Improving the quality of healthcare delivery and medical outcomes for patients with heart rhythm disorders

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Introduction

The scientific and technological impact, with a rapidly progressive trend and multiplier impact effect has generated enormous changes in our society in a globalized world where the "planetary" concept is increasingly taking place, becoming an unstoppable reality that is transforming the world and therefore we have to be adapted.
Introduction

One of the biggest challenges that "structured societies" should face is how to planify and address the health care assistance to the individual and the society in terms of EXCELLENCE with the best management of the available resources often limited.
Introduction

The importance of health care and its impact on social welfare and society as a whole, is of such magnitude, which constitutes the cornerstone of the debates and electoral programs of all political groups, whatever their vision or ideological trend, in all democratic and advanced societies in our world.
Introduction

Private and public health care providers necessarily have to adapt to the evolution of the time and optimize all available resources to adequate and improve to the "sometimes" difficult balance:

- Quality of health care delivery
- Cost of service
- Keeping the performance in terms of excellence, with the ultimate goal of helping patients.
Introduction

In this sense, and in direct relation with the objective and centre of this important meeting which gathers many of the most important healthcare providers in the world, I am going to centre my discussion with the principal focus on the pathology that we treat and that constitute part of the fundamental basis of healthcare, to which a CARDIAC ELECTROPHYSIOLOGY LABORATORY dedicates its efforts every day, to the management, diagnosis and treatment of patients with:

- Syncope or presyncope episodes of unknown etiology
- Dizziness of unrevealed causes, with or without feeling palpitations
- Palpitations of uncertain origin and/or documented TACHYCARDIA
- Aborted or resuscitated Sudden Death episodes
“SYNCOPE ” episode is defined as a sudden and transient loss of consciousness, with absence of postural tone and falling to the ground (if the patient is standing), but with rapidly and spontaneous recovery that DOES NOT REQUIRE cardiopulmonary resuscitation maneuvers (CPR) in order to reverse the clinical situation.
Introduction

Definitions

SUDDEN DEATH

Sudden Death episode is defined as a clinical event that occurs suddenly, in an unexpected manner, with little or no clinical manifestation prior to the event, within the first 24 hours of a sudden change in the prior clinical condition.
Sudden Cardiac Death episode is defined as an unexpected and sudden event of cardiac etiology demonstrated, occurring without clinical manifestation in the 2 hours prior to the event, characterized by a sudden loss of consciousness, with absence of postural tone and falling to the ground (if the patient is standing), that REQUIRES cardiopulmonary resuscitation (CPR) manoeuvres in order to reverse the clinical situation.
Introduction

SYNCOPE. CAUSES

There is a large list of causes with different and multifactorial etiopathogenesis that are capable of producing syncope and dividing its classification into higher or lower risk.
Introduction

SYNCOPE. CAUSES

Basically, the sudden loss of consciousness, with absence of postural tone and falling to the floor, is an intrinsic expression of the lack of integration of the cortical brain functions, which basically responds to two main physiopathological causes:

- Intrinsically Structural electric alteration of the Central Nervous System (Brain, Brain Stem).
- Absence of delivery of nutrients to the brain (glucose, oxygen,...), mainly due to transient absence of cerebral blood flow.
SYNCOPE.
CAUSES
• EPILEPSY

Intrinsic Structural Electric Alteration of the Central Nervous System (Brain, Brain Stem)
Absence of delivery of nutrients to the brain (glucose, oxygen...), mainly due to transient absence of cerebral blood flow.

**CAUSES**

- **Without Structural Anomaly:**
  - Neither cardiological nor neurological, demonstrated (due to exacerbated neurological responses of the Afferent - Efferent Vagal and Sympathetic REFLEX ARCH)

**NEUROCARDIOGENIC SYNCOPE**
Introduction
SYNCOPE
Secondary clinical manifestations

Depending on the duration of this brain blood flow supply, the level of neuronal damage will be higher or lower and the patient will experience secondary clinical manifestations (convulsions YES/NO, sphincters relaxation YES/NO) alteration of their cognitive...
Introduction
SYNCOPE
Secondary clinical manifestations

Clinical manifestations
• This is important

50% of epilepsy patients have a NORMAL ELECTROENCEPHALOGRAM

NORMAL ELECTROENCEPHALOGRAM
Therefore, THE PAST MEDICAL HISTORY of the clinical events, is fundamental to accurate the diagnosis, with the clear precision of previous symptoms, clinical or postural situation in which have occurred (standing, sitting, supine position, postural change, previous stimulus triggers or not, e.g.: pain, laughter, cough, scratching (particularly the head), shaving, sudden turn of the neck, mictional, hot environment, during exercise, immediately post exercise effort, etc...) and always taking in account: Spontaneous Sudden Recovery without the need of RCP manoeuvres to restore the previous normal clinical situation.
SYNCOPE

Diagnosis / Exploration

Introduction

After a complete correct medical, cardiological, clinical and neurological evaluation,

ALL NEGATIVE,

TILT-TABLE-TEST

and/or Electrophysiological Study
Introduction

SYNCOPE

Diagnosis / Exploration

TILT-TABLE-TEST

- This is a valuable diagnosis tool to explore the influence of the AUTONOMIC NERVOUS SYSTEM (sympathetic/parasympathetic) on the mechanisms of cardiovascular self-regulation which are responsible (among other functions) for pumping
Introduction
SYNCOPES
TILT-TABLE-TEST

All of these functions of “Cardiovascular self-regulation” are regulated by the brain and modulated through a complex neurological structure:

Afferent- Efferent Vagal and Sympathetic REFLEX ARCH
SYNCOPE
TILT-TEST

Useful to evaluate patients with:

- Syncope
- Postural orthostatic tachycardia (POT)
- Intolerance of exercise
- Extreme fatigue
- Dizziness, lightheadedness, sensation of instability vs. Vertigo, pre-syncope and blurry vision.
SYNCOPE
TILT-TABLE-TEST

- Tilt 70º.
- Continuous monitoring.
- Defibrillator / External pacing (Stand-By).
- Auxilliary / CPR. Equipment

SYNCOPE
TILT –TABLE-TEST

3 TYPES OF RESPONSES

TYPE 2
Cardioinhibitory

TYPE 1
Mixed

TYPE 3
Pure vasodepressor

Each with a specific treatment and focus
SYNCOPE
TILT-TABLE-TEST

Despite this tremendous cardioinhibitory cardiac response...The patient DO NOT NEED a PACEMAKER TO BE IMPLANTED.
SYNCOPE
Electrophysiological Study

(Only when indicated)

This is an electrical catheterization of the heart which allows to study the specific system electrical conduction of the heart, responsible for the heart beat, as well as to study any kind of anomalous electrical impulses responsible for Tachycardia, Syncope or Sudden Death.
By doing this, we can solve the electrical anomaly by implanting special prothesis (like Pacemaker or ICD, or even more, by definitly eliminating the anomalous electrical substrate, applyng either Radiofrequency or Cold.

ABLATION
SYNCOPE - EPS
SYNCOPE- EPS

SYNCOPE- EPS

SYNCOPE- EPS

A-V Sequential Pacemaker Implanted
SYNCOPE - EPS/ABLATION
SYNCOPÉ

FAST PATHWAY

X Ray
(RAO/ 35º)
view

SLOW PATHWAY

X Ray
(RA 35º)
view

RF/Ablation / Intranodal Reentry Tachycardia
SYNCOPE/
ABORTED SUDDEN DEATH
WOLFF- PARKINSON-WHITE SYNDROME
SYNCOPE/
ABORTED SUDDEN DEATH

WOLFF- PARKINSON-WHITE SYNDROME (Very high risk of Sudden Cardiac Death)
(Mostly young people)

RF/Ablation
SYNCOPE

Nevertheless, despite of all previous medical tests performed

UP to 30% of patients

Remain undiagnosed
SYNCOPE

Insertable Loop Recorder

“Usefulness of the Implantable Loop Recorder in the Diagnosis of Recurrent Syncope of Unknown Etiology in patients without Structural Heart Disease and Negative Tilt-Test and Electrophysiological Study”.

ECONOMICAL BURDEN / SYNCOPE APPROACH

- ESTIMATED AMOUNT OF MONEY (CHARGES INVOLVED)
  To the final approach of patients with a Syncope episode of unknown etiology:

- 2 WAYS
  TO FINALLY ACHIEVE THE
  BETTER SOLUTION

- Economical BURDEN
ECONOMICAL BURDEN / SYNCOPE APPROACH

ONE WAY AROUND (The “usual way”)

Emergency Room
ECONOMICAL BURDEN / SYNCOPE APPROACH

- GENERAL PRACTITIONER

- INTERNAL MEDICINE Approach

  - Full complete general blood testing

  - ECG / Chest-X Ray

  - ALL NORMAL
ECONOMICAL BURDEN / SYNCOPE APPROACH

Internal Medicine Approach

ALL NORMAL

Referred to NEUROLOGIST

Brain CT scan vs. – MRI-

VS.

Brain Evoked Potential Study
(Or – even more:-Brain Nuclear SPECT Scan, looking, “maybe” for “some lacunar or ischemic spot”)

VS.

Resting EEG –

When Normal
ECONOMICAL BURDEN / SYNCOPE APPROACH

Monitoring Brain activity (during sleep, with 24 hours EEG/video)

ALL NORMAL

Referred to ORL Specialist

To perform all kinds of technological approaches to rule-out some... (just “in case”) vestibulo-cochlear disturbances

ALL NORMAL
ALL NORMAL

Refered to Vascular Specialist
(To perform supraaortic vascular trunks studies by ultrasound eco-doppler examination, looking for "some" arterial-plaque-stenosis, or so ......)

ALL NORMAL

Cardiologist

- Transthoracic Echocardiogram
- Excercise stress-testing
Clinically negative, but with “some electrical abnormalities” which can be due to a “possible” underlying ischemic heart disease, in “some way” (or...... “just in case”)

- Exercise Stress-Testing with Thallium Isotope Nuclear Radioactive, SPECT myocardial Scan.

- Looking for “some dormant” ischemic myocardial tissue

Gadolinium delayed-enhancement MRI, in case of some possible “indirect signs” of silent ischemia or fibrosis.

Need To perform

Coronary angiogram

ALL NORMAL
ECONOMICAL BURDEN / SYNCOPE APPROACH

- AFTER, this last ("Never End") EVALUATION

- FINALLY

- The Cardiologist

- Referrer the patient To

- EP/LAB/ARRHYTHMIA (SINCOPE UNIT)

- TO PERFORM
ECONOMICAL BURDEN / SYNCOPE APPROACH

TILT-TABLE- TEST

(WAY-2)

POSITIVE

(Type I – Response) and FULL Identification of Symptoms by the patient.

FINAL DIAGNOSIS

38 year old man having a SYNCOPE EPISODE of Neuromediated Mechanism (VASOVAGAL)
SYNCOPE

TREATMENT

- Increase the intake of SALT-and-WATER.
- AVOID prolonged STAND-STILL, specially when "HOT".
- Moderate postural changes.
- Avoid stopping suddenly after intense exercise.
SYNCOPE APPROACH

TOTAL COSTS INVOLVED TO ACHIEVE THIS FINAL DIAGNOSIS??

WAY 1

WAY 2
SYNCOPE
WAY 1 (5,490 €)

General Practitioner 80€

INTERNAL MEDICINE Approach

Fuel complete general blood testing 100€

ECG 60€/ Chest X Ray 50€

ALL NORMAL
SYNCOPE

Internal Medicine Approach

ALL NORMAL

Referred to Neurologist 80€

BRAIN CT SEAN 280€ VS. – MRI 480€

BRAIN EVOKED POTENTIAL 480€
(or even more: Brain Nuclear Spect SCAN, looking for “maybe” some lacunar ischemic “spot”)

VS. RESTING EEG 175€ – When normal
SYNCOPE

- Monitoring Brain activity (at night or 24 hours with video)

- ALL NORMAL

- Referred to ORL Specialist 80€

- Including all kinds of technological approach to rule-out some ("just in case") vestibulo-cochlear disturbances 240€

- ALL NORMAL
SYNCOPE

ALL NORMAL

Referral to Vascular Specialist 80€

Supraaortic vascular trunks approach by ECO Doppler ("looking for some" arterial –plaque –stenosis) 120€

ALL NORMAL

Referral to Cardiologist 80€
SYNCOPE

ALL NORMAL

- Transthoracic Echocardiogram 80€

- Exercise- Stress-Testing 220€

Clinically negative, but with “some electrical abnormalities” which “can underlyng” ischemic heart disease in “some way” (“or…” just in case”)
SYNCOPE

- Ergometry with radioactive Thalium Isotope myocardial SPECT Scan 160€

- Even more: In case of “doubt”

  Gadolinium delayed enhancement MRI, and in case of “some possible” indirect signs of “silent ischemia” 500€

To perform – Coronary angiogram 2.000€

ALL NORMAL
SYNCOPE

AFTER, this last EVALUATION

FINALLY

The Cardiologist 80€

Referr the patient TO

EP/LAB/ARRHYTHMIA (SINCOPE UNIT)

TO PERFORM
SYNCOPE

TILT-TABLE TEST-\(1520\text{€}\) (WAY-2)

POSITIVE

(TYPE I – RESPONSE) and FULL Identification of Symptoms for the patient.

FINAL DIAGNOSIS

38 year old man having a SYNCOPE EPISODE of Neuromediated Mechanism (VASOVAGAL)

TREATMENT
SYNCOPE APPROACH

TOTAL COSTS INVOLVED TO ACHIEVE THIS FINAL DIAGNOSIS??

WAY 1- 5490€

WAY 2- 1520€
SUDDEN CARDIAC DEATH

➢ WITH Underlying Structural Heart Disease

➢ WITHOUT any evidence of Structural Heart Disease

(CHANDELOPATHIES)
SUDDEN CARDIAC DEATH

FINAL RESPONSIBLE EVENT (90% of cases)

- Ventricular Arrhythmias
  - VENTRICULAR TACHYCARDIA/ VENTRICULAR FIBRILLATION
SUDDEN CARDIAC DEATH

A-V Sequential ICD
(Implantable Cardioverter Defibrillator)
SUDDEN CARDIAC DEATH

WITHOUT STRUCTURAL HEART DISEASE

CHANNELOPATHIES (genetically Modulated)

- Brugada Syndrome
  (SCNSA gen)
  (Membrane Sodium Channel disfunction)

- Short and Long QT interval syndrome
  (KENQA gen)
  (Membrane slow potasion channel dysfunction)

- Ventricular Polimorphic Cathecolaminergic Tachycardia
  (CASQL gen)
I will not discuss in depth these issues because they are not the focus of this conference, but I would like to leave the message to the audience that there may be patients successfully resuscitated after an episode of sudden death, which do not present any form of structural heart disease, and require several studies including genetical analysis linked to some pathology like primary ventricular fibrillation, early repolarization or Brugada Syndrome.
SUDDEN CARDIAC DEATH

EARLY REPOLARIZATION SYNDROME

Figure 1. Baseline Electrocardiograms from Four Case Subjects.
In each panel, early repolarization is evident in the varying patterns of QRS slurring or notching in inferolateral leads (arrows). Panel D shows a beat-to-beat fluctuation in this pattern.
SUDDEN CARDIAC DEATH

CHANELOPATHIES (GENETICALLY MODULATED)

GENETIC “SCREENING” TESTING, present a low sensitive and specific value

- 109 families (411 members) with one or more episodes of sudden death in the family, and 52 families (91 members) with an unexplained episode of cardiac arrest, were analyzed from January 2007 to December 2012.

- Familial cardiological and targeted genetic evaluation: Low yield in sudden unexplained death and high yield in unexplained cardiac arrest syndromes

Saurabh Kumar, Stacey Peters, Tina Thompson et al. (Heart Rhythm 2013: 10 : 1653-1660)
ATRIAL FIBRILLATION

WORLDWIDE SANITARY EPIDEMIC
Atrial Fibrillation ➤ Sanitary Epidemic

USA: +500,000 Hospital Admissions / Year

- Is the most common arrhythmia in daily clinical practice and is associated with a significant morbidity and mortality rate.
- Men and Women > 40 years (+ 25%)
- 1/3 hospital admissions ➤ Heart rhythm disorders

ATRIAL FIBRILLATION

IN THE LAST 20 YEARS

Hospital admissions: +60%.
Average admission: 3.8 - 4.7 days.
Average cost: $3,559

- Men < 64 years
- Women > 64 years

ATRIAL FIBRILLATION

EU

COST OF ANNUAL AF HOSPITAL CARE:

€ 3,500,000,000

✓ Pharmacological treatment.
✓ Out-patient clinic follow-up.

SPAIN

ATRIAL FIBRILLATION

Out-patient Cardiology appointments: 18-26%
Hospital Emergency Services consultations: 0.54%
+ 50% Patients ≥ 70 years (Men/Women)
ATRIAL FIBRILLATION

Patients with HBP: 🧠 RISK of AF.

60% Patients = Hypertensive

HBP Control = ↓ 14% AF

Other risk factors:
- Diabetes
- Obesity

ATRIAL FIBRILLATION

SPAIN

15-20% patients with AF

Associated Valvular Heart Disease

PERPETUATION OF AF

“Atrial Fibrillation begets Atrial Fibrillation”.


Electrical changes:

Ionic
Molecular
Structural

Atrial Remodelling

(Perpetuating Factor)
ATRIAL FIBRILLATION

HUGE Social/ Economical, and Health IMPACT

↓

Quality of life.

↓

Psychological Impact
↓ Functional class / Limited physical activity

Drugs dependence / Sense of insecurity
Risk of bleeding / Need of Anticoagulation treatment
ATRIAL FIBRILLATION

STROKE

- Of each 6 Strokes ➞ 1 AF
- Of each 100 Patients with AF ➞ 5 Stroke
- AF increase **fivefold** the risk of Stroke.
- If Valvular heart disease: Risk x17.


- ⬆ Risk in Permanent and Paroxysmal AF


- Currently: It is thought that AF itself constitutes a marker of a procoagulant condition.
ATRIAL FIBRILLATION

Guidelines

ACC (American College of Cardiology)
AHA (American Heart Association)
ESC (European Society of Cardiology)

Ist Episode

Recurrent AF
Paroxysmal AF
Persistent AF
Permanent (Long Standing) AF
1) RHYTHM CONTROL:

- Class IC Antiarrhythmic in the absence of ventricular involvement (*Chronic, Ischemic cardiopathology, Contractile Anomalies, Ventricular Hypertrophy, etc.*)

- Amiodarone (*Valvular Heart Disease, Chronic Ischemic Cardiopathology, Hypertrophic Cardiomyopathy, etc.*)
ATRIAL FIBRILLATION

PALLIATIVE

2) FREQUENCY CONTROL:

- Antiarrhythmic Drugs Modulators of AV nodal conduction (*Digoxin, Betablockers, Calcium Blockers, etc.*)
3) LAST OPTION:

- AF with difficult control and pharmacological treatment with clinical commitment, hospital recurrences and age $\geq 65$ years

↓

Definitive AV Nodal Conduction Ablation

+ PACEMAKER IMPLANTATION
ATRIAL FIBRILLATION

CURATIVE

↓

Actuation at the origin source of the arrhythmia

AND

↓

ISOLATION

↓

ARRHYTHMOGENIC FOCUS

↓

Electrical Disconnection of the Pulmonary Veins from the left Atrium

↓

ABLATION
COMPLETE CIRCUMFERENTIAL ISOLATION OF PULMONARY VEINS WITH CRYOBALOON-CATHETERABLATION IN PATIENTS WITH PAROXYSMAL ATRIAL FIBRILLATION

Jesús M. Paylos*, Adriana Espejo, Nuria Cabrera, Clara Ferrero, Carmen Berrio, Jesús J. Veiga y José L. Moreno
Arrhythmia Unit and Cardiac Electrophysiology Laboratory.
Moncloa Hospital.

Artic Front Balloon Catheter of 28 mm, 10.5 French (Cryocath technologies, Montreal, Quebec, Canada) with double chamber that allows the circulation of nitrous oxide, absorbing the heat from the adjacent tissue, then cooling at very low temperatures (-30° / -75° C).

After each application, the gas is evacuated out from the system.
ATRIAL FIBRILLATION

CRYO-BALLOON ABLATION
ATRIAL FIBRILLATION

CRYO-BALLOON ABLATION

PV Phlebography
ATRIAL FIBRILLATION

CRYO-BALLOON ABLATION

Systematic/Mapping

20 - poles Circular-Catheter Mapping.
ATRIAL FIBRILLATION

OCCLUSION

CRYOBALLOON-CATHETER
ATRIAL FIBRILLATION
Mapping PV after CB ablation
ATRIAL FIBRILLATION

PRE-ABLATION

POST-ABLATION

(Entry Block)
Long-Term Evolution of Patients Treated for Paroxysmal Atrial Fibrillation with First and Second Generation Cryoballoon Catheter Ablation with a Prospective Protocol Guided by Complete Bidirectional Left Atrium-Pulmonary Veins Disconnection after Adenosine as Main Target and Point to achieve. Seven Years Follow-up of Patients with a rough estimation profile of Low ALARMEc Score. A Single Center Report

Jesus M. Payles MD, PhD, Arcelis Morales MD, Luis Azeona MD, Mario Paradela MD, Raquel Yagüe MD, Fernando Gómez-Guijarro MD, Lourdes Lecal MD, Clara Ferrero RN, Octavio Rodríguez MD

Cardiac Electrophysiology Lab, Arrhythmia Unit and Atrial Fibrillation Center. Mancha University Hospital. European University of Madrid, Madrid (Spain).

Abstract

Introduction: Cryoballoon ablation (CB) has proven effective for treating patients with paroxysmal atrial fibrillation (PAF). We analyzed our seven year follow-up of patients, treated for PAF with first generation (CB1) and second generation (CB2), with demonstration of LA-PV disconnection with bidirectional block (BB) after adenosine (ADO).

Methods: Since November 2008 to May 2015, 128 patients, 97 male (68±7 years), without heart disease, highly symptomatic, refractory to antiarrhythmic drugs (AAD) were treated, and follow-up (141±1727 days). Left atrial size: 37±6 mm.

Results: A total of 439 PV were successfully isolated (95.9%). Acute reconnection: 44 PV (9.9%) after CB: 16 unmasked by ADO; 12 extrapulmonary muscular connections (EMC). Main complication was phrenic nerve palsy (PNP) 9 (7 %). On follow-up, 114 patients (88%) remained asymptomatic in sinus rhythm (SR), free of medication. Fourteen patients (11%) had atrial fibrillation recurrence: 12 male (52±68 years). Early recurrences occurred in 9 male. Late recurrences presented 3 male at 24, 27 and 60 months, and 2 female at 7 and 40 months respectively. All recurrence patients were redo, and remain in SR without medication during follow-up.

Conclusions: CB alone is very effective and safe for the definitive treatment of patients suffering PAF with 72.6% success rate, increasing up to 89.1% when this protocol is applied in a single procedure. After redo, all population group (100%), remain in sinus rhythm, freedom of arrhythmia, without AAD, in this very long term follow-up. Checking for BB protocol, and ruling-out EMC allowed us to identified 14.8% of patients with underlying substrate for potential arrhythmia recurrence. CB2 applications entail a highest risk of PAF. Patients with a rough estimated profile of low ALARMEc score (≤ 1) have an excellent long term outcome, being this series the largest follow-up described so far, for patients treated for PAF with CB.

Introduction

Complete electrical isolation of pulmonary veins (PVI) from the left atrium (LA) is crucial to cure patients with Atrial Fibrillation (AF). The Cryoballoon catheter ablation technique (CB) has proven effective to achieve this electrical disconnection of pulmonary veins (PV) from LA, resulting in a demonstrated effectiveness to treat pts suffering from PAF.

However, some observations have shown, at least when first generation CB was used that cryoenergy CB application doesn’t produce a homogeneous circumferential lesion in all PV, which is related to their anatomical shape, thickness and size with a non-uniform distribution of the atrial muscle around them.
ATRIAL FIBRILLATION

- 100% Free of Arrhythmia.
- Without Antiarrhythmic drugs.
- None on oral anticoagulation regimen therapy.
- No mortality.
- No major complications.
- 48-72 hours hospital stay.

Paylos J.M. et al Journal of Atrial Fibrillation/ May 2016 Volume 8, Issue 6 (1-12)
## ATRIAL FIBRILLATION

### COST-BENEFIT/ Balance

Facing patients suffering the arrhythmia:
Under medical treatment, follow-up, emergency room incomes, hospital stays, large number of medical studies. Along with the several diagnosis and technological approaches, etc...

**SPAN/TIME DURATION OF ARRHYTHMIA:**

<table>
<thead>
<tr>
<th>Duration</th>
<th>Cost Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-5 years</td>
<td>10-25.000 €</td>
</tr>
<tr>
<td>5-10 years</td>
<td>15-35.000 €</td>
</tr>
<tr>
<td>10-15 years</td>
<td>20-45.000 €</td>
</tr>
<tr>
<td>15-20 years</td>
<td>25-50.000 €</td>
</tr>
</tbody>
</table>
ATRIAL FIBRILLATION

without taking into account the several numbers of factors with co-morbidity associated,

Beside of the

WORSE

STROKE

Enormous impact on individual and social environment

Requiring never ending medical supplies, social and psychological attention, general rehabilitation, full personal assistance and an unexpected and unlimited economical costs.
According to all the items formerly mentioned, in terms of social, emotional and healthcare delivery to the individual and society, to: better face the problem when occurs, acting as soon as possible at the origin

We strongly recommend to

Send the patient to EP Lab/Arrhythmia Unit

To perform PV/LA Electrical Disconnection

BY

CRYO-BALOON CATHETER / ABLATION
CRYO-BALOON CATHETER / ABLATION COST

Mean total cost of procedure:

31,874.02 + /- 8349,70 $

Final Conclusions
Final Conclusions

1. The healthcare providers must have enough information and direct knowledge to be able to refer their patients and insured population to the adequate specialized medical centers, where they could be offered a better and most efficient attention in terms of EXCELLENCE of Healthcare delivery and medical outcomes, ensuring the prompt reintegration of the individual to society.
To achieve this goal, it would be very convenient that health care providers had extensive information and direct knowledge of the referral medical centers where to send their patients, in order to assure in a more reliable way the level of healthcare delivery that their policyholders will receive, with the best management of the economical resources.
3. For all the above mentioned, it is necessary that both sides involved (insurance/service providers and healthcare suppliers) WORKING TOGETHER
As far as our responsibility concern, as an integrated member of the HLA Group, we offer our hospital and, more specifically, the Cardiac Electrophysiology Laboratory and Arrhythmia and Syncope Unit to all of you, so that we can achieve this goal TOGETHER.
Thank you for your attention!