ΣΥΓΚΟΠΗ ΣΤΗΝ ΚΑΡΔΙΑΚΗ ΑΝΕΠΑΡΚΕΙΑ. ΕΚΤΙΜΗΣΗ ΚΑΙ ΘΕΡΑΠΕΙΑ

Σ. ΠΑΡΑΣΚΕΥΑΪΔΗΣ

ΔΙΕΥΘΥΝΤΗΣ ΕΣΥ

Α ΚΑΡΔΙΟΛΟΓΙΚΗ ΚΛΙΝΙΚΗ ΑΠΘ

ΝΟΣΟΚΟΜΕΙΟ ΑΧΕΠΑ

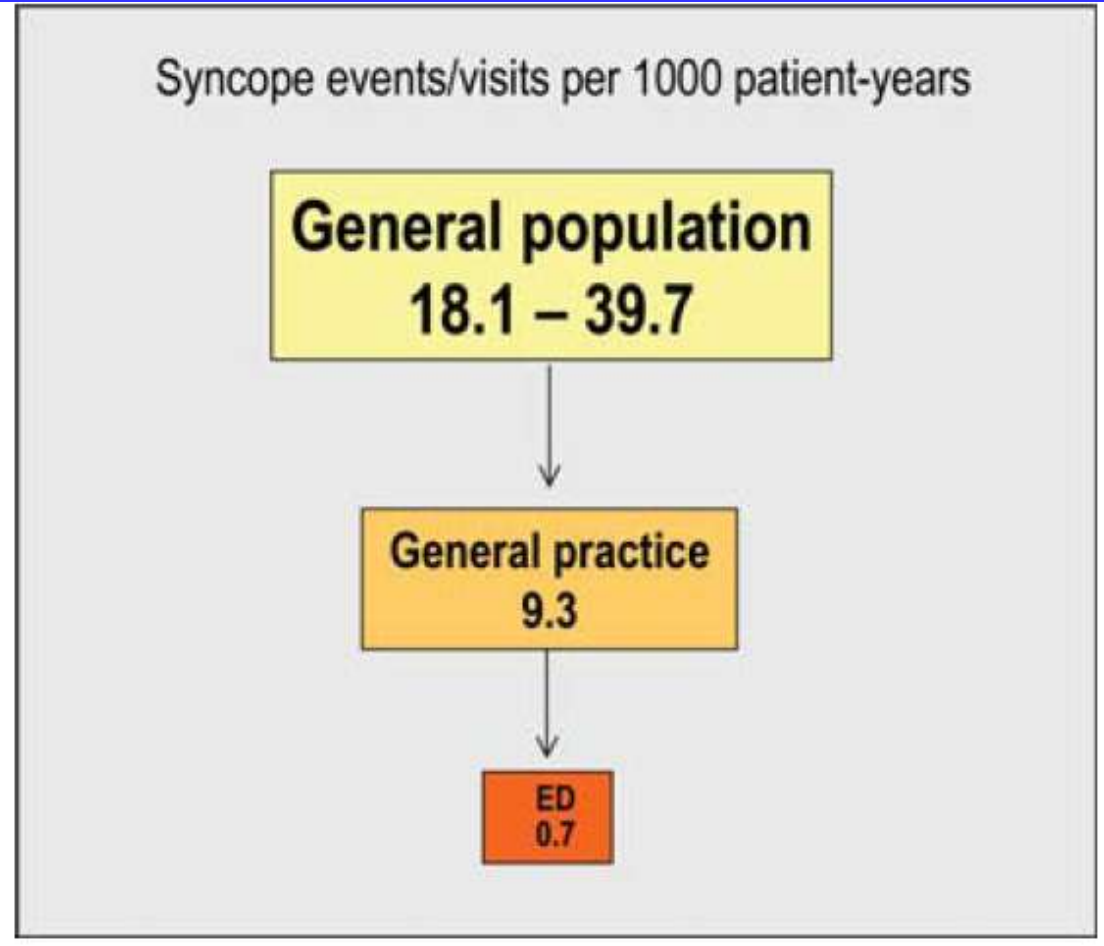
ΟΡΙΣΜΟΣ ΣΥΓΚΟΠΗΣ

παροδική απώλεια συνείδησης λόγω παροδικής εγκεφαλικής υποαιμάτωσης που χαρακτηρίζεται από :

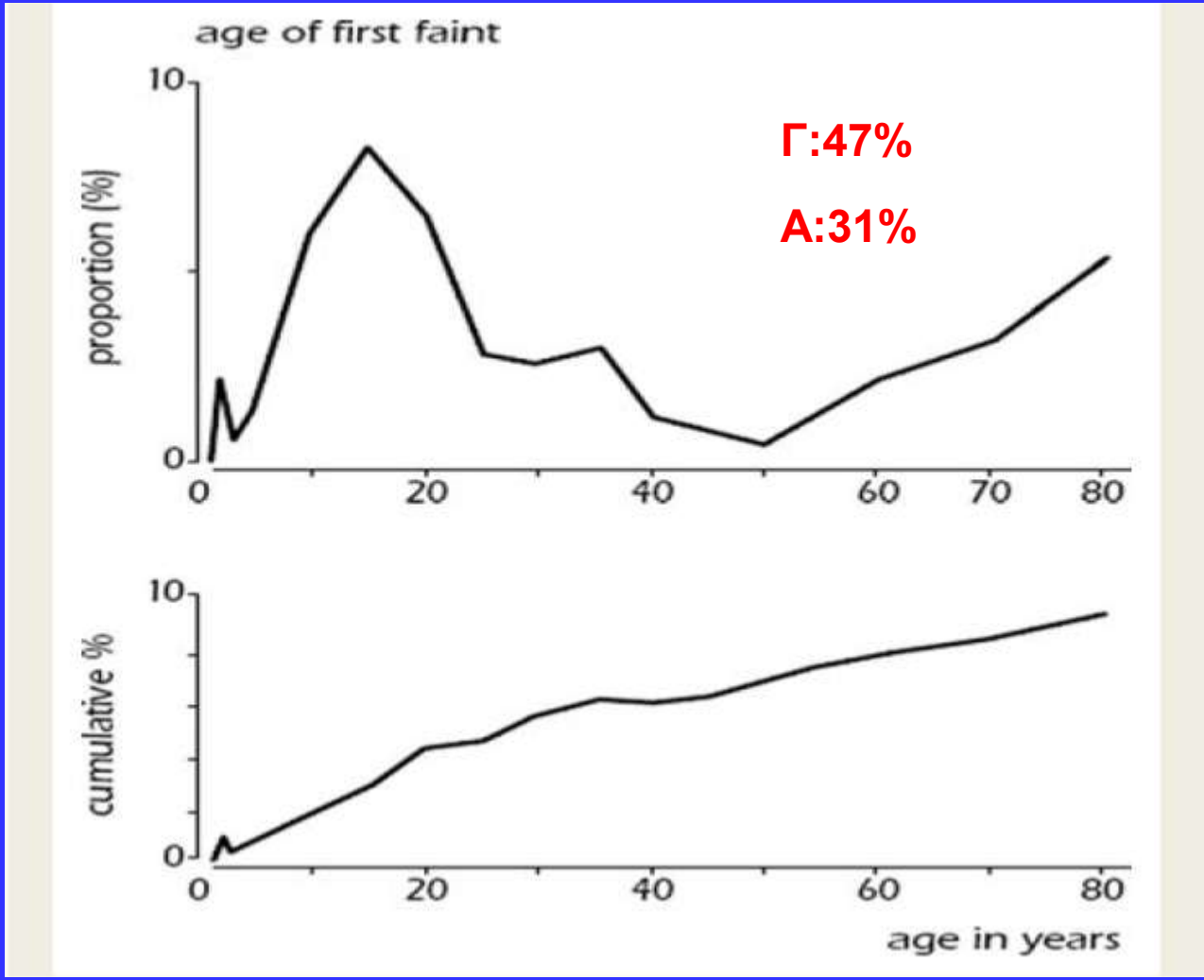
1. ταχεία έναρξη
2. μικρή διάρκεια και
3. αυτόματη, πλήρη αποκατάσταση

ESC Guidelines EHJ 2009

ΣΥΧΝΟΤΗΤΑ ΣΥΓΚΟΠΗΣ-ΓΕΝΙΚΟΣ ΠΛΗΘΥΣΜΟΣ



ΣΥΓΚΟΠΗ. ΗΛΙΚΙΑ-ΓΕΝΙΚΟΣ ΠΛΗΘΥΣΜΟΣ



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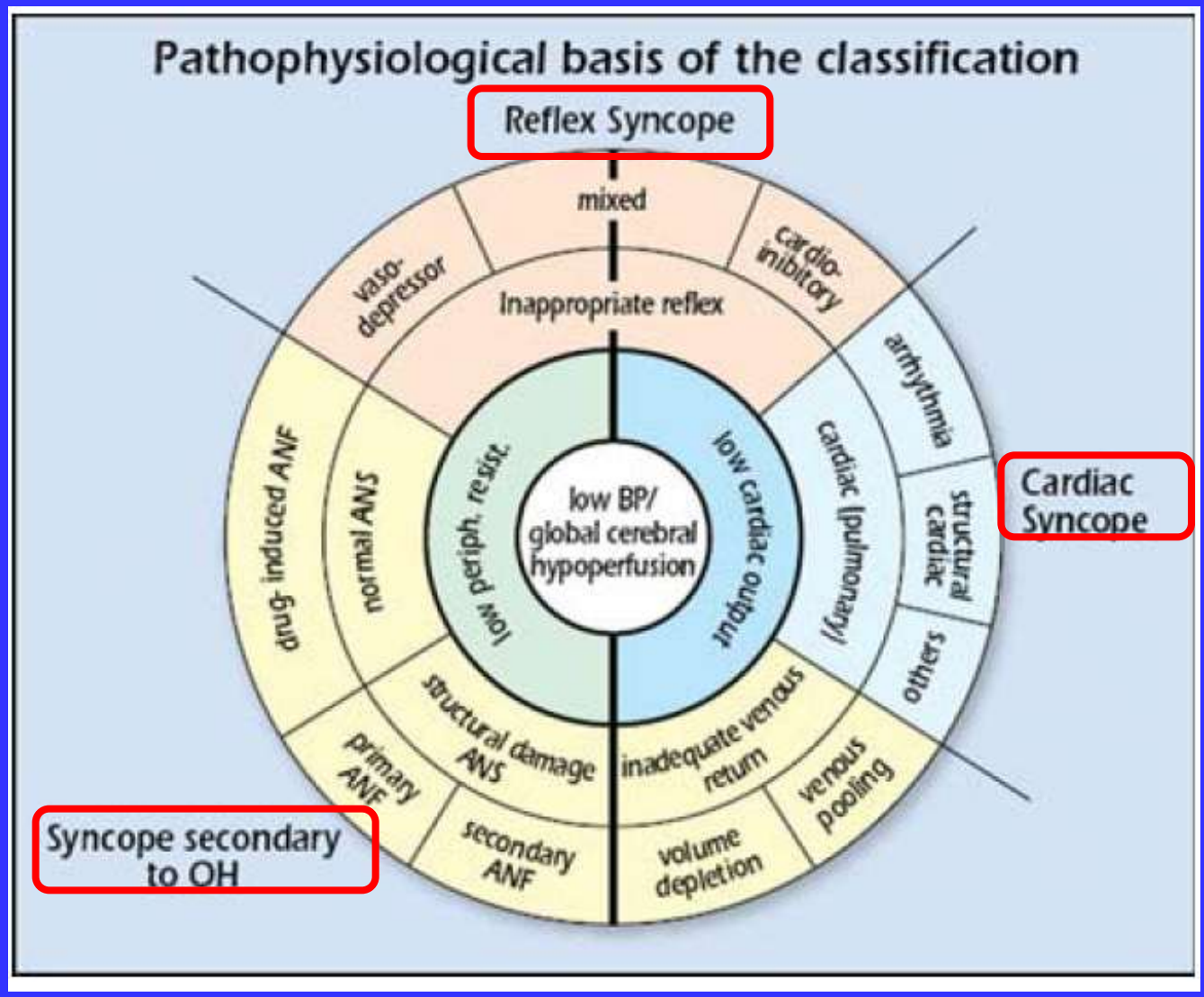


ΑΝΤΑΝΑΚΛΑΣΤΙΚΗ (REFLEX)-ΝΕΥΡΟΚΑΡΔΙΟΓΕΝΗΣ ΣΥΓΚΟΠΗ

Πυροδότης, παροδική ανεπάρκεια αντανακλαστικών μηχανισμών, συμπτώματα > 3-45 min

Vasovagal:

- *mediated by emotional distress: fear, pain, instrumentation, blood phobia*
- *mediated by orthostatic stress*

Situational:

- *cough, sneeze*
- *gastrointestinal stimulation (swallow, defaecation, visceral pain)*
- *micturition (post-micturition)*
- *post-exercise*
- *post-prandial*
- *others (e.g., laught, brass instrument playing, weightlifting)*

Carotid sinus syncope

Atypical forms (without apparent triggers and/or atypical presentation)

ΟΡΘΟΣΤΑΤΙΚΗ ΥΠΟΤΑΣΗ

Χρόνια ανεπάρκεια αντανακλαστικών μηχανισμών, συμπτώματα 30 sec-3 min

Primary autonomic failure:

- *pure autonomic failure, multiple system atrophy, Parkinson's disease with autonomic failure, Lewy body dementia*

Secondary autonomic failure:

- *diabetes, amyloidosis, uraemia, spinal cord injuries*

Drug-induced orthostatic hypotension:

- *alcohol, vasodilators, diuretics, phenotiazines, antidepressants*

Volume depletion:

- *haemorrhage, diarrhoea, vomiting, etc*

ΚΑΡΔΙΑΓΓΕΙΑΚΗ ΣΥΓΚΟΠΗ

Arrhythmia as primary cause:

Bradycardia:

- *sinus node dysfunction (including bradycardia/tachycardia syndrome)*
- *atrioventricular conduction system disease*
- *implanted device malfunction,*

Tachycardia:

- *supraventricular*
- *ventricular (idiopathic, secondary to structural heart disease or to channelopathies)*

Drug induced bradycardia and tachyarrhythmias

Structural disease:

Cardiac: *cardiac valvular disease, acute myocardial infarction/ischaemia, hypertrophic cardiomyopathy, cardiac masses (atrial myxoma, tumors, etc), pericardial disease/tamponade, congenital anomalies of coronary arteries, prosthetic valves dysfunction*

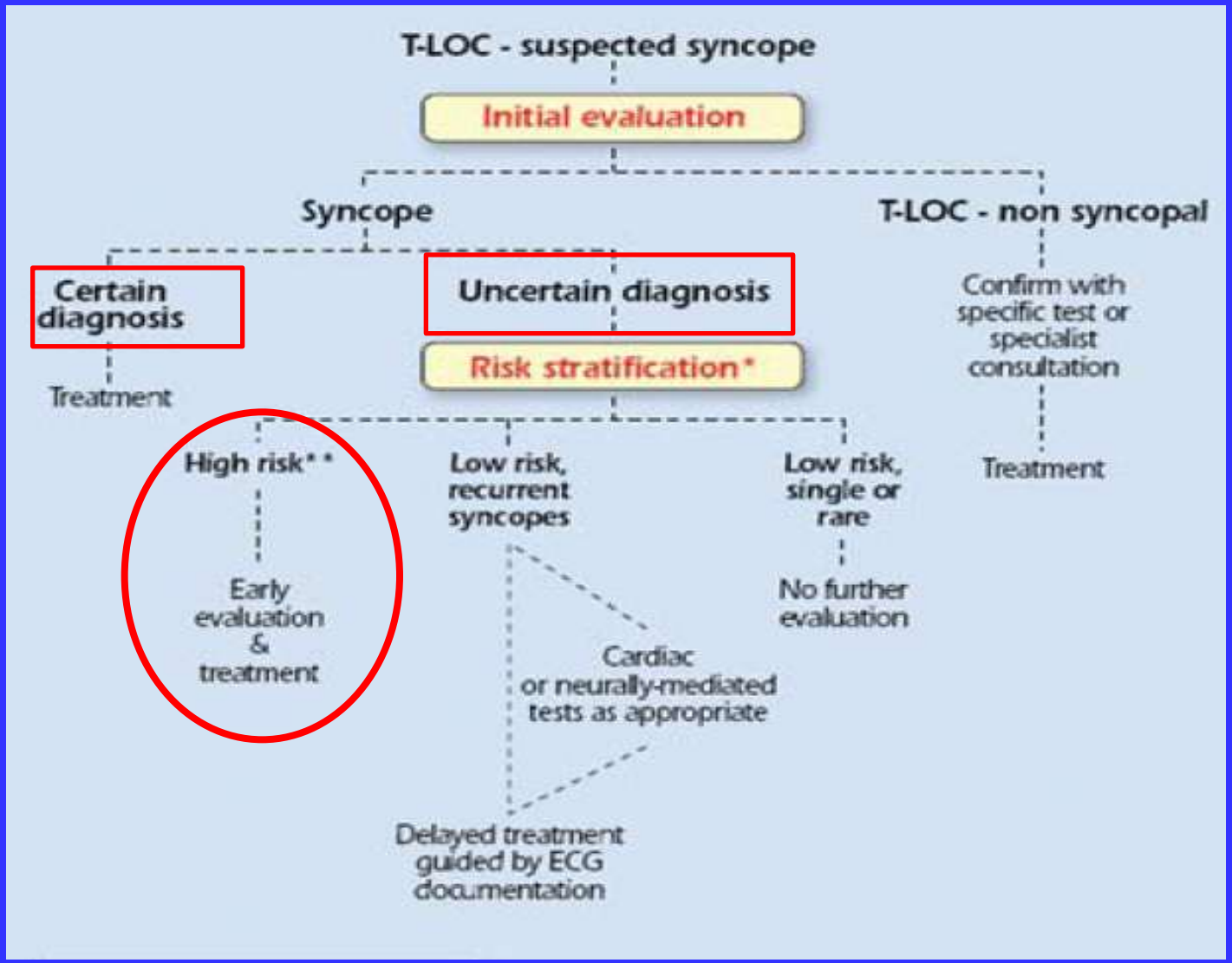
Others: *pulmonary embolus, acute aortic dissection, pulmonary hypertension*

ΠΡΟΓΝΩΣΗ ΣΥΓΚΟΠΗΣ

- κίνδυνος αιφνιδίου θανάτου (δομική καρδιακή νόσος, πρωτογενής ηλεκτρική διαταραχή LQT, Brugada). Οι περισσότεροι θάνατοι σχετίζονται με την υποκειμένη νόσο παρά με τη συγκοπή καθαυτή

- κίνδυνος υποτροπών (33 % σε 3 έτη) και τραυματισμού

ΔΙΑΓΝΩΣΤΙΚΗ ΠΡΟΣΕΓΓΙΣΗ ΣΥΓΚΟΠΗΣ



ΔΙΑΓΝΩΣΤΙΚΗ ΠΡΟΣΕΓΓΙΣΗ ΣΥΓΚΟΠΗΣ

- Ιστορικό, κλινική εξέταση, ΗΚΓ, echo μπορεί να καθορίσουν τον τύπο και αιτία της συγκοπής (αντανακλαστική, ορθοστατική υπόταση, καρδιαγγειακή)
- Stress test, spect
- Holter
- Tilt test
- Ηλεκτροφυσιολογική μελέτη

TILT testing-GUIDELINES ESC 2009

Indications		
• Tilt testing is indicated in the case of an unexplained single syncopal episode in high risk settings (e.g. occurrence of, or potential risk of physical injury or with occupational implications), or recurrent episodes in the absence of organic heart disease, or in the presence of organic heart disease, after cardiac causes of syncope have been excluded	I	B
• Tilt testing is indicated when it is of clinical value to demonstrate susceptibility to reflex syncope to the patient	I	C
• Tilt testing should be considered to discriminate between reflex and OH syncope	IIa	C

ECG-HOLTER monitoring

Recommendations	Class[a]	Level[b]
Indications		
• ECG monitoring is indicated in patients who have clinical or ECG features suggesting arrhythmic syncope (listed in *Table 10*). The duration (and technology) of monitoring should be selected according the risk and the predicted recurrence rate of syncope:	I	B
○ Immediate in-hospital monitoring (in bed or telemetric) is indicated in high risk patients defined in *Table 11*	I	C
○ Holter monitoring is indicated in patients who have very frequent syncope or pre-syncope (≥1 per week)	I	B

ΕΜΦΥΤΕΥΣΙΜΟ HOLTER-IMPLANTABLE LOOP RECORDER (ILR)

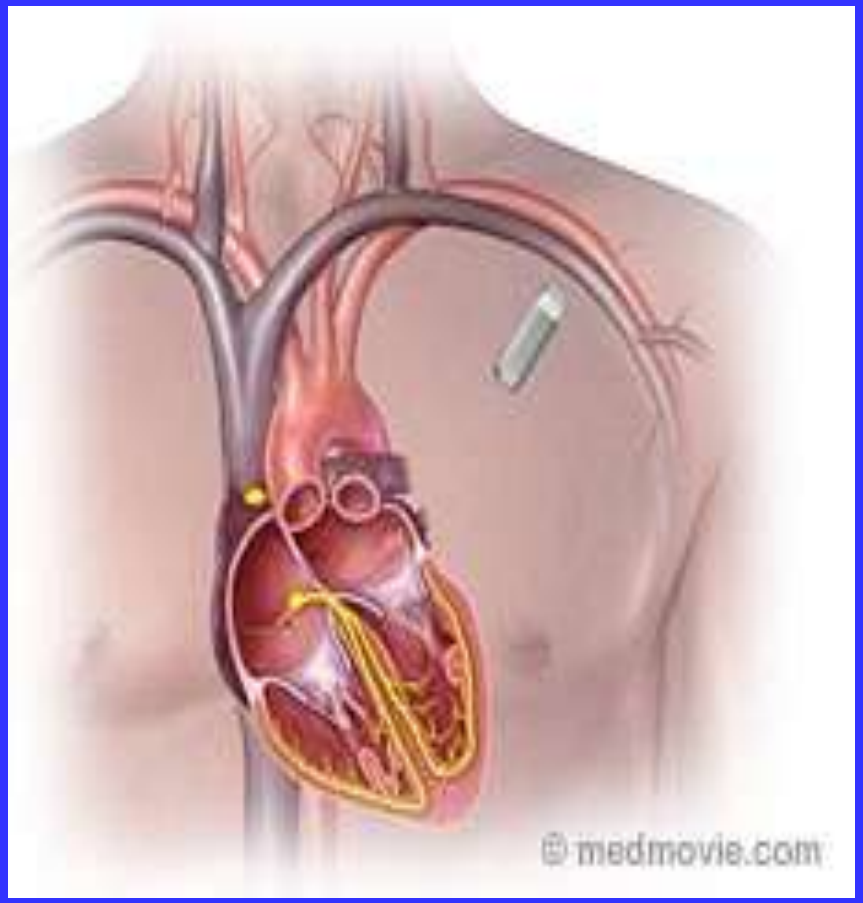
○ ILR is indicated in:		
☐ An early phase of evaluation in patients with recurrent syncope of uncertain origin, absence of high risk criteria listed in *Table 11* and a high likelihood of recurrence within battery longevity of the device	I	B
☐ High risk patients in whom a comprehensive evaluation did not demonstrate a cause of syncope or lead to a specific treatment	I	B
○ ILR should be considered to assess the contribution of bradycardia before embarking on cardiac pacing in patients with suspected or certain reflex syncope presenting with frequent or traumatic syncopal episodes	IIa	B
○ External loop recorders should be considered in patients who have an inter-symptom interval ≤4 weeks	IIa	B

ΣΥΓΚΟΠΗ

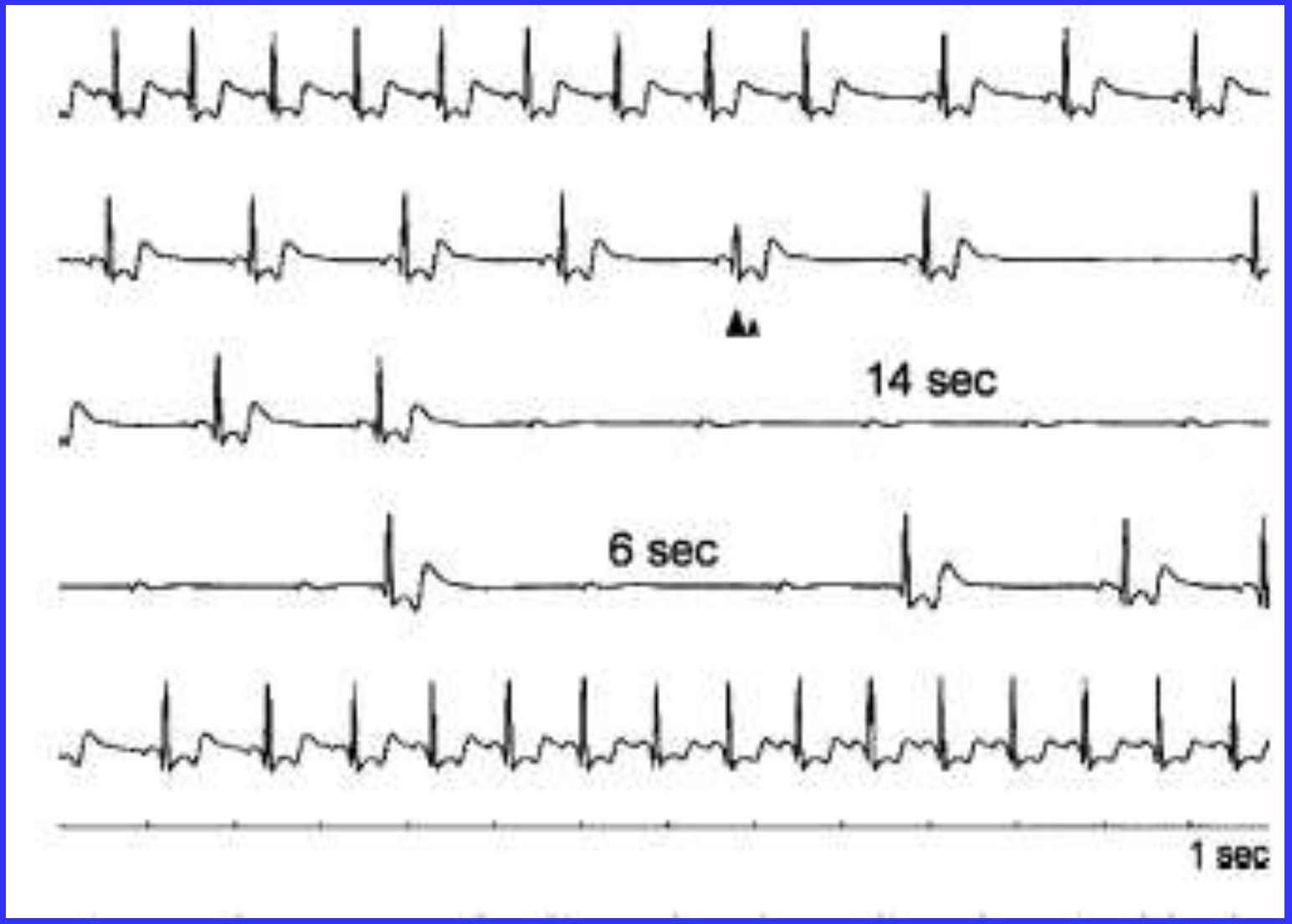
- Παρά την ευρεία χρήση διαγνωστικών μεθόδων τουλάχιστον 20% των περιπτώσεων παραμένει αδιάγνωστο

- Τα σημαντικότερα εμπόδια στη διάγνωση είναι ότι τα συμπτώματα παρουσιάζονται απρόσμενα και σε άτακτα, αραιά χρονικά διαστήματα

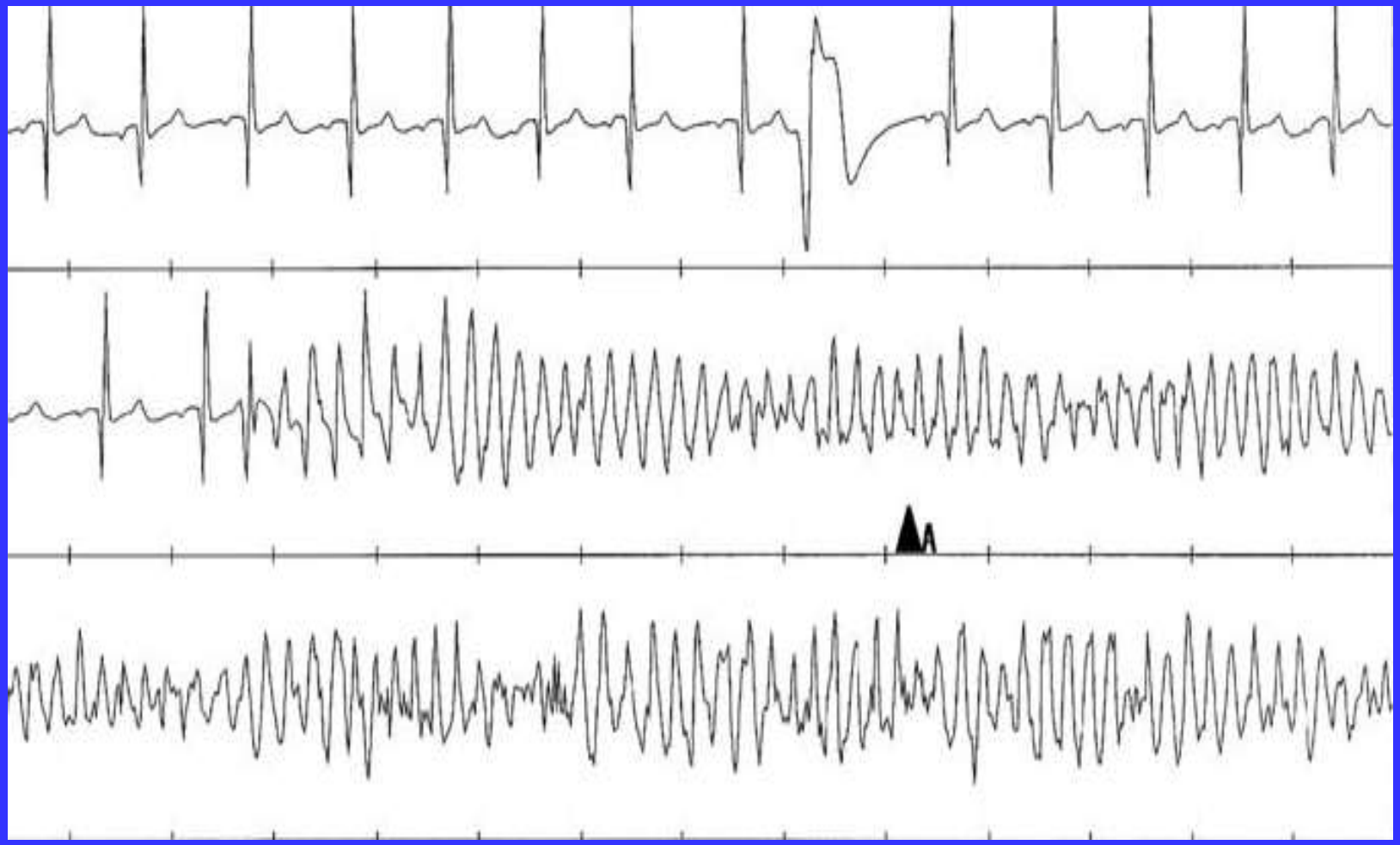
Εμφυτεύσιμο Holter



ΒΡΑΔΥΚΑΡΔΙΑ-ΠΑΥΣΕΙΣ



ΚΟΙΛΙΑΚΗ ΜΑΡΜΑΡΥΓΗ



ΗΛΕΚΤΡΟΦΥΣΙΟΛΟΓΙΚΗ ΜΕΛΕΤΗ -ΗΦΜ

Recommendations	Class[a]	Level[b]
Indications		
• In patients with ischaemic heart disease EPS is indicated when initial evaluation suggests an arrhythmic cause of syncope (listed in *Table 10*) unless there is already an established indication for ICD	I	B
• In patients with BBB, EPS should be considered when non-invasive tests have failed to make the diagnosis	IIa	B
• In patients with syncope preceded by sudden and brief palpitations, EPS may be performed when other non-invasive tests have failed to make the diagnosis	IIb	B
• In patients with Brugada syndrome, ARVC and hypertrophic cardiomyopathy an EPS may be performed in selected cases	IIb	C
• In patients with high-risk occupations, in whom every effort to exclude a cardiovascular cause of syncope is warranted, an EPS may be performed in selected cases	IIb	C
• EPS is not recommended in patients with normal ECG, no heart disease, and no palpitations	III	B

ΗΛΕΚΤΡΟΦΥΣΙΟΛΟΓΙΚΗ ΜΕΛΕΤΗ -ΗΦΜ

- Ενδειξη στην ανεξήγητη συγκοπή με ισχαιμική καρδιακή ανεπάρκεια και

  ΚΕ > 35-40%

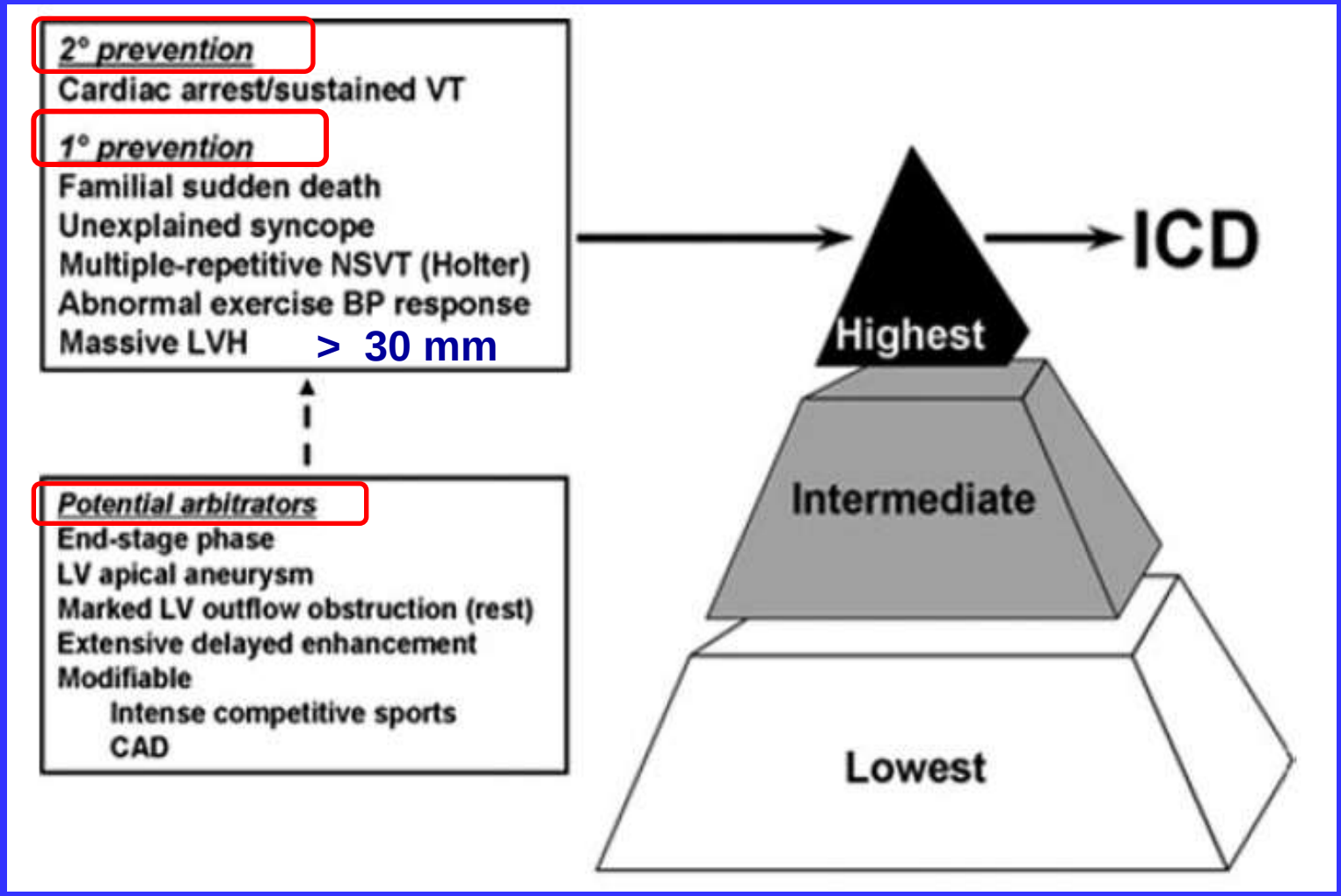
ΔΙΑΓΝΩΣΤΙΚΑ ΚΡΙΤΗΡΙΑ ΗΦΜ

- EPS is diagnostic, and no additional tests are required, in the following cases:
  - ☐ Sinus bradycardia and prolonged CSNRT (>525 ms) — I — B
  - ☐ BBB and either a baseline HV interval of ≥100 ms, or second or third degree His–Purkinje block is demonstrated during incremental atrial pacing, or with pharmacological challenge — I — B
  - ☐ Induction of sustained monomorphic VT in patients with previous myocardial infarction — I — B
  - ☐ Induction of rapid SVT which reproduces hypotensive or spontaneous symptoms — I — B

ΔΙΑΓΝΩΣΤΙΚΑ ΚΡΙΤΗΡΙΑ ΗΦΜ

• An HV interval between 70 and 100 ms should be considered diagnostic	IIa	B
• The induction of polymorphic VT or ventricular fibrillation in patients with Brugada syndrome, ARVC, and patients resuscitated from cardiac arrest may be considered diagnostic	IIb	B
• The induction of polymorphic VT or ventricular fibrillation in patients with ischaemic cardiomyopathy or DCM cannot be considered a diagnostic finding	III	B

ΥΠΕΡΤΡΟΦΙΚΗ ΜΥΟΚΑΡΔΙΟΠΑΘΕΙΑ (HCM)- ΔΙΑΣΤΡΩΜΑΤΩΣΗ ΚΙΝΔΥΝΟΥ



risk factors: applicable to 18-50 yrs

Negative predictive value: 90%

Positive predictive value :15-30%

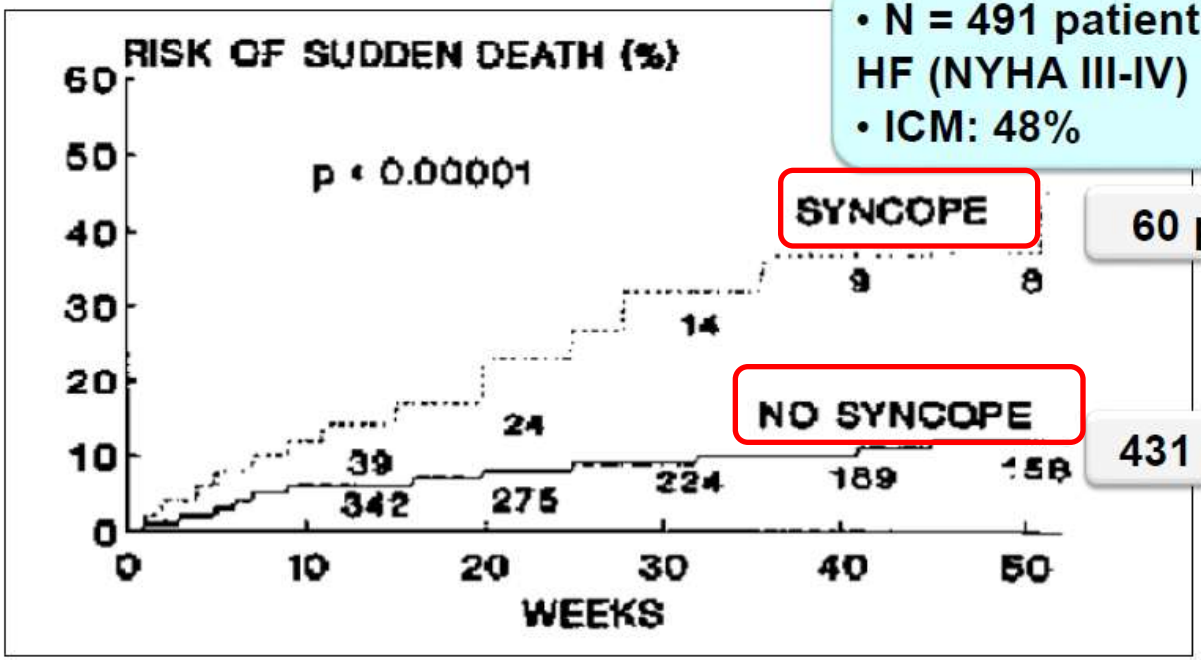
ΔΙΑΣΤΡΩΜΑΤΩΣΗ ΚΙΝΔΥΝΟΥ ΣΤΗΝ ΑΡΡΥΘΜΙΟΓΟΝΟ ΔΥΣΠΛΑΣΙΑ-ΜΥΟΚΑΡΔΙΟΠΑΘΕΙΑ ΔΕΞΙΑΣ ΚΟΙΛΙΑΣ-ARVC

συγκοπή: 33 % των ασθενών

- οικογενειακό ιστορικό ΑΚΘ
- νεαρή ηλικία
- εκτεταμένη δυσλειτουργία RV
- συμμετοχή της LV
- κοιλιακή ταχυκαρδία
- κύμα **ε, ↓ T** V_1-V_3

ΑΚΘ ΚΑΙ ΣΥΓΚΟΠΗ ΣΤΗΝ ΚΑ

Syncope in advanced heart failure: high risk of sudden death…



- N = 491 patients with HF (NYHA III-IV)
- ICM: 48%

60 pts

431 pts

Middlekauff et al., JACC 1993

ΑΙΤΙΑ ΣΥΓΚΟΠΗΣ ΣΤΗΝ ΚΑ

Syncope in advanced heart failure: causes

- N = 60 patients with HF (NYHA III-IV) and syncope
- ICM: 45% / LVEF: 21±7%

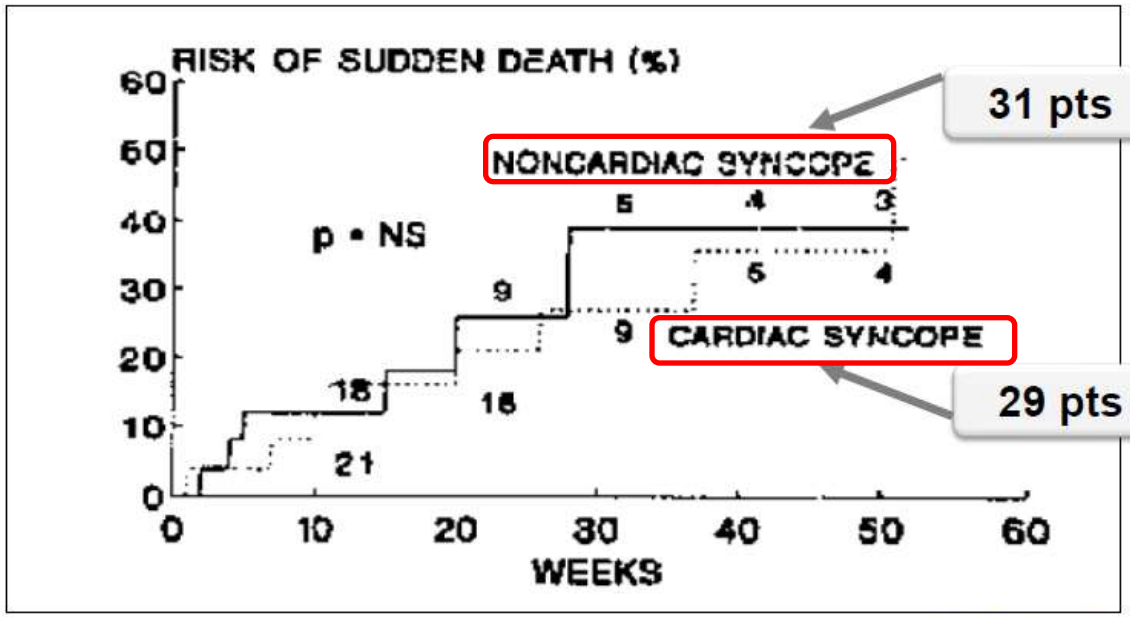
Cardiac N = 29 (48%)	VT = 21 pts
	Bradyarrhythmias = 5 pts
	SVT = 1 pt
	Valvular stenosis = 2 pts
Non Cardiac N = 31 (52%)	Orthostatic = 9 pts
	Situational = 3 pts
	Neurologic = 1 pt
	Undetermined = 18 pts

Middlekauff et al., JACC 1993

ΣΥΓΚΟΠΗ ΣΤΗΝ ΚΑ –ΥΨΗΛΗ ΘΝΗΤΟΤΗΤΑ ΑΝΕΞΑΡΤΗΤΩΣ ΑΙΤΙΑΣ

Syncope in advanced heart failure: high risk of sudden death… *regardless of origin of syncope*

- N = 60 patients with HF (NYHA III-IV) and syncope

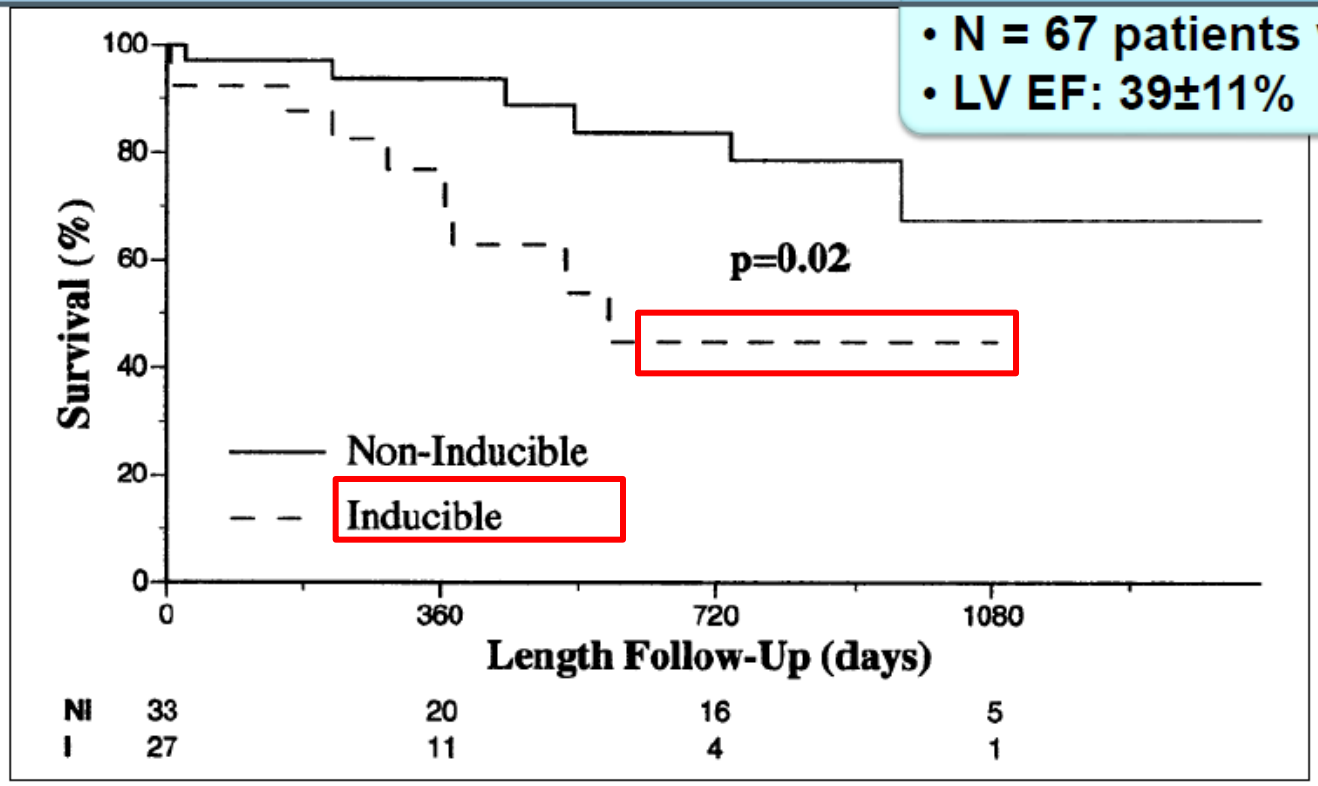


Middlekauff et al., JACC 1993

ΣΥΓΚΟΠΗ ΙΣΧΑΙΜΙΚΗ ΚΑ - ΗΦΜ (ΠΡΟΚΛΗΣΗ VT)

CAD patients with syncope: influence of inducibility on survival

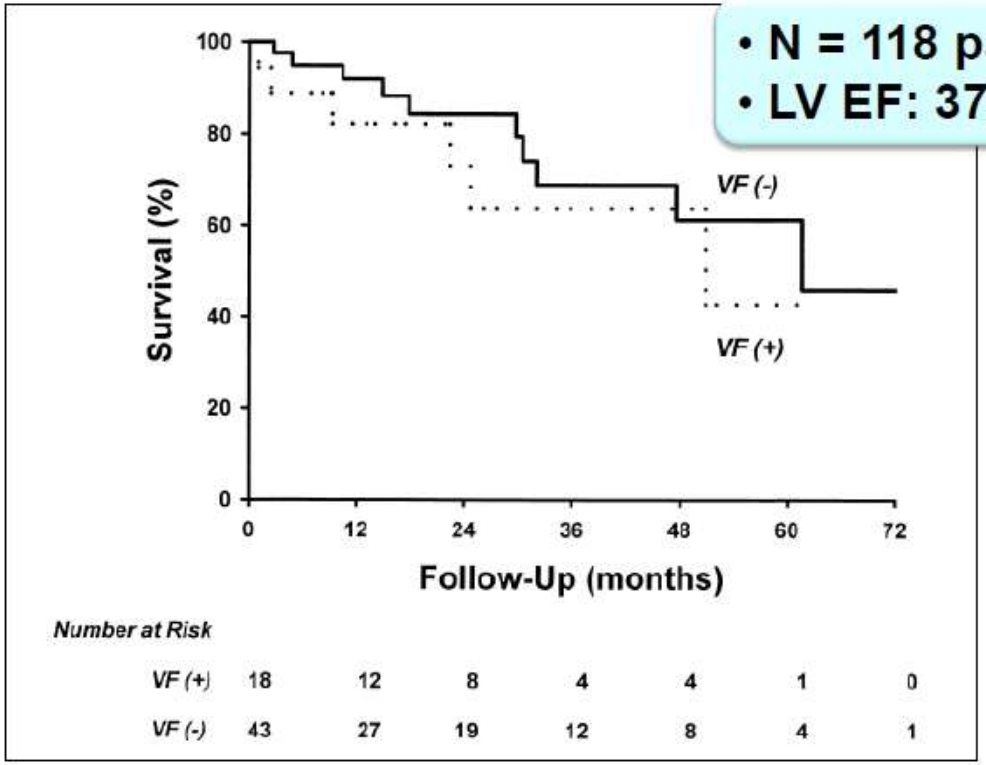
- N = 67 patients with CAD
- LV EF: 39±11%



Mittal et al., JACC 1999

ΣΥΓΚΟΠΗ ΙΣΧΑΙΜΙΚΗ ΚΑ-ΗΦΜ (ΠΡΟΚΛΗΣΗ VF)

Value of inducible VF in CAD patients with syncope

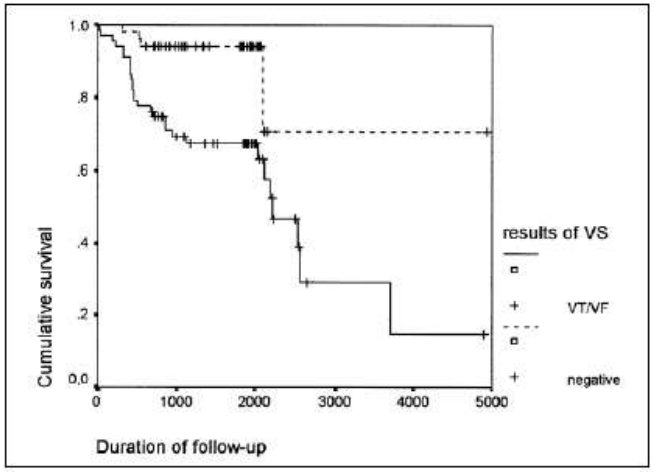


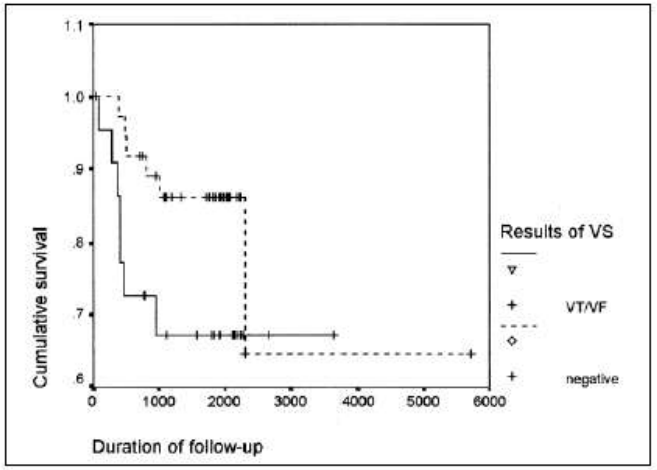
- N = 118 patients with CAD
- LV EF: 37±13%

Mittal et al., JACC 2001

ΣΥΓΚΟΠΗ ΙΣΧΑΙΜΙΚΗ-ΔΙΑΤΑΤΙΚΗ ΚΑ

Difference in mechanisms and outcomes of syncope in CAD and Idiopathic LV dysfunction





ICM / N= 119 pts
Inducibility predicts death

NICM / N= 61 pts
LVEF predicts death

Brembillat Perrot et al., JACC 2004

ΗΦΜ ΣΕ ΙΣΧΑΙΜΙΚΗ ΚΑ

θετική προγνωστική αξία | αρνητική προγνωστική αξία

	PPV			NPV		
	CD	SD	HF	CD	SD	HF
VT	52%	29.5%	23%	85%	96%	89%
VF	33%	8%	25%	73%	85%	87%

ΗΦΜ ΣΕ ΔΙΑΤΑΤΙΚΗ ΚΑ

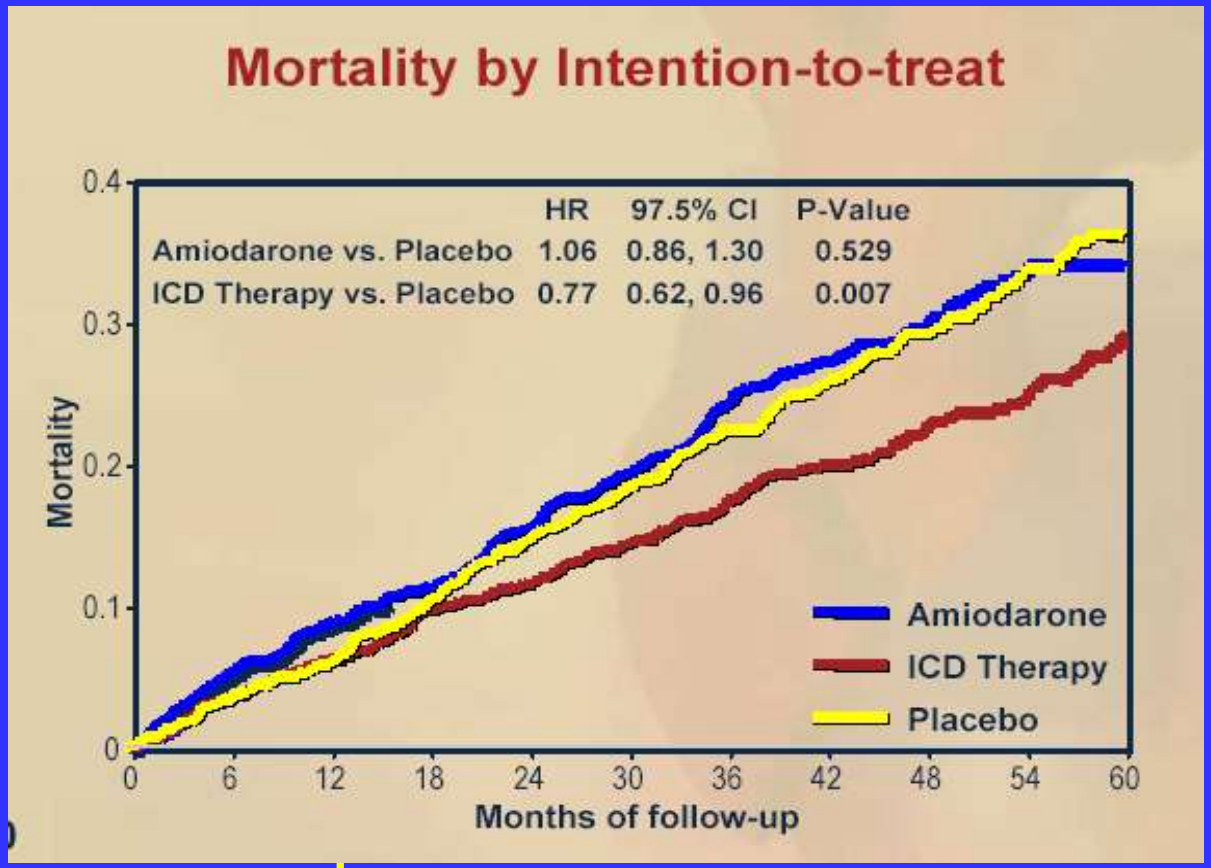
	PPV			NPV		
	CD	SD	HF	CD	SD	HF
VT/VF	23%	18%	4.5%	87%	97%	90%

CD = cardiac death; HF = heart failure; NPV = negative predictive value; PPV = positive predictive value; SD = sudden death; VF = ventricular fibrillation/flutter; VT = ventricular tachycardia.

Brembilla-Perrot JACC 2004

SCD-HeFT

ICD, amiodarone, placebo,
n= 2521 (DCM,CHD), F/U:60 mo, EF: 25%



ICD: ↓ ολική θνητότητα 23%

Bardy G, NEJM 2005

SCD-HeFT –ΥΠΟΜΕΛΕΤΗ ΣΥΓΚΟΠΗΣ

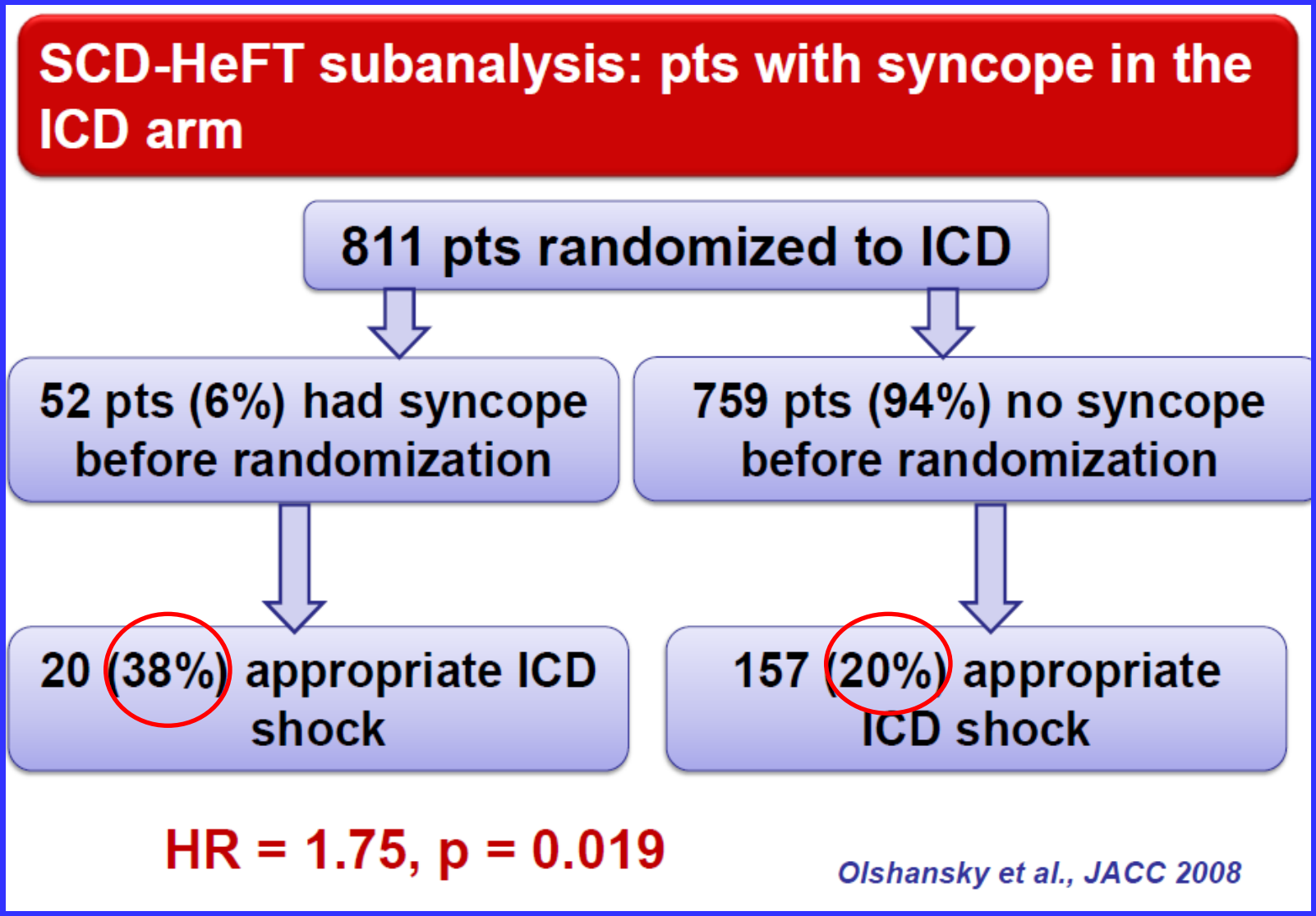
SCD-HeFT subanalysis: pts with syncope (6% before / 14% after randomization / 2% both)

Presumptive Causes for All Post-Randomization Syncopal Episodes (458 Episodes Among 356 Patients)

Cause	n
Orthostatic hypotension	65
Ventricular tachycardia	44
Drug-induced hypotension	38
Vasomotor	33
Cardiac arrest*	24
Drug-induced arrhythmia	2
Seizures	7
Other	159
Unknown	86

Olshansky et al., JACC 2008

SCD-HeFT- APPROPRIATE SHOCKS



SCD-HeFT subanalysis: pts with syncope (6% before / 14% after randomization / 2% both)

- Syncope **before randomization**: no increased risk of death
- Syncope **after randomization**: **increased risk of death**

By Treatment Arm			
Syncope	Amiodarone	Placebo	ICD
HR (95% CI)	1.33 (0.91–1.93)	1.39 (0.96–2.02)	1.54 (1.04–2.27)

By Cause of Death			
Syncope	All-Cause Mortality	Cardiovascular Mortality	Sudden Death
HR (95% CI)	1.41 (1.13–1.76)	1.55 (1.19–2.02)	1.41 (0.90–2.21)
p value	0.002	0.001	0.13

Syncope's association with death independently of randomization arm

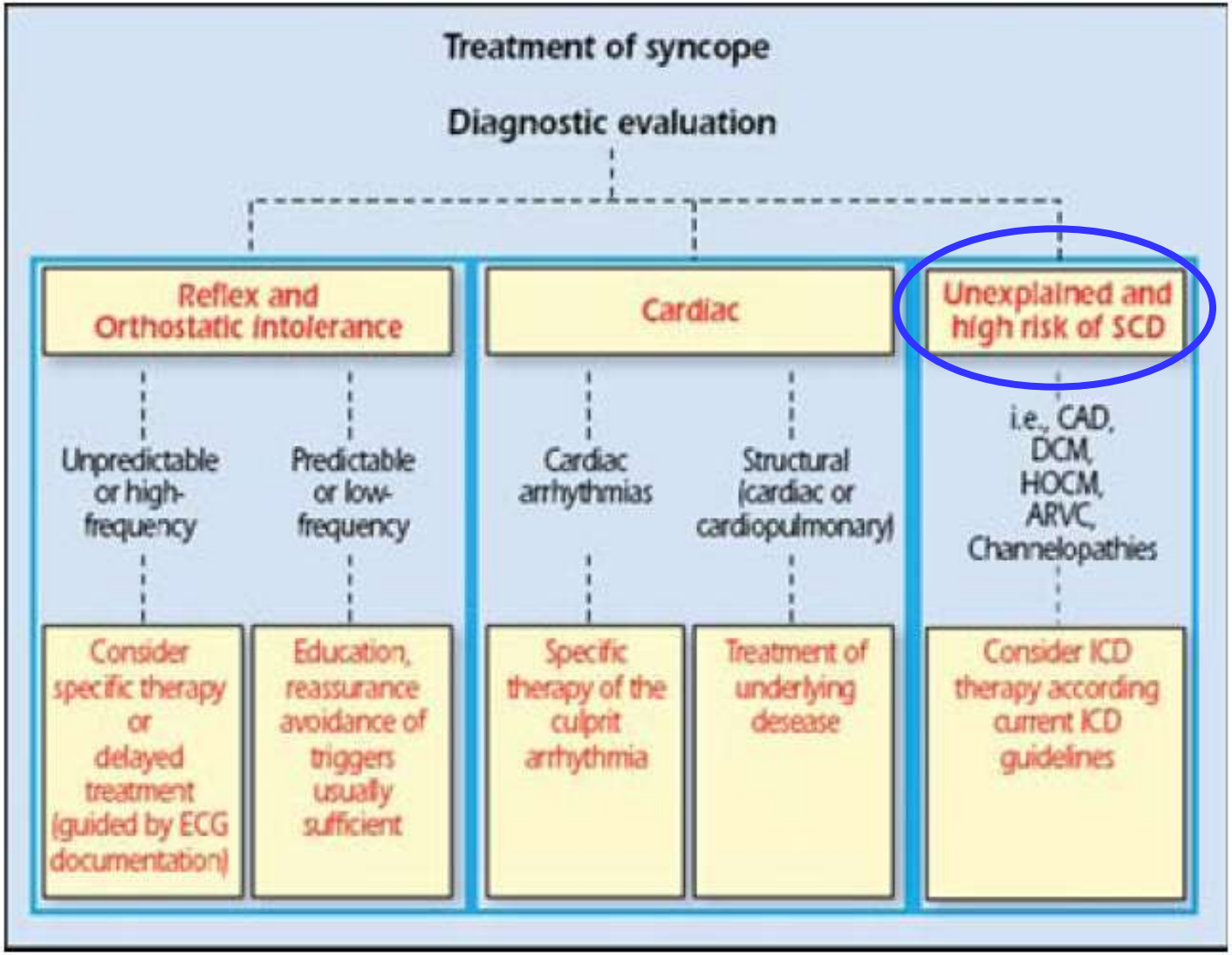
Olshansky et al., JACC 2008

ΣΥΓΚΟΠΗ ΣΤΗΝ ΚΑ- ΔΕΙΚΤΗΣ ΘΝΗΤΟΤΗΤΑΣ. SCD-HeFT

Η συγκοπή πιθανώς οφείλεται σε αιμοδυναμική κατέρρειψη (collapse) παρά σε αρρυθμία και αντανακλά ένα ασταθές και τελικό πιθανώς στάδιο μυοκαρδιοπάθειας, με χειρότερη πρόγνωση

Olshansky B et al, JACC 2008

ΘΕΡΑΠΕΙΑ ΣΥΓΚΟΠΗΣ ΣΤΗΝ ΚΑ



ΕΝΔΕΙΞΕΙΣ ICD ΣΕ ΑΝΕΞΗΓΗΤΗ ΣΥΓΚΟΠΗ ΚΑΙ ΥΨΗΛΟ ΚΙΝΔΥΝΟ ΑΚΘ

• Ischemic cardiomyopathy with low LVEF or HF → refer to ICD / CRT guidelines	I, A
• Non-ischemic cardiomyopathy with low LVEF or HF → refer to ICD / CRT guidelines	I, A

- More apppropriate ICD shocks in syncope patients
- ICD does not protect from syncope recurrence
- Syncope recurrence carries a higher risk of death

Moya et al., ESC guidelines 2009

ΕΝΔΕΙΞΕΙΣ ICD ΣΕ ΑΝΕΞΗΓΗΤΗ ΣΥΓΚΟΠΗ ΚΑΙ ΥΨΗΛΟ ΚΙΝΔΥΝΟ ΑΚΘ

Disease	Απινιδωτής	Εμφφυτεύσιμο Holter, ILR
HCM, ARVC	ICD in high risk, IIa, C	ILR, in non-high risk
ICM, EF> 35 %, HYHA II, (-) ΗΦΜ	ICD IIb, C	ILR
NICM, EF> 35 %, NYHA II	ICD IIb, C	ILR

ESC Guidelines EHJ 2009

CLASS I ICD-ACC/AHA/HRS 2008 Guidelines

- ICD therapy is indicated in patients with LVEF less than 35% due to prior myocardial infarction who are at least 40 days post-myocardial infarction and are in NYHA functional Class II or III. *(Level of Evidence: A)*
- ICD therapy is indicated in patients with nonischemic dilated cardiomyopathy who have an LVEF less than or equal to 35% and who are in NYHA functional Class II or III. *(Level of Evidence: B)*

- ICD therapy is indicated in patients with LV dysfunction due to prior myocardial infarction who are at least 40 days post- myocardial infarction, have an LVEF less than 30%, and are in NYHA functional Class I. *(Level of Evidence: A)*
- ICD therapy is indicated in patients with nonsustained VT due to prior myocardial infarction, LVEF less than 40%, and inducible ventricular fibrillation or sustained VT at electrophysiological study. *(Level of Evidence: B)*

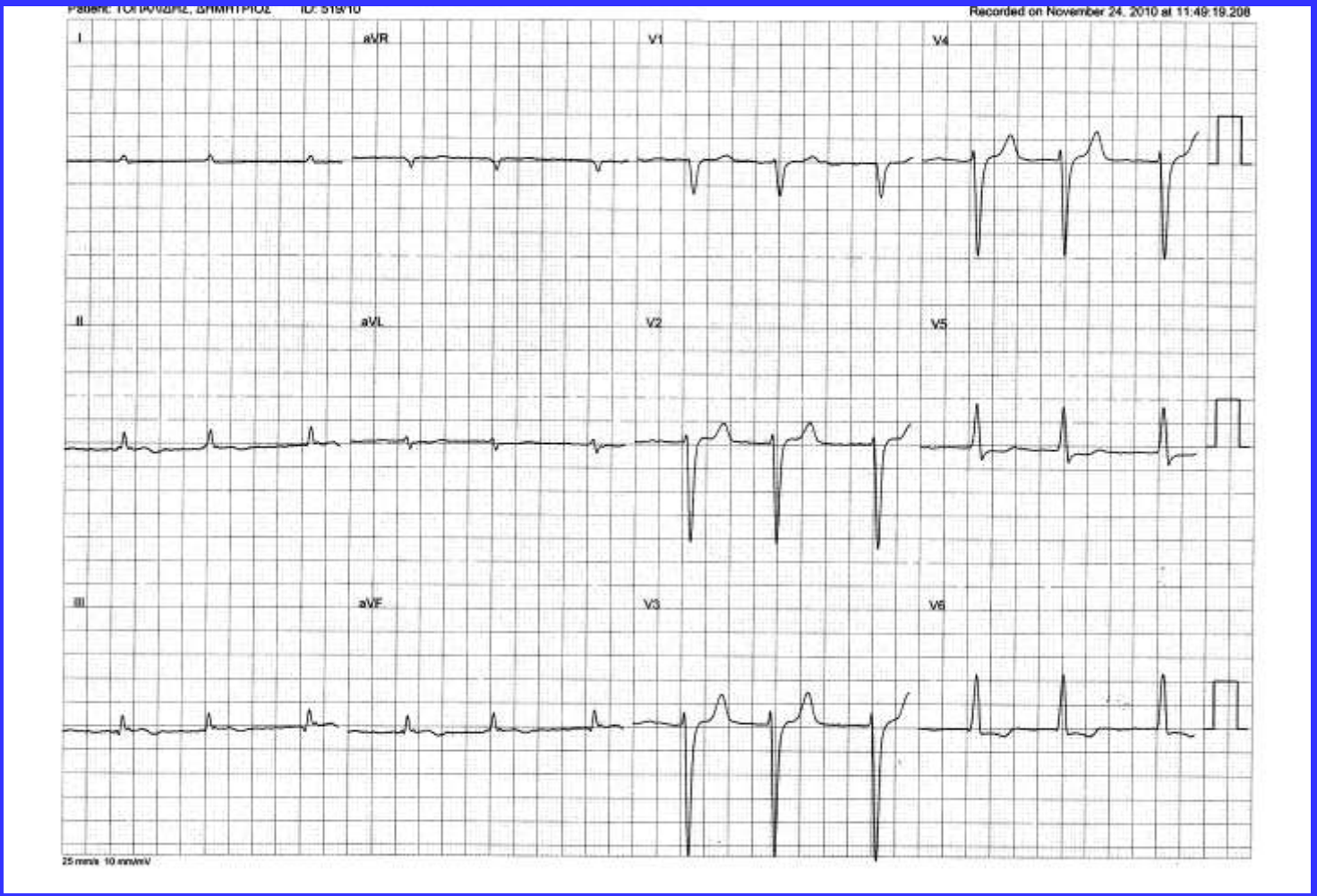
CLASS IIa

- ICD implantation is reasonable for patients with unexplained syncope, significant LV dysfunction, and nonischemic dilated cardiomyopathy. *(Level of Evidence: C)*
- ICD implantation is reasonable for patients with hypertrophic cardiomyopathy who have 1 or more major risk factor for SCD. *(Level of Evidence: C)*
- ICD implantation is reasonable for the prevention of SCD in patients with arrhythmogenic right ventricular dysplasia/cardiomyopathy who have 1 or more risk factor for SCD. *(Level of Evidence: C)*
- ICD implantation is reasonable for nonhospitalized patients awaiting transplantation. *(Level of Evidence: C)*
- ICD implantation is reasonable for patients with cardiac sarcoidosis, giant cell myocarditis, or Chagas disease. *(Level of Evidence: C)*

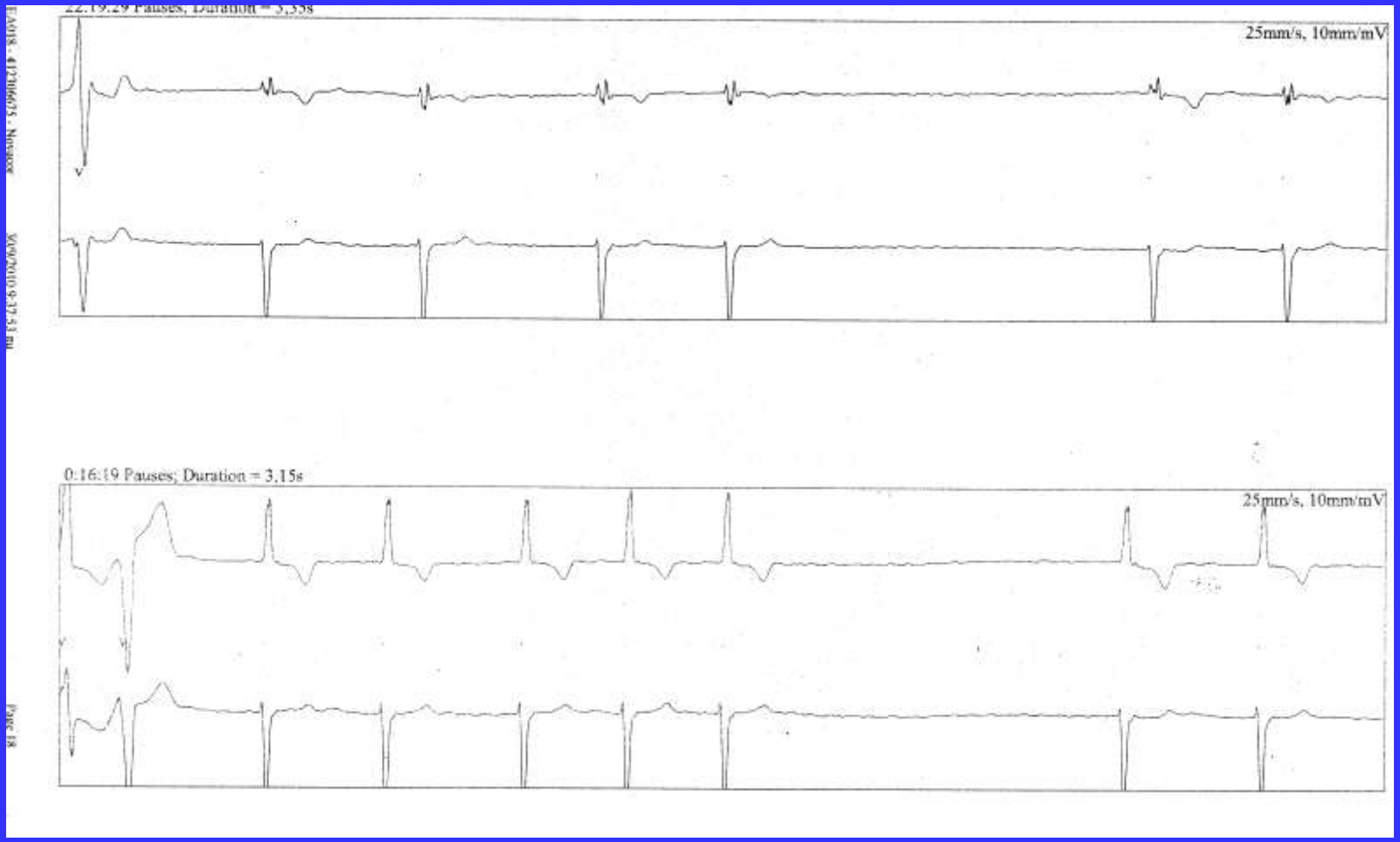
ΠΕΡΙΠΤΩΣΗ

- άνδρας 68 ετών, με συγκοπτικό επεισόδιο
- παλαιό ΕΜ, GABG προ 15 ετών
- αντικατάσταση αορτικής και μιτροειδούς βαλβίδας προ 5 ετών
- ΚΑ ΝΥΗΑ II-III, ΚΕ: 25-30%
- σπινθηρογράφημα : αρνητικό για ισχαιμία
- Αγωγή: καρβεδιλόλη 6.25 mg: ¼ x 2, lasix 40 mg, Sintrom

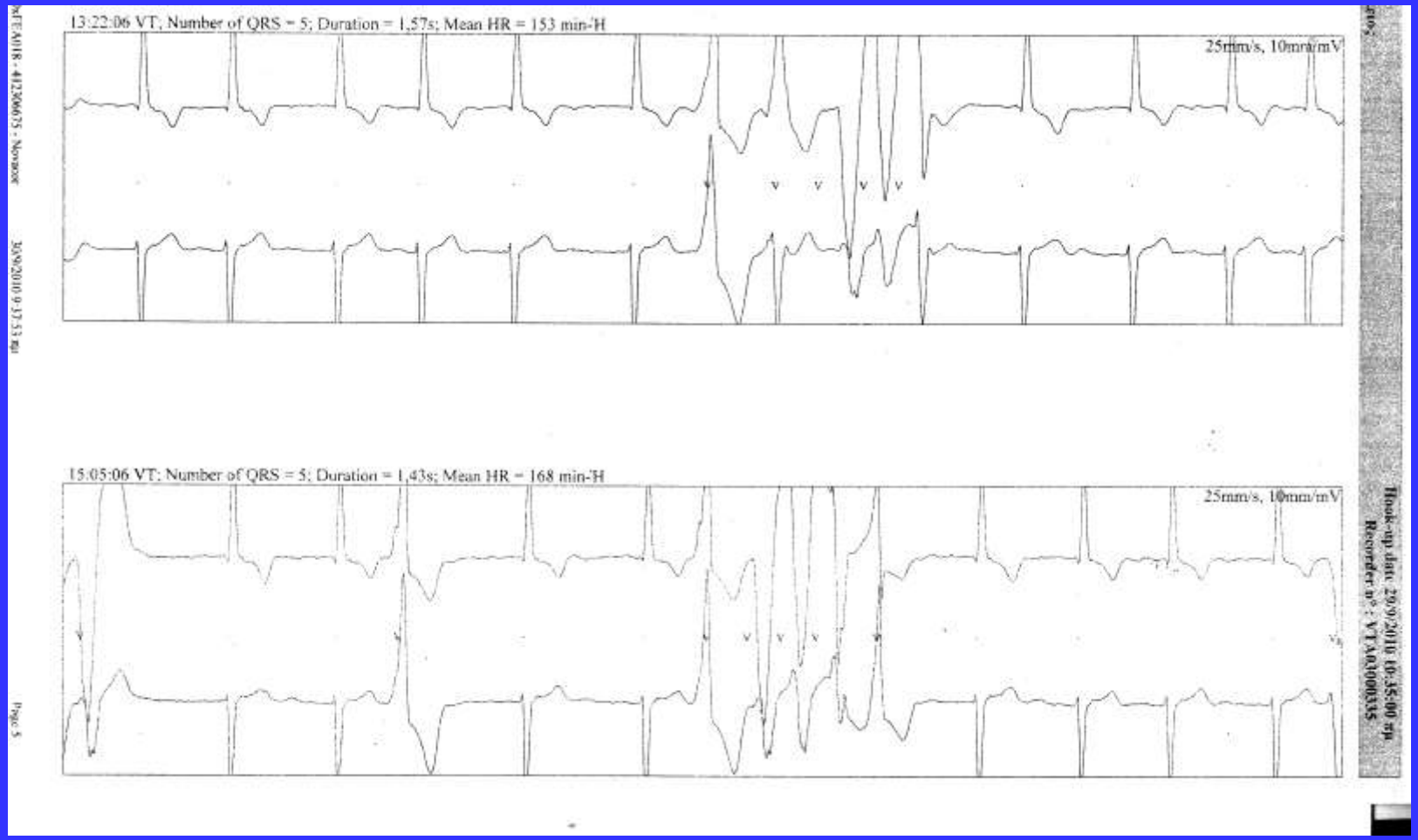
ΗΚΓ-χρόνια ΚΜ



HOLTER-ΠΑΥΣΕΙΣ 3.3 sec



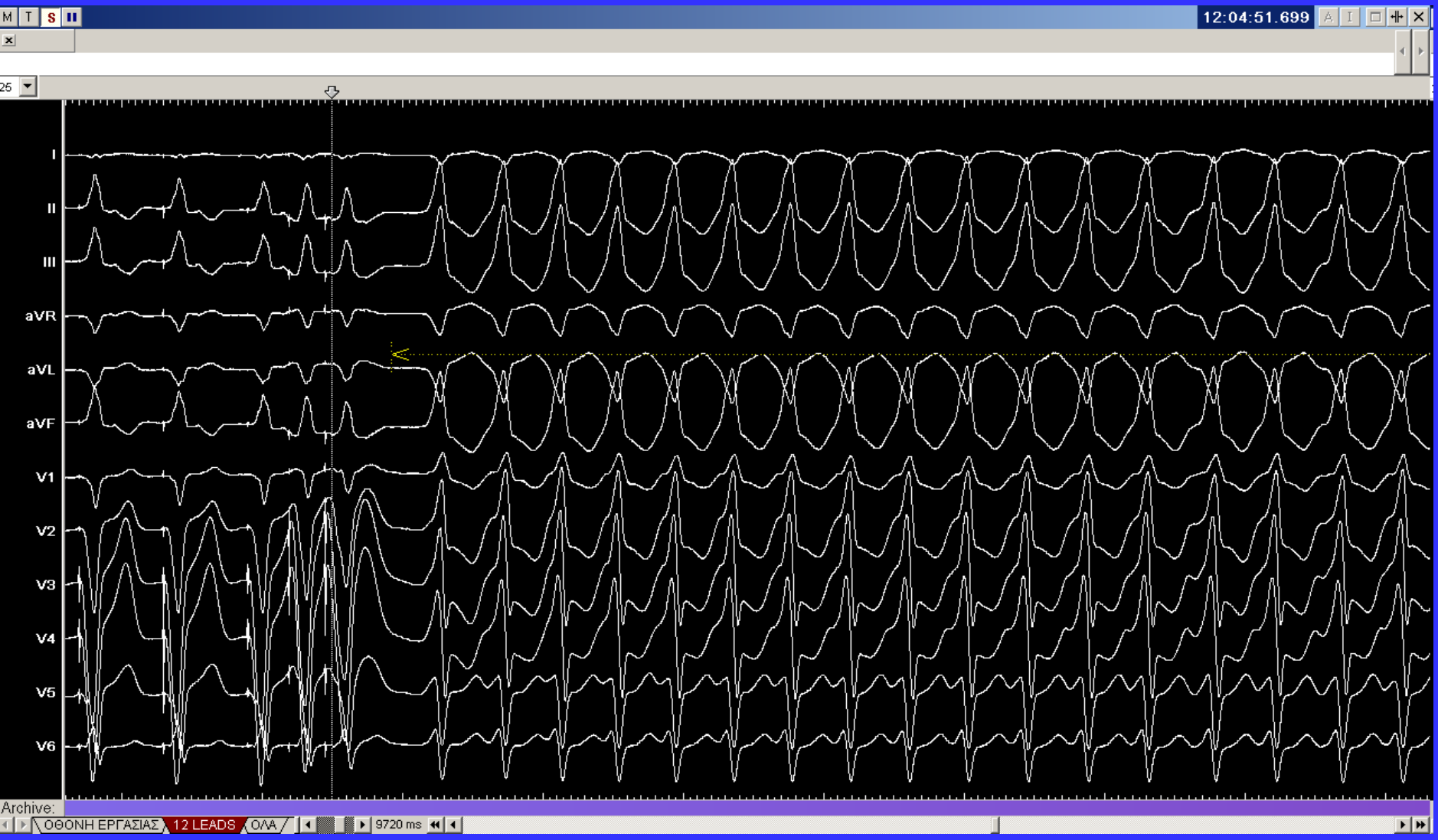
HOLTER-NSVT


13:22:06 VT; Number of QRS = 5; Duration = 1,57s; Mean HR = 153 min-1
25mm/s, 10mm/mV
15:05:06 VT; Number of QRS = 5; Duration = 1,43s; Mean HR = 168 min-1
25mm/s, 10mm/mV

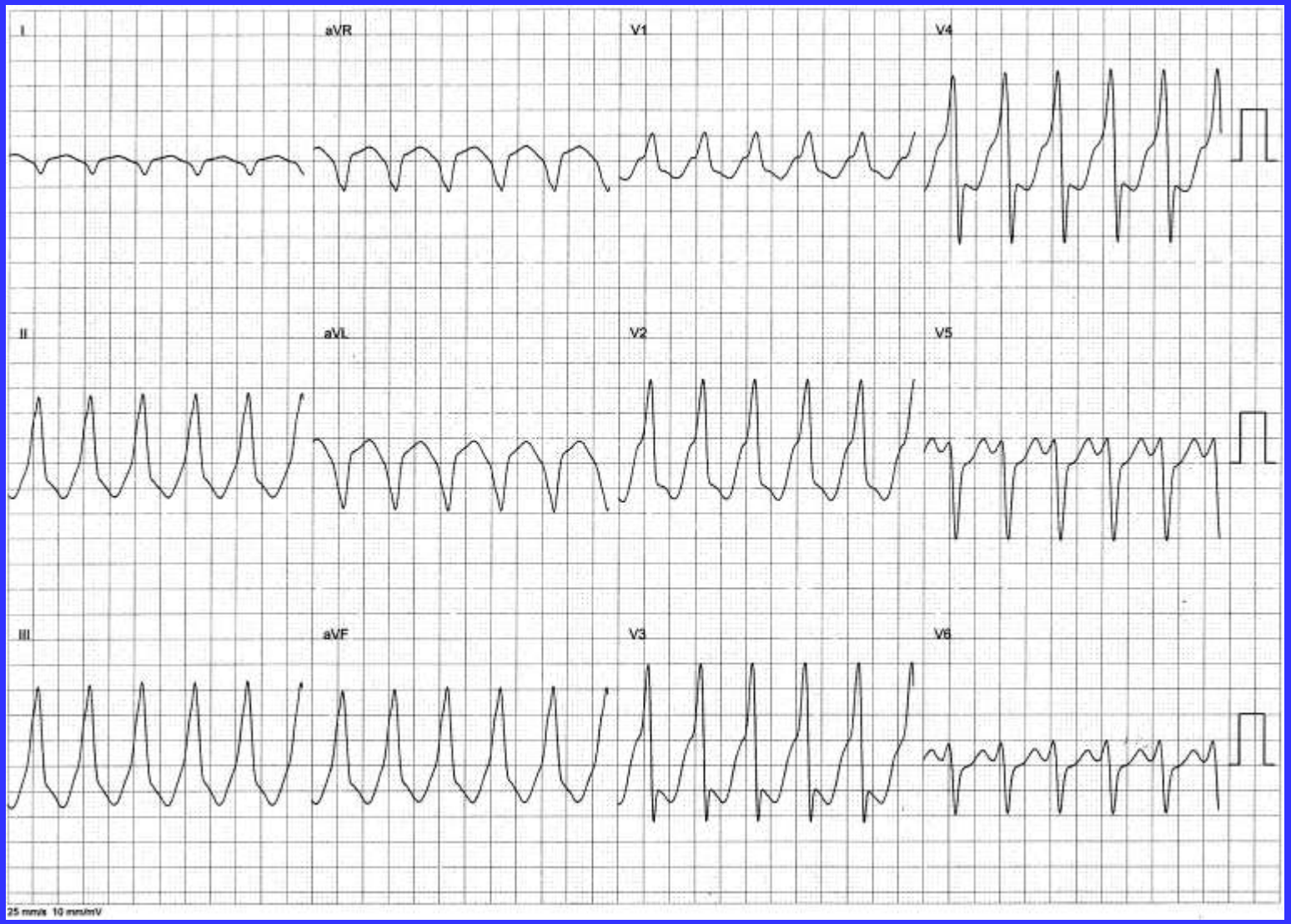
ΑΝΤΙΜΕΤΩΠΙΣΗ

- εμφύτευση βηματοδότη και αμιοδαρόνη ?
- εμφύτευση ICD ?
- ηλεκτροφυσιολογική μελέτη ?

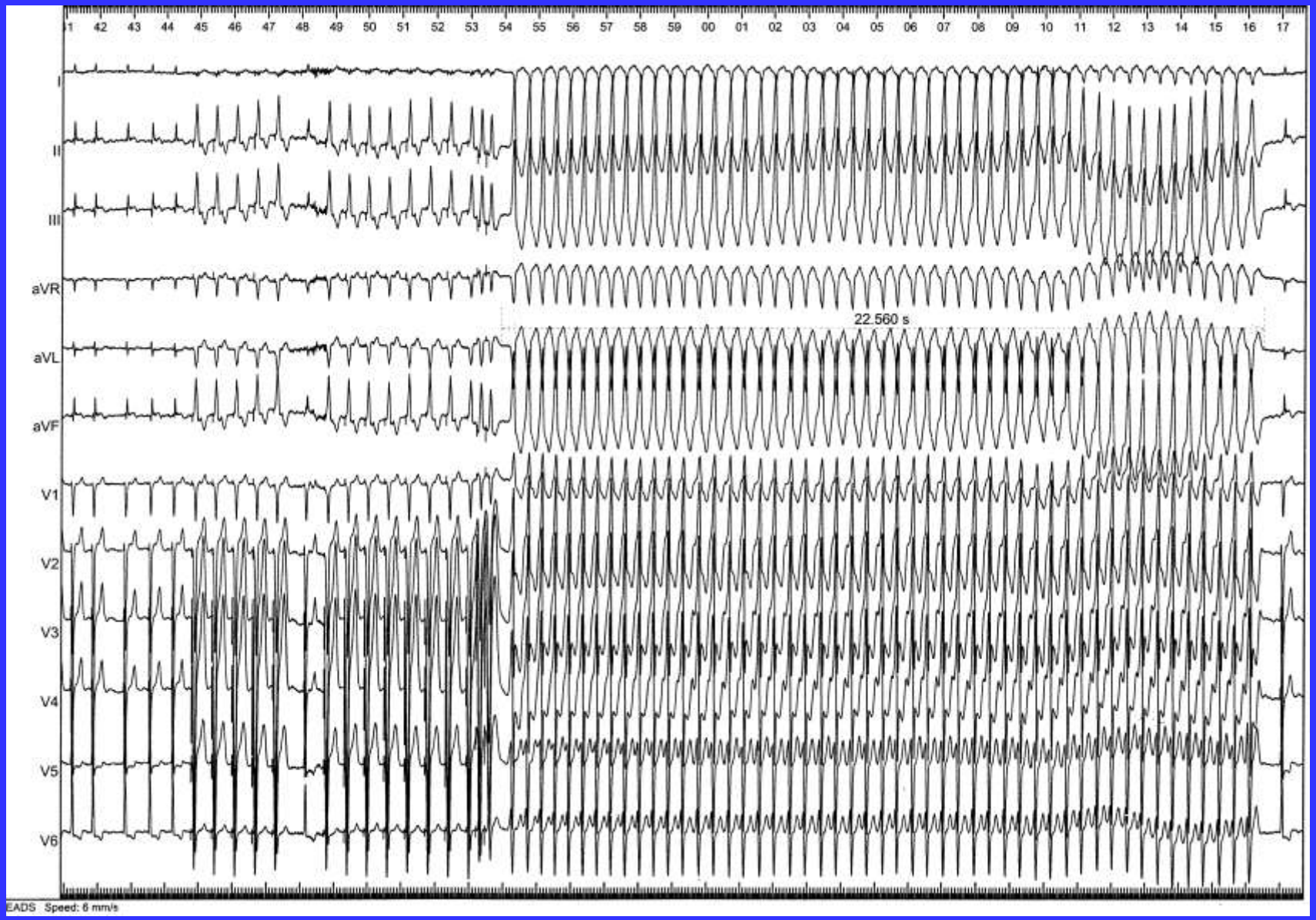
ΗΛΕΚΤΡΟΦΥΣΙΟΛΟΓΙΚΗ ΜΕΛΕΤΗ (αναίμακτη)- ΠΡΟΚΛΗΣΗ VT



VT- RBBB, δεξιός άξων



VT



ΚΟΙΛΙΑΚΗ ΤΑΧΥΚΑΡΔΙΑ, 24 h ΜΕΤΑ ΤΗΝ ΕΜΦΥΤΕΥΣΗ ICD

ICD Model: Maximo VR 7232
Serial Number: PRN639080S

9979 Software Version 7.0
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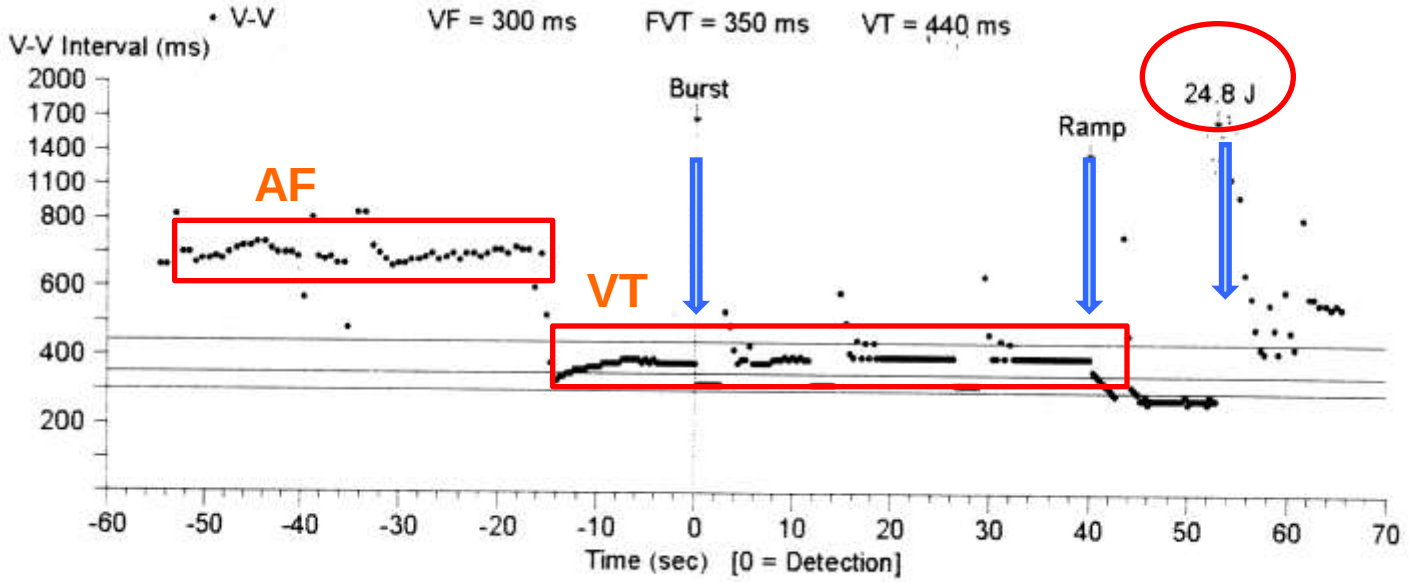
VT/VF Episode #2 Report

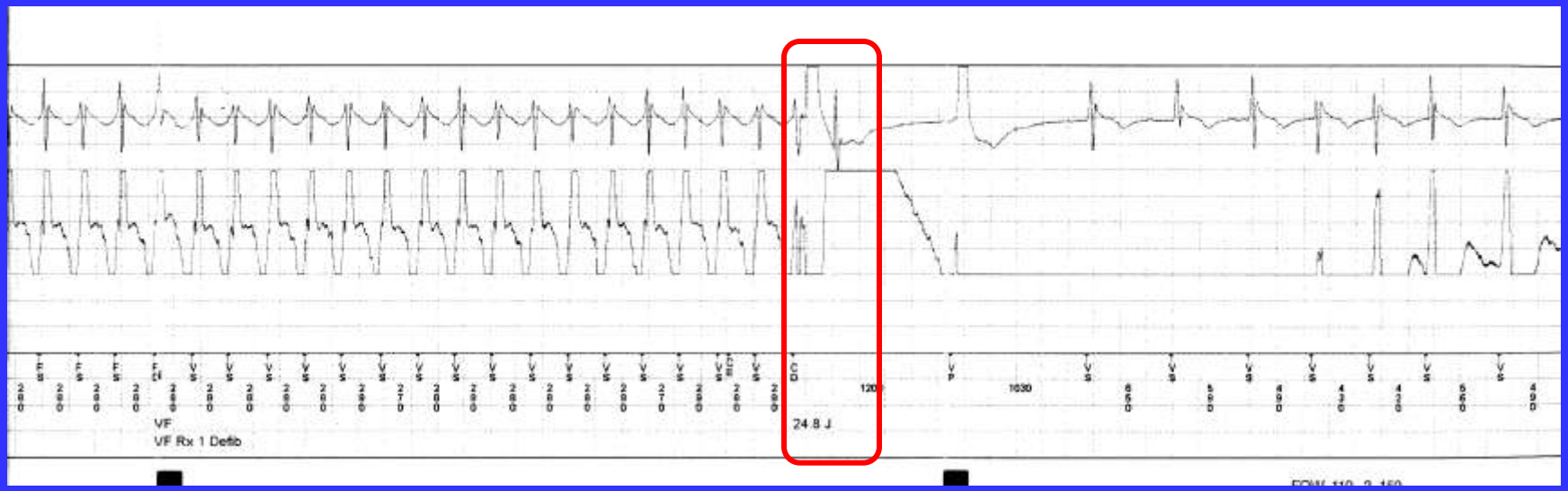
Page 1

ID#	Date/Time	Type	V. Cycle	Last Rx	Success	Duration
2	Nov 26 17:05:25	VT	380 ms	VF Rx 1	Yes	1.2 min



ΑΝΕΠΙΤΥΧΗΣ ΑΤΡ

ΑΝΑΤΑΞΗ ΜΕ SHOCK



ΣΥΜΠΕΡΑΣΜΑ – ΣΥΓΚΟΠΗ ΚΑΙ ΚΑ

- θεραπεία με ICD όπου υπάρχει ένδειξη (ΚΕ < 30-35%) ανεξαρτήτως συμπτωμάτων
- ο ICD δεν προφυλάσσει από τις υποτροπές της συγκοπής
- συγκοπή ανεξαρτήτως μηχανισμού ≈ αυξημένος κίνδυνος θανάτου
- σε ενδιάμεσο κίνδυνο με ΚΕ > 35-40 % : ΗΦΜ στην ισχαιμική ΚΑ και εμφυτεύσιμο Holter
- διατατική μυοκαρδιοπάθεια, ΚΕ> 35-40 %: εμφυτεύσιμο Holter

ΣΑΣ ΕΥΧΑΡΙΣΤΩ ΓΙΑ ΤΗΝ ΠΡΟΣΟΧΗ ΣΑΣ