

# What's the problem ?

*Alaa Allah Mohamed Al Anany*

*M.Sc. Cardiology*

*Ain Shams University*

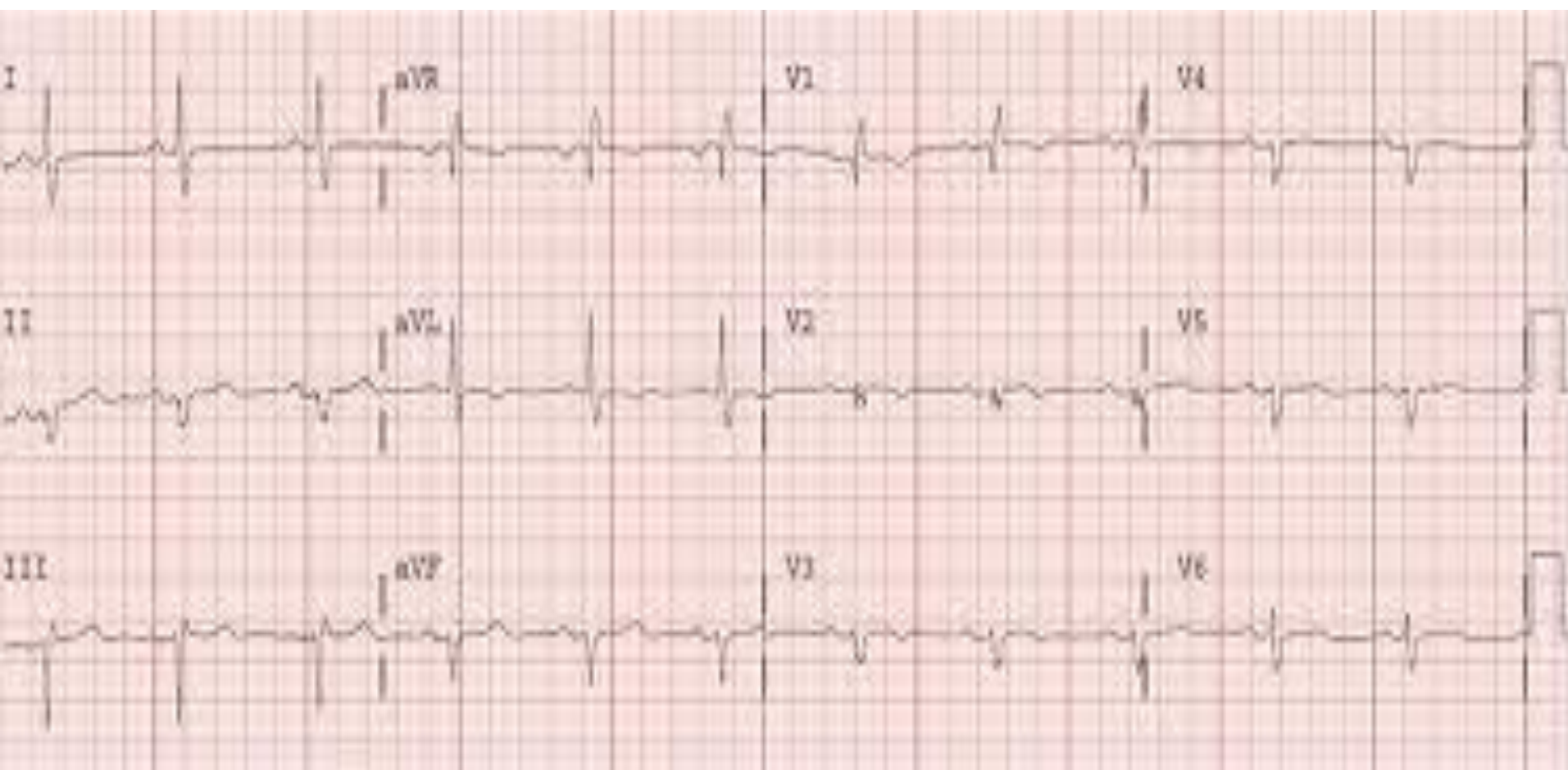
*2014*

- Male patient, 62yrs old, DM (10yrs), HTN(12yrs), ICM, S/PCABG(3yrs ago), paroxysmal A.F.

- He was complaining of awareness of heart beats for the last month.

- General and local examination.

- ECG
- NSR.
- QRS: 110 msc.
- Q waves V<sub>1</sub>-V<sub>5</sub> and inferior leads.



- Echocardiography :

EF 30%, LV (65x45), SWMAs

- Holter was requested.
- It revealed frequent PVCs, and non sustained runs of VT.



- Dual chamber ICD for primary prevention of SCD was implanted for him.

- VT @ 170 b/m
- FVT was through VF zone @ 200 b/m
- VF @ 230 b/m

- One month later, the patient said he felt a very painful kick in his chest.
- So we interrogated the device to find the following ...

# Arrhythmia Episodes

| Type | ATP Seq | Shocks | Success | Date        | Time<br>hh:mm | Duration<br>hh:mm:ss | Avg bpm<br>V | Max V<br>bpm | EGM |
|------|---------|--------|---------|-------------|---------------|----------------------|--------------|--------------|-----|
| V/F  | 1       | 35J    | Yes     | 06-Dec-2013 | 22:55         | :17                  | 250          | 250          | EGM |

----- Last Programmer Session 23-Nov-2013 -----  
(Data prior to last session has not been interrogated.)

7:  Plot  EGM  Text  QRS



(Patient name not entered)

# Data - Arrhythmia Episodes

VT/VF

SVT

View Treated

> 0 sec

| Type | ATP Seq | Shocks | Success | Date        | Time<br>hh:mm | Duration<br>hh:mm:ss | Avg bpm<br>V | Max V<br>bpm | EGM |
|------|---------|--------|---------|-------------|---------------|----------------------|--------------|--------------|-----|
| VF   | 1       | 35J    | Yes     | 06-Dec-2013 | 22:55         | :17                  | 250          | 250          | EGM |

----- Last Programmer Session 23-Nov-2013 -----  
 (Data prior to last session has not been interrogated.)

#17:

Plot

EGM

Text

QRS

Previous

Next



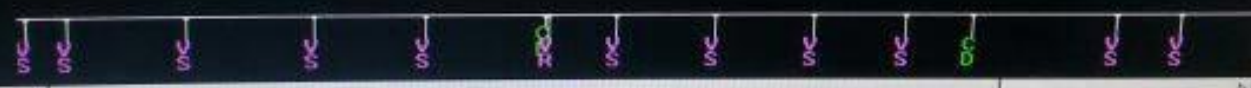
RVtip to RVring



Can to RVcoil



Markers



Flashback

Print...

Close

Emergency

(Patient name not entered)

Interrogate...

End Session...

Medtronic

vitalro

- Checklist
- < Data
- Params
- < Tests
- < Reports
- < Patient
- < Session



Last Programmer Session 23-Nov-2013

(Data prior to last session has not been interrogated.)

#17:

Plot  EGM  Text  QRS

Previous

Next



RVtip to RVring



Can to RVcoil



Markers



Flashback

Print...

Close

Emergency

(Patient name not entered)

Interrogate...

End Session...

Medtronic

- He had a non sustained (lasted for 17 sec.) VT episode @ HR 250 b/m.
- Though the tachycardia stopped after ATP, the patient received a 35J shock.

The device confirms arrhythmias during charge and before shock(during initial detection).

It analyze the last five events and abort therapy if 4 out of 5 are normal (out of arrhythmic window).



So what was the problem  
?!

- If ATP during charge is on ...

NO EPISODE CONFIRMATION

- We also increased detection interval to  $24/32$  instead of  $18/24$ .

- It has long been known that implantable cardioverter defibrillator (ICD) shocks, although potentially lifesaving, can produce a wide range of adverse psychological effects including acute pain, anxiety, and depression.

- More recently there has been increasing evidence that ICD shocks may have direct adverse effects on myocardial function leading to an increased risk of death.

- A patient who reports a shock from his or her ICD has experienced one of 3 situations: appropriate therapy, inappropriate therapy, or a phantom shock.

- In the 2 largest studies that established a mortality benefit for ICD implantation for the primary prevention of sudden death, the MADIT II and the SCD-HeFT, there was a paradoxical association between receiving shocks and a subsequent 2 to 5 times increase in risk of death.

- This association between ICD shocks and an increased risk of death is especially troublesome for shocks that are triggered by rhythms other than ventricular tachycardia (VT) or ventricular fibrillation (VF).



- In these studies, the most common cause of inappropriate shocks in decreasing order of frequency were atrial fibrillation; supraventricular tachycardia such as sinus tachycardia, atrial tachycardias, and paroxysmal supraventricular tachycardias; and oversensing caused by lead fracture, T wave sensing, and electromagnetic interference.

- Inappropriate shocks may be more common than we think.
- In AVID, 22% of patients received inappropriate therapy.
- In SCD-HeFT, 17% patients received inappropriate shocks compared to 22.4% who received appropriate shocks over a median of 45.5 months of follow-up. Similarly in MADIT-II, 13% of patients had inappropriate shocks during 2 years of follow-up.

# Take home message

- Other than known causes of inappropriate shocks ex. SVT, programmed parameters can be an easily correctable cause.

Thank u ... 😊