Einthoven lecture

Electrophysiology in a humanitarian context

EHRA 2019 – Lisbon - Portugal

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Hôpital de La Tour
Meyrin - Geneva - Switzerland

« Cœur de la Tour »
Foundation

Conflict of interest : none

aims

« humanitarian » or development assistance ?

1. Teaching professionals on site
2. Shortening of the learning curve
3. Giving advices on organisation
4. Giving technical advices and technical assistance
5. Adaptation to the local context
6. Optimal use of local resources
7. Reducing waste
8. Decreasing the gap between two worlds
9. Offering adequate treatment for everybody

aims

Help us ….
…but…

- No medical tourism
- Projects should be monitored and controlled
- Long-term projects
- Projects based on education

Statement made by an egyptian surgeon during the International Cooperation Committee EACTS (Vienne 2003)

Teaching electrophysiology

Teaching ECG…
Teaching guidelines
Teaching technical skills

On site live procedures or courses
on-line support and teaching
Participation to local congresses
Promoting clinical research

ECG teaching course at the “Hôpital central” of Yaoundé (Cameroon)

To medical students
To nurses….

To cardiologists
To electrophysiologists….

Cathlab Open Heart Clinic – Tbilisi - Georgia

ATRIAL FIBRILLATION IN AFRICA: clinical characteristics, prognosis and adherence to guidelines in Cameroon

M. Ntep-Gweth,MD#, M.Zimmermann,MD*, A. Meiltz, MD*, S. Kingue, MD#, P. Ndobo#, P. Urban*, A. Bloch*. Hôpital de La Tour - Meyrin* and Hôpital Central de Yaoundé - Cameroon #

Introduction

Atrial fibrillation (AF) is the most common sustained arrhythmia and guidelines concerning treatment have been published by ACC/AHA/ESC. Only few studies have been devoted to application of these guidelines in clinical practice and no data are available concerning treatment of AF in Africa.

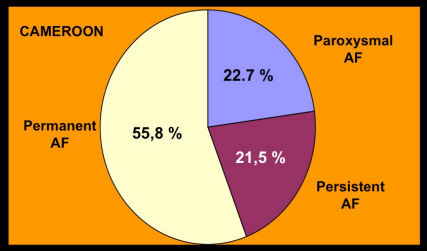
Objectives

The aim of the present study was to characterize the clinical profile of patients with AF in the urban population of a sub-Saharan African country and to assess how successfully current guidelines are applied in this context.

Methods

- Prospective survey
- 10 cardiologists in Cameroon
- From June 2006 to July 2007
- Data on clinical profile, mode of presentation and therapeutic strategy were collected and analyzed
- Inclusion criteria: AF documented by an ECG during the index visit and age > 18 yrs

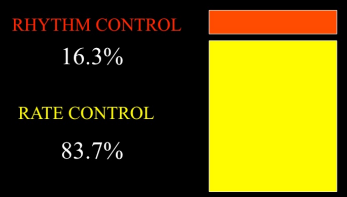
AF classification



Patients characteristics (n = 172)

Mean age (yrs)	65.8 ± 13
M/F	75/97
Structural Heart Disease	156/172 (90.7%)
hypertensive heart disease	82/172 (47.7%)
Rheumatic heart disease	44/172 (25.6%)
Congestive HF	85/172 (49.4%)
Previous Cerebrovascular accident	30/172 (17.4%)

Treatment strategy



CHADS2 score

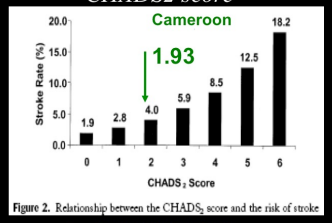
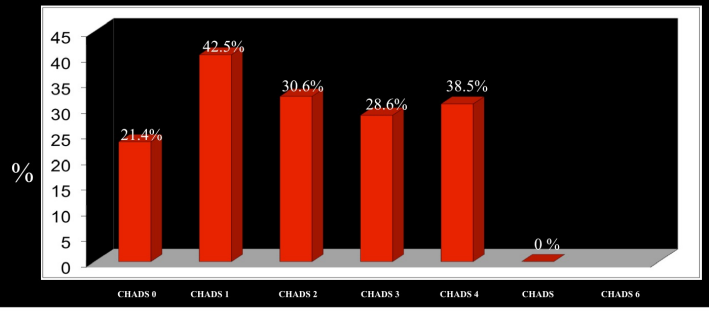


Figure 2. Relationship between the $CHADS_2$ score and the risk of stroke

Gage FG, *JAMA* 2001; 285: 2864-70

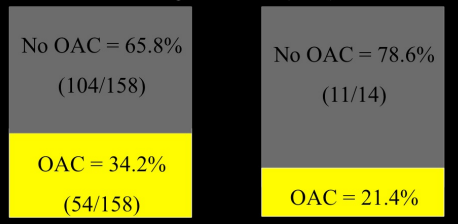
Anticoagulation rate



Echocardiography data n = 172

Echo performed	141/172 (82.0%)
LA diameter (mm)	50 ± 10
Normal LV function	44 /141 (31.2%)
Discrete LV dysfunction	40/141 (28.4%)
Moderate LV dysfunction	32/141(22.7%)
Severe LV dysfunction	25/141 (17.7%)

Anticoagulation rate (OAC)



follow-up data (FU duration 318 ± 124 days)

Death	26/88 (29.5%)
Cardiovascular death	15/26
Non lethal embolic stroke	11/88 (12.5%)
Congestive heart failure	23/88 (26.1%)

Conclusion

- Clinical presentation of AF is much more severe in Cameroon than in developed countries
- A rate-control strategy is almost the rule in Cameroon and OAC is prescribed in only 34.2% of eligible patients despite a high $CHADS_2$ score at inclusion
- Death and stroke rate at one year are very high in Cameroon possibly because of a lower use of OAC, a higher prevalence of rheumatic mitral disease and of more severe comorbidities

Europace Advance Access published February 23, 2010

Europace
doi:10.1093/europace/euq006

CLINICAL RESEARCH

Atrial fibrillation in Africa: clinical characteristics, prognosis, and adherence to guidelines in Cameroon

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Received 7 September 2009; accepted after revision 4 January 2010

Aims The purpose of this prospective study was to characterize the clinical profile of patients with atrial fibrillation (AF) in the urban population of a sub-Saharan African country and to assess how successfully current guidelines are applied in that context.

Methods and results This prospective study involved 10 cardiologists in Cameroon. Enrolment started on 1 June 2006 and ended on 30 June 2007. Consecutive patients were included if they were >18 years and AF was documented on an ECG during the index office visit. In this survey, 172 patients were enrolled (75 males and 97 females; mean age 65.8 ± 13 years). The prevalence of paroxysmal, persistent, and permanent AF was 22.7, 21.5, and 55.8%, respectively. Underlying cardiac disorders, present in 156/172 patients (90.7%), included hypertensive heart disease (47.7%), valvular heart disease (25.6%), dilated cardiomyopathy (15.7%), and coronary artery disease (6%). A rate-control strategy was chosen in 83.7% of patients (144 of 172) and drugs most commonly used were digoxin and amiodarone. The mean $CHADS_2$ score was 1.9 ± 1.1 and 158 of 172 patients (91.9%) had a $CHADS_2$ score ≥1. Among patients with an indication for oral anticoagulation (OAC), only 34.2% (54 of 158) actually received it. During a follow-up of 318 ± 124 days, 26 of 88 patients died (29.5%), essentially from a cardiovascular cause (15 of 26). Ten patients (16.1%) had a non-lethal embolic stroke and 23 (26.1%) had symptoms of severe congestive heart failure.

Conclusion Clinical presentation of AF in Cameroon is much more severe than in developed countries. A rate-control strategy is predominant in Cameroon and OAC is prescribed in only 34.2% of eligible patients, despite a high $CHADS_2$ score at inclusion. Death and stroke rate at 1 year are very high in Cameroon possibly because of a lower use of OAC, and a higher prevalence of rheumatic mitral disease and of more severe co-morbidities.

Keywords Atrial fibrillation • Africa • Adherence to guidelines • Cameroon

Introduction

In industrialized countries, atrial fibrillation (AF) is the most common sustained cardiac arrhythmia, strongly associated with an increased morbidity and mortality. Atrial fibrillation causes a five-fold rise in the risk of stroke and one of every six strokes occurs in a patient with AF. Atrial fibrillation is also associated with heart failure, with frequent physician's or emergency department visits and with hospitalization, and with significant economic consequences.[1] In the last decade, important acquisitions in the management of AF have emerged concerning treatment strategies, risk assessment or stroke prevention, and 'unified' guidelines (ACC/AHA/ESC) for AF management have been published.[2] Even in developed countries, suboptimal anticoagulation is frequently observed[3–7] and a high level of adherence to the guidelines has been shown only rarely.[8] Only very few data are available concerning AF or AF-related stroke in Africa[9–13] and little is known of the clinical characteristics, treatment, and prognosis of African patients with AF. Since the overall burden of cardiovascular disease is predicted to rise by ~150% in the developing

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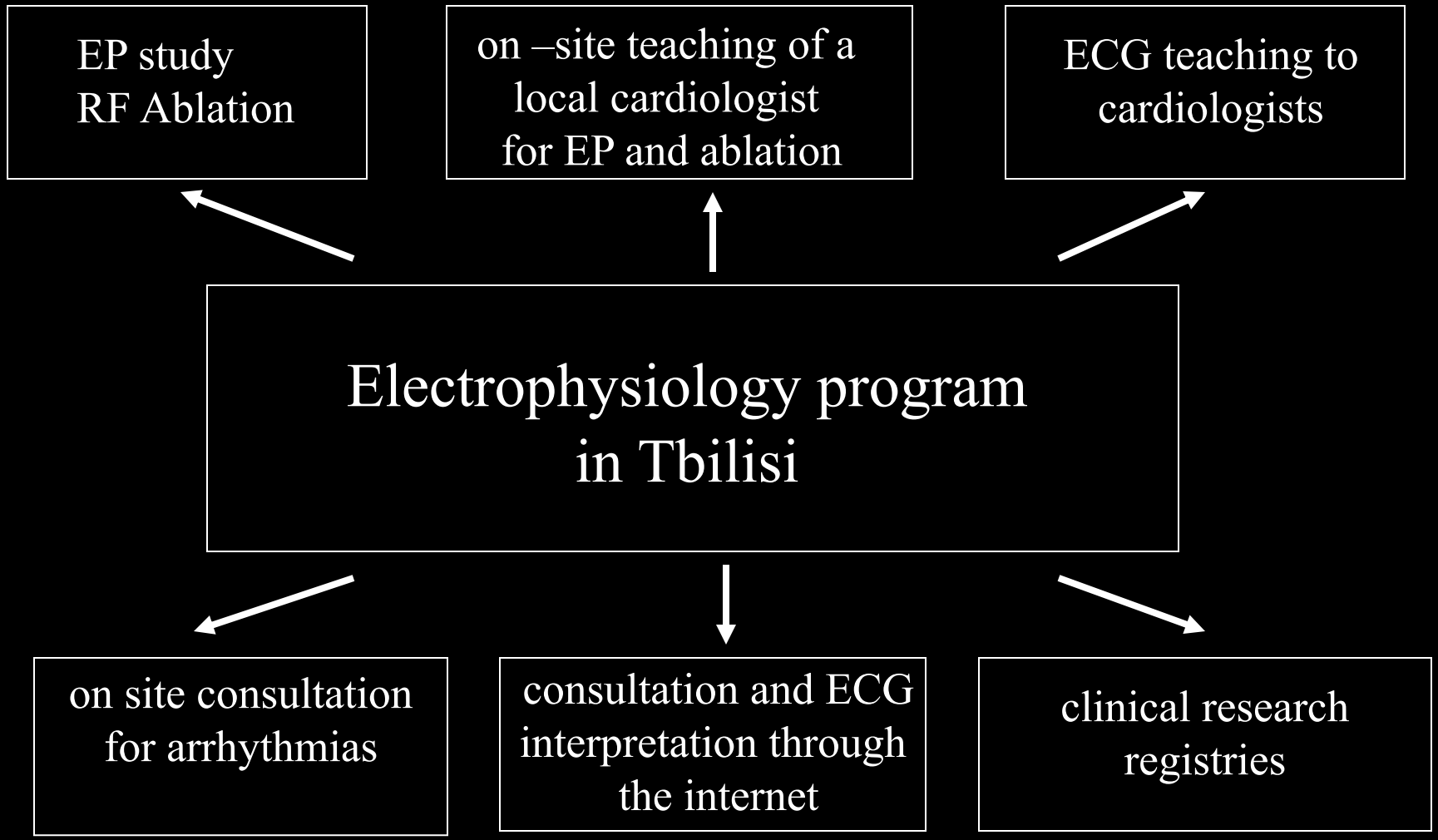
Comment from the reviewer and editor-in-chief of Europace, Prof. AJ.Camm:

"Despite the limitations of the study follow-up, it is interesting to know specifics of specialized care for AF in Africa. Especially the discussion on typical limiting factors for adequately implementing best practice in Africa is worth while…"

Developing electrophysiology beyond borders

განვითარება electrophysiology პროგრამა საზღვრებს მიღმა

Personal experience at OPEN HEART clinic Tbilisi - Georgia


EP study
RF Ablation
on –site teaching of a local cardiologist for EP and ablation
ECG teaching to cardiologists
Electrophysiology program in Tbilisi
on site consultation for arrhythmias
consultation and ECG interpretation through the internet
clinical research registries

how to get started ?

- Demand must be clearly communicated
- Official authorization
- Direct contact with the local institution
- Selection of the cardiologist to be trained
- Direct contact with all profesionals involved
- Check of the local equipment
- Evaluation of the need

project to develop electrophysiologie and ablation at OPEN HEART clinic - Tbilisi - Georgia

Provided by Foundation Frédéric et Jean Maurice and by Foundation "Cœur de la Tour" :

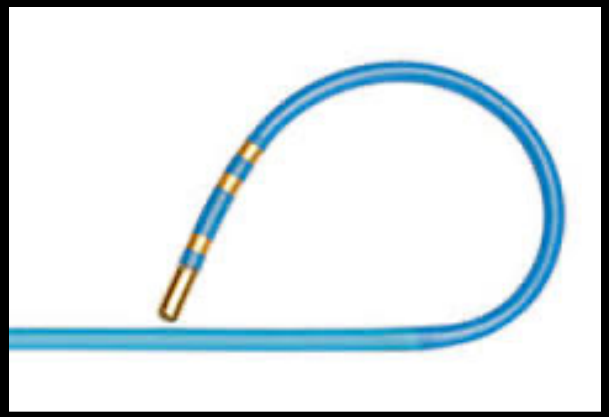
- senior electrophysiologist + technician
- EP recording system
- teaching (theory and practice)
- RF generator, irrigation pump
- second-**hand** catheters for EP/ablation
-Cables and patches

Provided by OPEN HEART clinic:

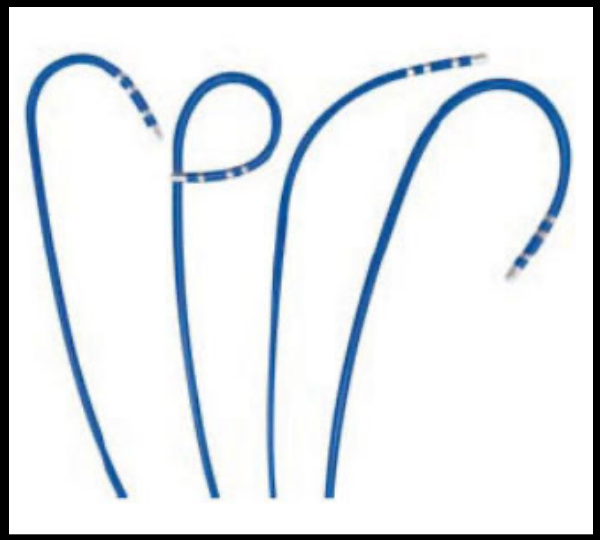
- cathlab with X-ray equipment
- local cardiologist with interest in EP and ablation
- sterilisation system (ETO) for cables et catheters
- Puncture materials
- patient's selection - data-base

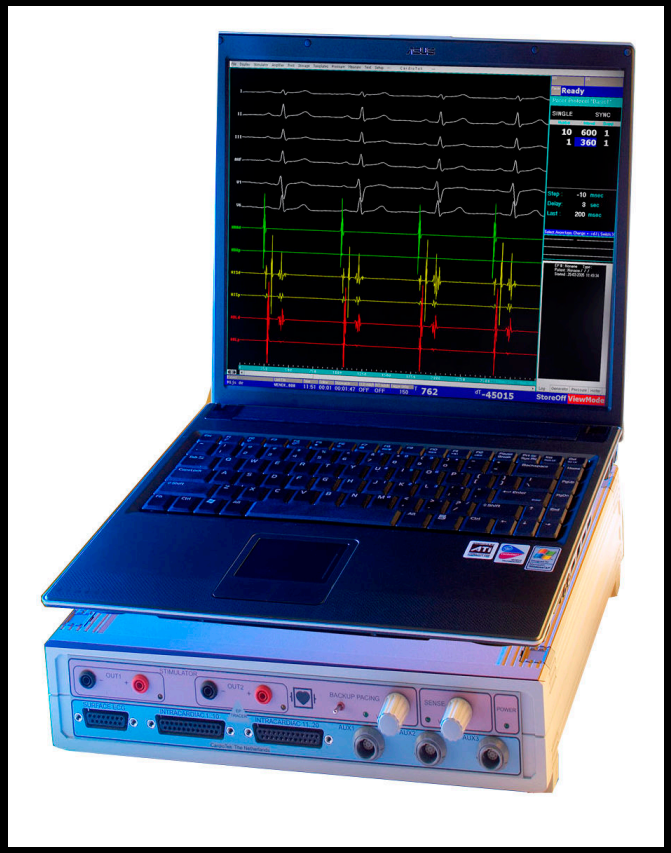
A true and efficient partnership is based on a memorandum of understanding (MOU)

ablation catheters



diagnostic catheters





Portable EP-tracer (Cardiotek)

RF generator (Stockert)

SELECTION of PATIENTS

- regular internet contact (2-3 x/mois) for information concerning clinical data, ECG, Holters etc…
- clinical evaluation during on-site visits
- creation of a list of potential candidates for EP / ablation
- during the initial phase, ablation only for AVRT, AVNRT, AT, FL, RVOT (and not for complex arrhythmias like Afib, left atrial flutters or ischemic VT…)

SELECTION OF THE LOCAL ELECTROPHYSIOLOGIST

- well-trained cardiologist with a high-motivation for electrophysiology and ablation
- fluent in English
- able to perform consultations for rythmic problems and able to correctly select patients

11 ablation session between September 2015 and November 2018

date	consultations	EPS-ablations	succès	complications
20.09.2015	16	3	2	0
29.11.2015	18	3	3	0
29.02.2016	20	4	4	0
03.07.2016	18	6	5	0
13.11.2016	36	5	5	0
16.03.2017	26	3	3	0
23.06.2017	32	4	4	0
05.11.2017	26	4	4	0
26.02.2018	26	3	3	0
02.07.2018	24	5	5	0
08.11.2018	20	4	4	0
	262	44	42	0

* The 2 failures were successfully treated in a second session


Launcher
6F

ღია გული OPEN HEART

კარდიოლოგიური კლინიკა „ღია გული“
მისამართი: თბილისი, თემქა XI მიკრო I კვარტალი
ტელეფონი: 2 52 05 25, 2 60 18 14, 2 60 18 74
ფაქსი: 2 520525

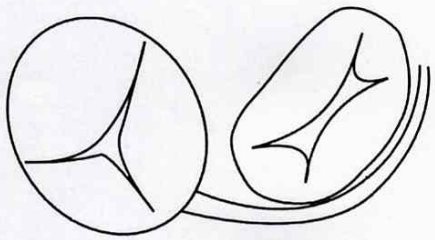
დანართი
სამედიცინო დოკუმენტაციის ფორმა NIV-300-16

ენდოკარდიული ელექტროფიზიოლოგიური კვლევა და რადიოსიხშირული კათეტერული აბლაცია

პაციენტი ხარშილაძე ნიკოლოზ ნიკოლოზ
გვარი / Surname სახელი / Name

პროცედურის თარიღი, დრო: 22.09.2015 12:30-14:15
ოპერატორი: Professor Marc Zimmermann / ასისტენტი: გიორგი ცხომელიძე

პაციენტს ბოლო 10 წელია აღენიშნება პაროქსიზმული ტაქიკარდიის ეპიზოდები, ეპიზოდების უმრავლესობა გრძელდებოდა 1-2 საათი. ბოლო ეპიზოდი ჰქონდა აგვისტოში, არითმია კუპირდა ადენოზინით. ბოლო პერიოდში პაროქსიზმული ტაქიკარდიის სიხშირემ და ხანგრძლივობამ იმატა, პროგრესირდა სიმპტომატიკა, რის გამოც მიმართა კარდიოლოგს, სადაც ერჩია ენდოკარდიული ელექტროფიზილიოლოგიური კვლევა და რადიოსიხშირული კათეტერული აბლაცია.



პაციენტი შეყვანილ იქნა ელექტროფიზიოლოგიურ ლაბორატორიაში, დამუშავდა მარჯვენა ბარძაყის მიდამო, ჩატარდა მარჯვენა ბარძაყის ვენის პუნქცია. ჩაიდგა 6F ზომის ორი და 7F ზომის ერთი ინტროდუსერი. გულში შეყვანილ იქნა 2 ფიქსირებული მოხრილობის დეკაპოლარული და ბიპოლარული დიაგნოსტიკური კათეტერი, რომელთაგან ერთი მოთავსდა მარჯვენა წინაგულში, მეორე კი მარჯვენა პარკუჭში.

კორონარულ სინუსში მოთავსდა კორონარული სინუსის კათეტერი. განისაზღვრა ჰისოგრამის ინტერვალები: AH-123msc, HV-45msc. წინაგულიდან პროგრამული სტიმულაციით და იზოპროტერენოლის ინფუზიით გამოწვეული იქნა სუპრავენტრიკულური პაროქსიზმული ტაქიკარდია. VA ინტერვალი 50 მწმ, CL – 330 msec. მარჯვენა პარკუჭიდან ჩატარდა ენტრეინმენტ-მანევრი. VAV Response.

ტაქიკარდიის ანალიზი აჩვენებს რომ პაციენტს აქვს ნელი-სწრაფი ტიპის ატრიოვენტრიკულური კვანძოვანი რიენტრული ტაქიკარდია.

გადაწყდა ნელი გზის აბლაცია. აპლიკაციისას მიღებულ იქნა აჩქარებული კვანძოვანი რიტმი.

აპლიკაციის შემდეგ ჩატარებულმა კვლევამ დაადასტურა ნელი გზის წარმატებული აბლაცია. ჩატარებული ელექტროფიზიოლოგიური მანევრებით SVT-ს ინდუცირება შეუძლებელია, მათ შორის იზოპროტერენოლის ადმინისტრაციის შემდეგ. მაგრამ გამოწვეულ იქნა წინაგულთა ფიბრილაცია, გადაწყდა პროცედურის დასრულება. ამოღებულ იქნა კათეტერები და ინტროდუსერები, განხორციელდა ჰემოსტაზი და პუნქციის ადგილას დაედო დამწოლი ნახვევი. პაციენტი გადაყვანილ იქნა ინტენსიური თერაპიის ბლოკში.

დასკვნა: ნელი-სწრაფი ტიპის ატრიოვენტრიკულური კვანძოვანი რიენტრული ტაქიკარდია. ნელი გზის სელექტიური აბლაცია. წინაგულთა ფიბრილაციის პაროქსიზმი (სტიმულაციის შედეგად განვითარებული).

რეკომენდაციები:

1. კორდარონი 200მგ სინუსური რითმის აღსადგენად;
2. მაპოლარიზებელი ხსნარი, წყალ-ელექტროლიტური დისბალანსი კორეკცია;
3. კარდიომაგნილი 150 მგ 1 აბი შუადღეს სადილის შემდეგ 6 კვირა.

კარდიოლოგი (ელექტროფიზიოლოგი): _____ Professor Marc Zimmermann

understandable and readable report…

Pacemakers implantation and radiofrequency catheter ablation procedures during medical missions in Morocco: an 8 years experience

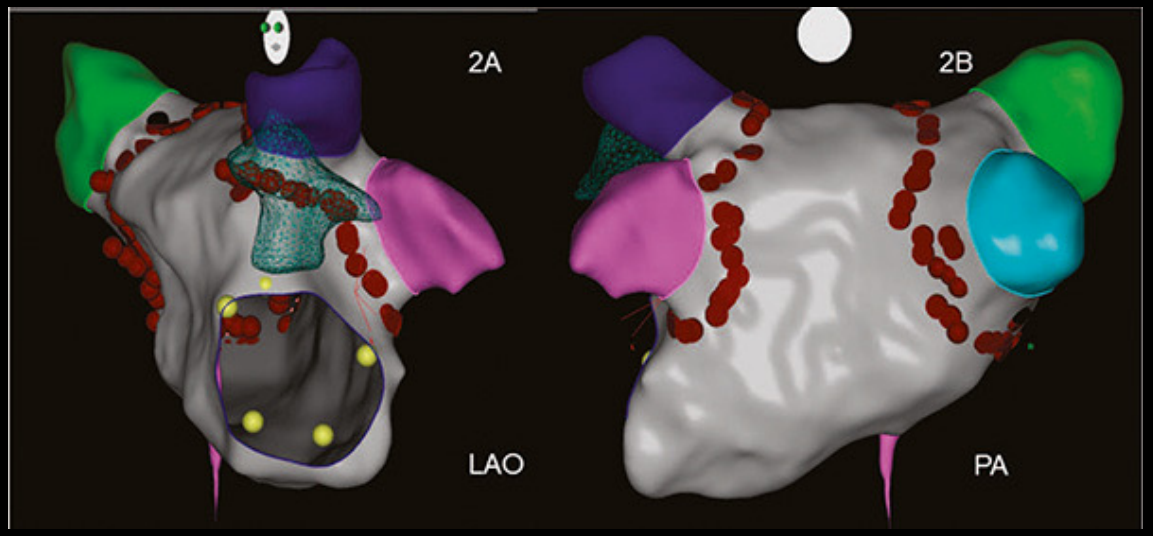
Sok-Sithikun B et al. Europace 2016; 18: 1038-1042

Number of RFCA :	31
Number of medical missions :	11
AVNRT	12
AVRT	15
atrial flutter	3
ventricular ectopy	1
Accute success	29/31
Complication (AV block, air embolism)	2/31

Princess Grace Hospital - Monaco

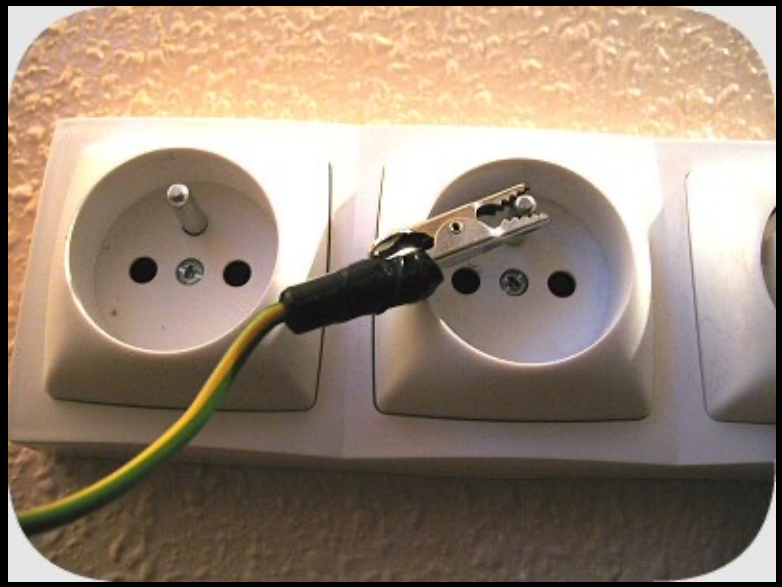
What about the future ?

- continuing education and teaching
- full autonomy of the local electrophysiologist
- transfer of knowledge locally (nurses…)
- Improving local organization (arrhythmia clinic)
- Improving technology
- Extending indication to more complex arrhythmias


2A
2B
LAO
PA


TF
23 g
22 g
8 g
-- gs
Reset Force

Back to the future….



consultation office
Hôpital Central - Yaoundé

non-functioning cathlab
Hôpital Général - Yaoundé

What about the future ?

- Improving collaboration with other centers
- Favouring on-site clinical research
- expand access to EP-ablation to all patients
- Improving policy for reimbursement
- Fighting against corruption

A real problem in many countries …

conclusion

- Developing a program for EP and electrophysiology in less developed countries is feasible but not always easy
- The program should be based on transfer of knowledge and education at all levels
- The first step should always concentrate on ECG learning
- The program should be designed for the long-term
- The aim is to offer knowledge, competence and autonomy
- Success highly depends on a strong personal relationship

This presentation is dedicated to all colleagues
who are trying to treat cardiac arrhythmia
in a difficult context

- political instability
- economical restrictions
- scarce domestic funding
- unavailability of technical materials

aknowledgments

Cameroon

- Dr. M. N'tep-Gweth
- Prof. S. Kingue

Nepal

- Dr. N.Shrestha

Georgia

- Dr. G. Tskhomelidze
- Mr. D. Mikeltadze
- Dr. G. Papihasvili

Geneva

- Mr. Lionel Agnoletti
- Dr. V. Velebit
- Foundation Frédéric et Jean Maurice
- Foundation "Coeur de la Tour"