.6% (515/762) by operators with up to 100 cases per year. The procedure was successful in 93.4% (709/762) of patients, and 3% had complications (23/762). Mean age was 42 years (5-94) and 56.3% were men. Most patients (76%) had no structural heart disease; 83.7% presented symptoms. Catheter ablation was indicated as primary therapy due to: symptoms, refractory medical treatment or high arrhythmic risk in 712 patients (93.5%); the procedure was performed due to recurrences in 20 cases (2.6%) and to failed ablation in 30 (3.9%). The arrhythmogenic substrates or circuits treated were: atrioventricular nodal tachycardia (30%; 237/786); atrial fibrillation (3.6%; 28/786); atrial flutter (21.5%; 171/786); atrial tachycardia (4.3%; 34/786); macroreentrant atrial tachycardia (0.8%; 7/786); manifest accessory pathway (24%; 186/786); concealed accessory pathway (8.6%; 68/786); idiopathic ventricular tachycardia (2.5%; 20/786); ischemic ventricular tachycardia (0.9%; 7/786); ventricular tachycardia associated with other heart diseases (0.9%; 7/786); AV node ablation (1.9%; 15/786) and ventricular premature beats (0.9%; 7/786). The complications were: complete AV block (n=2), pericardial effusion (n=2), hematoma at the puncture site (n=4), catheter entrapment, first degree AV block, traumatic LBB; aortic dissection, intolerance to the procedure, crural neuropathy, femoral artery pseudoaneurysm and deep venous thrombosis.

Conclusions
This first registry of catheter ablation in our country provides important and useful information about this procedure and shows an adequate immediate success rate (93.4%), similar to those reported by international registries, with low incidence of morbidity or non severe complications (3%). This procedure can be considered safe and efficient.

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Key words > Registry - Electrophysiology - Catheter Ablation

Abbreviations >

AFL	Atrial flutter	**MRAT**	Macroreentrant atrial tachycardia
AVNA	Atrioventricular node ablation	**AVNRT**	Atrioventricular nodal reentrant tachycardia
LBBB	Left bundle-branch block	**VTASOC**	Ventricular tachycardia associated with other heart diseases
ECG	Electrocardiogram		
VPB	Ventricular premature beat	**IVT**	Idiopathic ventricular tachycardia
AF	Atrial fibrillation	**ISCVT**	Ischemic ventricular tachycardia
AVB	Atrioventricular block	**MAP**	Manifest accessory pathway
AT	Atrial tachycardia	**CAP**	Concealed accessory pathway
		RV	Right ventricle

BACKGROUND

Cardiac electrophysiology has undergone significant advances in the therapeutic strategies of cardiac arrhythmias due to the implementation of invasive procedures, (1) as radiofrequency or the recently developed cryothermal catheter ablation of arrhythmogenic substrates, foci and circuits.

Due to the lack of information about the use and the outcomes of radiofrequency catheter ablation of arrhythmias in our environment, the Electrophysiology Council of the Argentine Society of Cardiology decided to create a registry of this procedure with free and anonymous participation of the main electrophysiology laboratories in our country.

MATERIAL AND METHODS

We performed a prospective and consecutive registry of the procedures reported from November 2007 to March 2009 (16 months).

An informed consent form was considered unnecessary as this was an observational and anonymous study with no follow-up period.

All consecutive patients undergoing radiofrequency or cryothermal catheter ablation from the moment the registry began were included. Patients treated with radiofrequency during cardiac surgery and those included in the registry undergoing new ablations were excluded. The procedures performed before the beginning of the registry were not reported.

A case report form was available at the Argentine Society of Cardiology website in order to be completed on line (www.sac.org.ar).

The information was transmitted over the Internet using optional users' names and passwords to ensure the security and privacy of patients and participant centers.

The information could also be submitted via mail or e-mail. The participants were regularly informed by e-mail about the development of the information obtained, which was also presented at the Scientific Meetings and seminars of the Electrophysiology Council.

The Research Area of the Argentine Society of Cardiology collaborated with the data collection and statistical analysis.

The success rate was based on the definitions provided by the bibliography for each condition and refers to the acute result obtained at the end of the invasive procedure. (2)

"Previous failed ablation" refers to those patients who did not achieve the habitual criteria of acute success used in the electrophysiology laboratory.

"Recurrence" refers to those patients with successful ablation in whom arrhythmias or treated circuits reappeared during follow-up.

The presence or absence of heart disease was defined by the participants based on the traditional clinical history.

Statistical Analysis

Once the case report form was completed on line, a master Excel file was automatically generated for data collection and subsequent analysis.

RESULTS

A total of 30 centers (19 from the city of Buenos Aires, 3 from the Great Buenos Aires and 8 from provinces) provided information about 762 catheter ablation procedures.

An average of 47 procedures was performed per month, with variations in the number of reports according to work demands, congresses, etc. All data were provided via the Internet.

Characteristics of the participant centers

Of the total number of centers, 52% corresponded to private institutions, 21% to university centers, 18% to the public health care system and 9% to the social security system. Seventy nine percent of the centers had a residency program in Cardiology.

Infrastructure and technical resources

Most procedures (82%) were performed in the catheterization or electrophysiology laboratory, while 18% were carried out in the operation room with availability of C-arm fluoroscopic units.

A multichannel (12 to 60 channels) digital polygraph was used in 98.3% of procedures. Non-fluoroscopic wapping systems were available in 8 centers (26%) which performed 32% of all procedures, and used some of these systems. The transseptal approach was available in 30% of centers.

Intracardiac echocardiography was used in only one case. Radiofrequency was used in 98.7% of patients and cryothermia in 1.3% (n = 10). In 81.7% and 18.3% of cases, 4 mm catheters and 8-10 mm catheters were used, respectively.

Irrigated-tip catheters were used in 35 cases (4.6%): 10 internally-irrigated and 25 externally-irrigated.

Human resources

The number of ablation procedures per center and per year ranged from 6 to 280, with the greatest number of procedures informed by those centers with the highest operational capacity (Figure 1). The reported experience of the main operator varied from 6 to 300 procedures per year. Eighty four percent of

procedures were made by operators who performed ≥ 50 procedures per year and 67.6% (515/762) had an experience as main operators performing up to 100 procedures per year.

Characteristics of the population

Average age was 42 years (range, 5 - 94 years); 56.3% were men. Eight percent (60/762) were pediatric patients (≤ 14 years).

Most patients (89%) had medical coverage: 66% were under the social security system, 23% had prepaid medical insurance and 11% had other types of coverage. The distribution of patients' educational level was as follows: 28% had primary education, 57% had secondary education and 15% were university graduates.

The absence of heart disease was reported in 76.5% (583/762) of patients.

A total of 179 patients (23.5%) had structural heart disease, particularly hypertensive cardiopathy, ischemic heart disease and dilated or hypertrophic cardiomyopathy (Table 1).

The type of heart disease was not specified in a small number of patients.

The presence of symptoms due to tachyarrhythmia, as asthenia, palpitations, syncope or dyspnea was reported in 83.7% of all patients.

Indication criteria

Catheter ablation was indicated to patients with symptoms, arrhythmias refractory to pharmacological treatment or high arrhythmic risk.

In 712 patients (93.5%), catheter ablation was a primary indication or the first procedure; 20 (2.6%) presented recurrences after a previously successful procedure and 30 patients (3.9%) had a history of at least one failed ablation before being included in this registry: 8 patients had up to 2 previous failed ablations.

Arrhythmogenic substrates and circuits

The arrhythmogenic substrates or circuits treated were: atrioventricular nodal reentrant tachycardia (AVNRT); atrial fibrillation (AF); atrial flutter (AFL); atrial tachycardia (AT); macroreentrant atrial tachycardia (MAT); manifest accessory pathway (MAP); concealed accessory pathway (CAP); idiopathic ventricular tachycardia (IVT); ischemic ventricular tachycardia (ISCVT); ventricular tachycardia associated with other heart diseases (VTASOC); AV node ablation (AVNA) and ventricular premature beats (VPBs).

There were no cases of bundle branch reentrant ventricular tachycardia (Figures 2 and 3).

Overall and specific substrate results

Acute success rate was 93.4%.

The highest success rates were achieved with ablation of AVNRT and VTASOC (Figure 4).

In 8 (73%) of the 11 different substrates treated, the procedure was successful in ≥ 90% of cases; the success rates of AVNA, VPBs and VTASC were lower.

A total of 786 substrates or circuits underwent catheter ablation in 762 patients. In 24 patients more than 1 substrate was treated within the same procedure.

Atrioventricular nodal reentrant tachycardia

A total of 237 cases with AVNRT were treated. The success rate was 98.7% (n = 234). Only 2 patients (0.8%) developed complications: complete AV block in 1 patient and hematoma at the puncture site in the other.

Accessory pathways

There were 253 patients treated with different degrees of antegrade or retrograde pre-excitation; 186 (73.5%) had a manifest accessory pathway in the ECG and 67 patients (26.5%) had a concealed accessory pathway. Among the 186 patients with MAP, 29 (15.6%) had symptoms due to ventricular pre-excitation, while all the patients with CAP had a history of tachyarrhythmia.

The success rates were 92% and 90.8% for MAP and CAP, respectively.

There were 4 patients with more than 1 accessory pathway: 3 patients had 2 MAP and 1 patient had MAP + CAP.

Seven patients (2.7%) presented complications: 2 patients with MAP developed first degree AV block

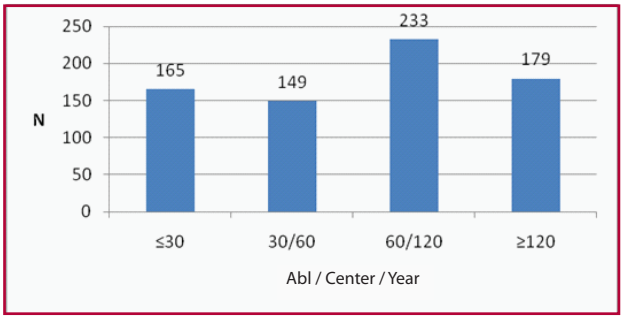

Fig. 1. Number of cases reported according to the operational capacity of the participant centers

Table 1. Distribution of the population based on normal heart or structural heart disease (n = 762)

Variables	N° of patients	%
Normal heart	583	76,5
Ischemic heart disease	54	7,1
Hypertensive heart disease	35	4,6
Cardiomyopathy	31	4,1
Congenital heart disease	13	1,7
Valvular heart disease	11	1,4
Chagas disease	4	0,5
Cardiovascular surgery	3	0,4
Undetermined	28	3,8

and hematoma at the puncture site, and 5 patients with CAP had pericardial effusion, aortic dissection, complete AV block, first degree AV block and traumatic LBBB.

Location of accessory pathways

Left accessory pathways were more common [174/257 (68%)], followed by right accessory pathways and other locations: 29% and 3.5%, respectively.
In the left ventricle, free wall location was the most common pathway ablated [70/174 (40%)]; paraseptal location was more frequent in the right ventricle [33/74 (44.6%)] (Table 2).

Atrial fibrillation

A total of 28 atrial fibrillation (AF) ablations were performed; 70% (n = 20) corresponded to paroxysmal, 25% to persistent and 5% to permanent AF. The isolation of the pulmonary veins was achieved in most patients (27/28); the procedure failed in 1 patient with paroxysmal AF. The transseptal approach to the left atrium was used in all the cases. No complications were reported.

Atrial flutter

Cavotricuspid isthmus-dependent atrial flutter occurred in 160 patients (93.5%), while 11 patients (6.5%) had non-isthmus dependent atrial flutter. Bidirectional conduction block was not achieved in 8 patients (5%) with isthmus-dependent and in 1 patient with non-isthmus dependent AFL. The complications reported were interruption of the procedure due to intolerance, prolonged hospitalization, venous thrombosis at the puncture sit and crural neuropathy.

Atrial tachycardia

The ectopic focus was in the right atrium in 22 patients and in the left atrium in the remaining 12 patients. The procedure failed in 1 patient with right AT and in 3 with left AT. No complications were reported.

Macroreentrant atrial tachycardia

The origin of the circuit was the right atrium in 4 patients and the left atrium in 2. The procedure failed in 1 patient (16.7%).

Idiopathic ventricular tachycardia

The location of idiopathic ventricular tachycardia was the right ventricular outflow tract in 12 patients, the left ventricular outflow tract in 6 and other 2 circuits were not specified. The procedure failed in 4 patients (3 with RV IVT).

Ischemic ventricular tachycardia

Only 7 cases were reported. The procedure failed in 1 patient. One patient presented pericardial effusion that was controlled in the catheterization laboratory.

Ventricular tachycardia associated with other heart diseases

Ablation procedures were performed in 7 patients with VTASOC with the following heart diseases: Chagas cardiomyopathy (n = 2), arrhythmogenic right ventricular dysplasia, scleroderma, coronary sinus VT, tachycardia induced cardiomyopathy and dilated cardiomyopathy. The procedure failed in 3 patients (with Chagas cardiomyopathy, dilated cardiomyopathy and scleroderma). No complications were reported.

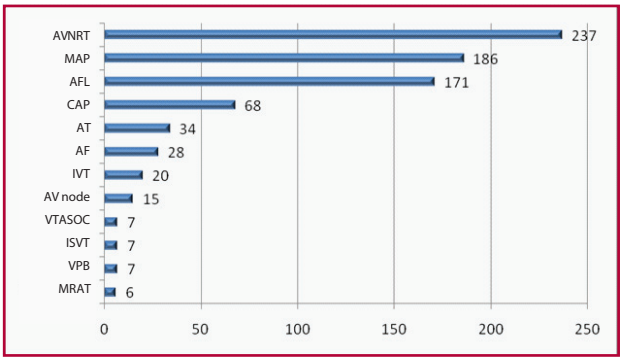

Fig. 2. Distribution of substrates or arrhythmogenic mechanisms undergoing ablation procedures.

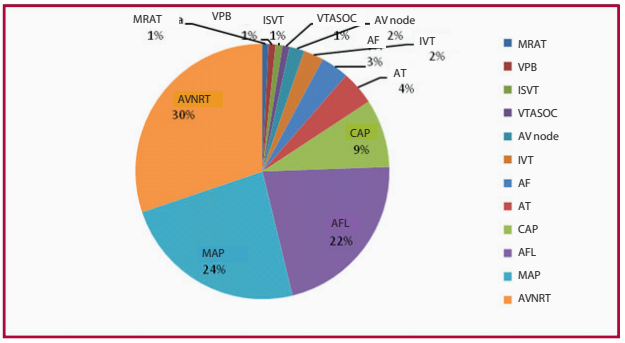

Fig. 3. Relative frequency of arrhythmic substrates or arrhythmogenic mechanisms undergoing ablation procedures.

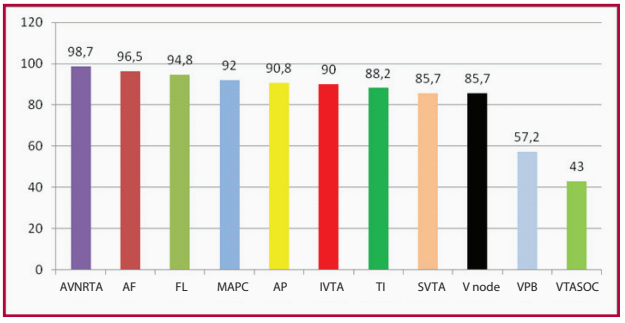

Fig. 4. Success rates by substrate treated. AVNRT: Atrioventricular nodal reentrant tachycardia. AF: Atrial fibrillation. ISCVT: Ischemic ventricular tachycardia. AFL: Atrial flutter. AT: Atrial tachycardia. MAP: Manifest accesory pathway. CAP: Concealed accessory pathway. IVT: Idiopathic ventricular tachycardia. AVNA: Atrioventricular node ablation. VPB: Ventricular premature beat. VTASOC: Ventricular tachycardia associated with other heart diseases

Table 2. Location of accessory pathways (n = 257)

Left (68%)	n	%	Right (29%)	n	%	Other (3,5%)	n
Anterior	24	14	Anterior	10	14	Parahisian	3
Anteroseptal	6	3	Anteroseptal	7	9	PJRT	1
Lateral	70	40	Lateral	9	12	Epicardial	1
Mid-septal	2	1	Mid-septal	9	12	Coumel type (posterolateral)	1
Posterior	33	19	Posterior	6	8	Fasciculoventricular	2
Posteroseptal	13	8	Posteroseptal	33	44,6	Undetermined	1
Posterolateral	26	15					
Total	**174**			**74**			**9**

PJRT: Permanent junctional reciprocating tachycardia.

Atrioventricular node ablation

Fifteen patients were ablated for non-pharmacological heart rate control of permanent AF. Atrioventricular block was not achieved in 2 patients.

Ventricular premature beat

A total of 7 procedures were performed, 6 to VPBs originated in the right ventricle and 1 in the left ventricle.

The ectopic foci were ablated in only 4 cases.

Complications

The incidence of complications was 3% (23/762.) No deaths were reported.

Complications during the procedure

The complications were: complete AV block (n = 2), pericardial effusion (n = 2), hematoma at the puncture site (n = 4), catheter entrapment, first degree AV block (n = 2), traumatic LBBB, aortic dissection, necessity of electrical cardioversion, intolerance to the procedure, and technical or no relevant complications (n = 4).

Complications after the procedure

The following complications were reported within 24 hours after the procedure: crural neuropathy (n = 1), femoral artery pseudoaneurysm (n = 1), deep venous thrombosis (n = 1) and prolonged hospitalization.

DISCUSSION

This is the first prospective registry published in our environment about radiofrequency catheter ablation for the treatment of diverse cardiac arrhythmias. It allows analyzing the most common arrhythmias, the results and complications of this therapy over an adequate number of patients, and comparing this information with other registries about this topic.

There are international ablation registries, as the one published by the Spanish Society of Cardiology in 2000 and the North American Society for Pacing and Electrophysiology (NASPE). (2-4) The success rate reported by these registries and ours refers to the success achieved at the end of the procedure (acute and immediate success rate) according to the operator's experience and the complexity of the substrate treated. The outcomes during follow-up are not analyzed, therefore it is not possible to know the number or recurrences; thus, long-term outcomes may not be extrapolated to those obtained during the procedure. (2)

The analysis of the participant centers (most of them in the city of Buenos Aires) shows that, nowadays, these centers have adequate technical and human resources. Most of them have high definition fluoroscopic units, multichannel polygraphs, availability of transseptal approach and non-fluoroscopic wapping systems.

The most relevant piece of information comes from the human resource: 80% of the procedures were performed by experienced operators (> 50 procedures/year). (5) Most of the participant centers have a residency program in Cardiology, therefore these centers have a certain organization; the participation of public institutions was low, probably due to lack economic resources for expensive treatments.

We also observed a direct relation between the level of the infrastructure and the number of procedures performed.

The population treated consisted of young adults with symptomatic arrhythmias, most of them without structural disease, especially those with accessory pathways and AVNRT.

The overall results were very acceptable, considering they reflect only one procedure.

Currently, 80% of the indications of catheter ablation are AVNRT, accessory pathways and cavotricuspid isthmus-dependent atrial flutter.

Paroxysmal supraventricular tachycardia was due 50% to AVNRT and 50% to accessory pathways. Ablation of AVNRT accounted for 31% of all the procedures, similar to the 30% reported by the Spanish registry. (9) Our high success rate (98.7%) and the low incidence of complications were similar to those of the international registries. The incidence of complete AV block was 0.4% in our registry and 0.3-0.5% in the other registries. These excellent results are one of the reasons that explain the high indication of ablation in this type of tachycardia.

The presence of MAP or CAP was cause of ablation in a percentage similar to that of AVNRT. The success rates are lower than those achieved treating AVNRT due to the fact that ablation of an accessory pathway is a technical challenge associated with the location of the accessory pathway.

Left accessory pathways represented more than 2/3 of all pathways; in the overall analysis, success rates were lower in right accessory pathways (93% vs. 87%). However, we consider that the overall success rate of 91.4% belongs to the real world and is almost identical to the Spanish registry, with 92% of success over a total of 1624 ablations. (2)

The incidence of complications was 2.7%, similar to that of previous registries (5); complete AV block and aortic dissection (0.8%) were the most severe complications. The population size was small to evaluate other less common complications.

Other groups have reported mortality rates of 1‰ and need of pacemaker due to AV block of 0.25%. (6)

Atrial flutter ablation is a common practice in the electrophysiology laboratories and constitutes 21% of all the indications.

The high success rate (98%) was similar to the one reported by international registries. It should be noted that this is the result of the acute success of bidirectional conduction block in the cavotricuspid isthmus and not the long-term outcome of the procedure. The lack of significant complications helps to understand the expansion of the indication in this group.

Ectopic atrial tachycardias occurred in 4% of cases; the success rate was 88.2% despite being complex arrhythmias which are difficult to eradicate.

The rest of the arrhythmias were less common; yet we should mention the ablation of uncommon substrates in our environment, as VPBs and VT in different clinical situations.

The rate of AF ablations (3.7%) is still small. Probably, some centers performing these procedures did not participate in the study; in addition, several centers have recently incorporated three-dimensional navigation systems with will undoubtedly help to perform this complex procedure. The number of AF ablations will probably increase in future registries. (7, 8) However, the greater acute success rate compared to previous publications represented by the isolation of the pulmonary veins is an encouraging piece of information. (9, 10)

Yet, the number of cases treated is small and the real clinical success of the procedure is the absence of AF during follow-up; this information will probably be available in future registries with clinical follow-up.

Study Limitations

This ablation registry with free, voluntary and anonymous participation and without financial support has the usual limitations of this type of studies. The number of cases reported does not represent the total number of procedures performed nationwide in relation with the number of active centers; this situation is common in most of the prospective registries. Yet, this sample is enough to generate initial and valuable information about the current situation of this electrophysiological practice in our country.

Information bias may exist in any registry with free, voluntary and anonymous participation and without financial support; safety and efficacy data of the participant centers were anonymous, perhaps contributing to encouraging the delivery of both successful and failed procedures. This characteristic led to study's operational and technical difficulties, including maintenance and audit; for this reason, it was not possible to collect accurate information about each center, such as the number of ablation procedures performed, and the incidence of operator-dependent complications, among others.

The number of cases is small in some types of substrates so the results should be carefully interpreted.

The design of the report grid did not allow an accurate identification of which patients underwent transseptal approach and non-fluoroscopic wapping systems.

CONCLUSIONS

This first registry of catheter ablation in our country provides important and useful information about this invasive procedure and shows an adequate immediate success rate (93.4%), similar to that reported by international registries, with low incidence of morbidity or non severe complications (3%): This procedure can be considered safe and efficient.

The information collected in this registry might serve as a basis for future comparative analysis with new registries of similar characteristics or with clinical follow-up.

RESUMEN

Primer Registro Argentino de Ablación con Catéter

Introducción

La electrofisiología cardíaca ha tenido en los últimos años un desarrollo muy importantedentro del aspecto terapéutico de las arritmias cardíacas gracias a la implementación deprocedimientos invasivos como la ablación con catéter de sustratos, focos y circuitos arritmogénicosa través de la aplicación de corriente de radiofrecuencia. El Consejo de Electrofisiología de la Sociedad Argentina de Cardiología decidió realizar un registro de este procedimiento con la participación libre y anónima de los principales laboratorios de electrofisiología de nuestro país.

Objetivo

Conocer el número de procedimientos de ablación con catéter, datos epidemiológicos de los pacientes, indicaciones más frecuentes, resultados y

complicaciones a través de la información suministrada por los centros participantes en el período estudiado.

Material y métodos

Se realizó un registro prospectivo y consecutivo de los procedimientos informados desde noviembre de 2007 hasta marzo de 2009 (16 meses). Para ese fin se elaboró una ficha de informe de caso para ser completada on line a través del portal de la Sociedad Argentina de Cardiología.
La información se enviaba a través de Internet con claves y nombre de usuario opcionales para garantizar la reserva y el anonimato de los datos de los pacientes y de los centros participantes.
También se habilitó la posibilidad de envío de informes por correo postal o electrónico.

Resultados

Los datos provienen de 30 centros, que comunicaron la realización de 762 procedimientos de ablación con catéter, en promedio 47 procedimientos por mes. De 762 pacientes tratados, se aplicó corriente de radiofrecuencia en el 98,7% (752/762) de los casos y pulsos de crioablación en el 1,3% (10/762). El 84% de los procedimientos fueron realizados por operadores con 50 o más procedimientos por año y el 67,6% (515/762) fueron efectuados por operadores con hasta 100 casos por año. El procedimiento se consideró exitoso en el 93,4% (709/762) de los pacientes, con una incidencia de complicaciones del 3% (23/762). La edad promedio de los pacientes tratados fue de 42 años (5-94), el 56,3% de sexo masculino. El 76% de la población no presentaba cardiopatía estructural; se refirieron síntomas de arritmias en el 83,7% de los casos. La indicación de tratamiento fue: primaria por síntomas, tratamiento farmacológico refractario o riesgo arrítmico elevado en 712 pacientes (93,5%), por recurrencia en 20 casos (2,6%) y por ablación no exitosa previa en 30 casos (3,9%). Los sustratos o circuitos arritmogénicos tratados fueron: taquicardia intranodal en el 30% (237/786), fibrilación auricular en el 3,6% (28/786), aleteo auricular en el 21,5% (171/786), taquicardia auricular en el 4,3% (34/786), taquicardia auricular macrorreentrante en el 0,8% (7/786), vía anómala manifiesta en el 24% (186/786), vía anómala oculta en el 8,6% (68/786), taquicardia ventricular idiopática en el 2,5% (20/786), taquicardia ventricular isquémica en el 0,9% (7/786), taquicardia ventricular asociada con otras cardiopatías en el 0,9% (7/786), ablación del nodo AV en el 1,9% (15/786) y extrasístole ventricular en el 0,9% (7/786). Las complicaciones fueron: BAV completo (n = 2), derrame pericárdico (n = 2), hematoma en el sitio de punción (n = 4), atrapamiento del catéter, BAV de primer grado, BRI traumático, disección de la aorta, intolerancia al procedimiento, neuropatía crural, seudoaneurisma femoral y trombosis venosa profunda.

Conclusiones

Este primer registro realizado en nuestro país sobre ablación con catéter brinda información importante y útil acerca de este procedimiento y muestra una tasa de éxito inmediato adecuada (93,4%) y similar a lo comunicado en otros registros internacionales, con una tasa baja de morbilidad o de complicaciones no graves (3%), por lo que esta acción médica puede considerarse segura y eficaz.

Palabras clave > Registro - Electrofisiología - Ablación por catéter

BIBLIOGRAPHY

1. Morady F. Radio-frequency ablation as treatment for cardiac arrhythmias. N Engl J Med 1999;340:534-44.
2. Álvarez M, Merino JL. Spanish registry on catheter ablation. 1st official report of the working group on electrophysiology and arrhythmias of the Spanish Society of Cardiology (year 2001). Rev Esp Cardiol 2002;55:1273-85.
3. García-Bolao I, Macías-Gallego A, Díaz-Infante E; Spanish Society of Cardiology Working group on Electrophysiology and Arrhythmias. Spanish catheter ablation registry. Sixth official report of the Spanish Society of Cardiology Working group on Electrophysiology and Arrhythmias (2006). Rev Esp Cardiol 2007;60:1188-96.
4. Scheinman MM, Huang S. The 1998 NASPE prospective catheter ablation registry. Pacing Clin Electrophysiol 2000;23:1020-8.
5. European Heart Rhythm Association (EHRA); European Cardiac Arrhythmia Society (ECAS); American College of Cardiology (ACC); American Heart Association (AHA); Society of Thoracic Surgeons (STS), Calkins H, Brugada J, Packer DL, Cappato R, Chen SA, Crijns HJ, et al. HRS/EHRA/ECAS expert Consensus Statement on catheter and surgical ablation of atrial fibrillation: recommendations for personnel, policy, procedures and follow-up. A report of the Heart Rhythm Society (HRS) Task Force on catheter and surgical ablation of atrial fibrillation. Heart Rhythm 2007;4:816-61.
6. Calkins H, Yong P, Miller JM, Olshansky B, Carlson M, Saul JP, et al. Catheter ablation of accessory pathways, atrioventricular nodal reentrant tachycardia, and the atrioventricular junction: Final results of a prospective, multicenter clinical trial. Circulation 1999;99:262-70.
7. Willems S, Hoffmann B, Steven D, Drewitz I, Servatius H, Müllerleile K, et al. Catheter ablation for atrial fibrillation: clinically established or still an experimental method? Herz 2008;33:402-11.
8. Hindricks G. The Multicentre European Radiofrequency Survey (MERFS): complications of radiofrequency catheter ablation of arrhythmias. The Multicentre European Radiofrequency Survey (MERFS) investigators of the Working Group on Arrhythmias of the European Society of Cardiology. Eur Heart J 1993;14:1644-53.
9. Macías Gallego A, Díaz-Infante E, García-Bolao I. Spanish Catheter Ablation Registry. 8th official report of the Spanish Society of Cardiology Working Group on Electrophysiology and Arrhythmias (2008). Rev Esp Cardiol 2009;62:1276-85.
10. Inama G, Pedrinazzi C, Adragao P, Alvarez M, Arribas F, Bonhorst D, et al. Five years of catheter ablation procedures in South-Western Europe: meta-analysis of National Registries. Pacing Clin Electrophysiol 2009;32:506-15.

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APPENDIX

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