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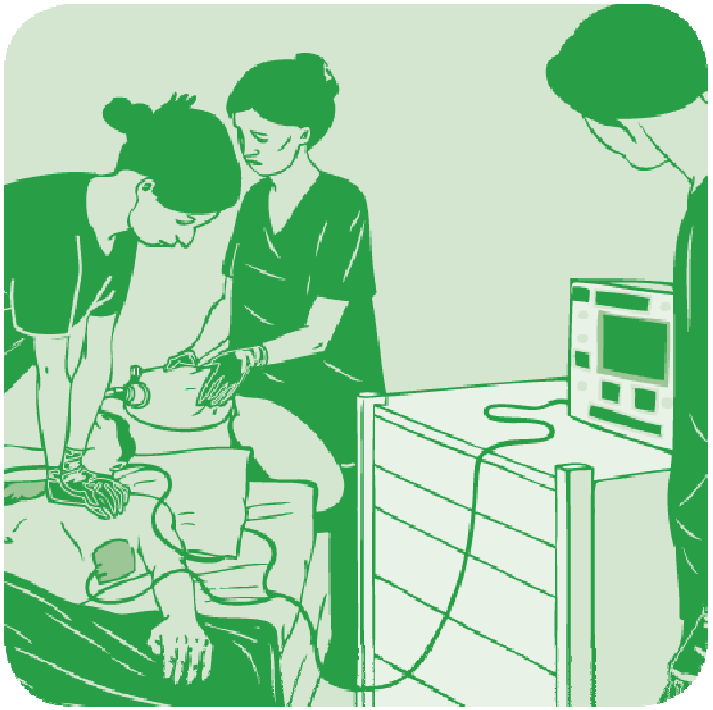
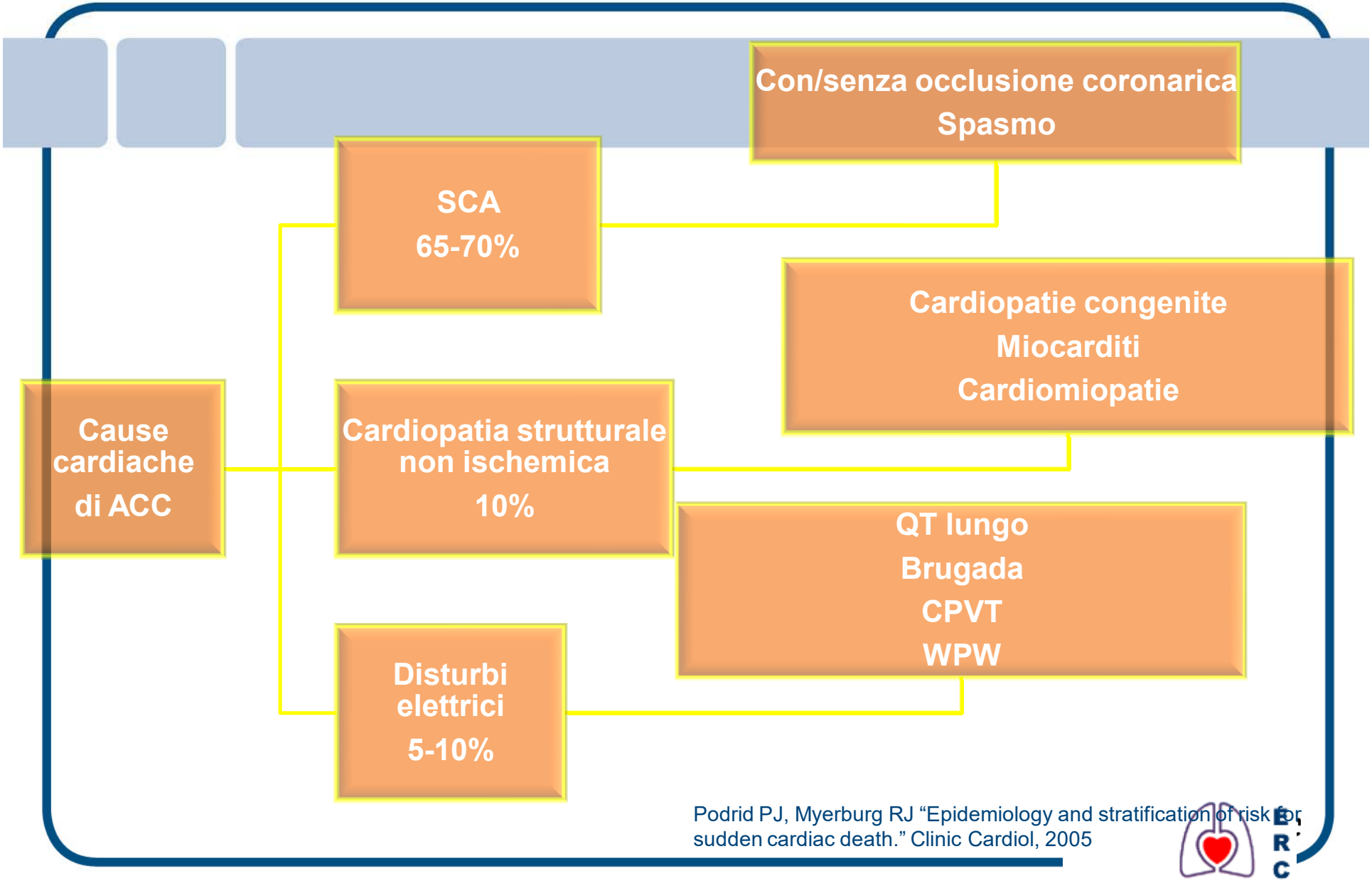
Lezione



Le sindromi coronariche acute

Cause cardiogene di arresto cardiaco



Podrid PJ, Myerburg RJ "Epidemiology and stratification of risk for sudden cardiac death." Clinic Cardiol, 2005

Vikas P et al. "Sudden Cardiac Death." Currents Prob in Card, 2015

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3th universal definition of MI

Acute myocardial infarction (MI) defines cardiomyocyte necrosis in a clinical setting consistent with acute myocardial ischaemia

Increase and/or decrease of a cardiac biomarker, preferably high-sensitivity cardiac troponin, with at least one value above the 99th percentile of the upper reference limit and at least one of the following:

(1) Symptoms of ischaemia.
(2) New or presumed new significant ST-T wave changes or left bundle branch block on 12-lead ECG.
(3) Development of pathological Q waves on ECG.
(4) Imaging evidence of new or presumed new loss of viable myocardium or regional wall motion abnormality.
(5) Intracoronary thrombus detected on angiography or autopsy.

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Type 1: Spontaneous myocardial infarction
Spontaneous myocardial infarction related to atherosclerotic plaque rupture, ulceration, fissuring, erosion, or dissection with resulting intraluminal thrombus in one or more of the coronary arteries leading to decreased myocardial blood flow or distal platelet emboli with ensuing myocyte necrosis. The patient may have underlying severe CAD but on occasion non-obstructive or no CAD.
Type 2: Myocardial infarction secondary to an ischaemic imbalance
In instances of myocardial injury with necrosis where a condition other than CAD contributes to an imbalance between myocardial oxygen supply and/or demand, e.g. coronary endothelial dysfunction, coronary artery spasm, coronary embolism, tachy-/brady-arrhythmias, anaemia, respiratory failure, hypotension, and hypertension with or without LVH.
Type 3: Myocardial infarction resulting in death when biomarker values are unavailable
Cardiac death with symptoms suggestive of myocardial ischaemia and presumed new ischaemic ECG changes or new LBBB, but death occurring before blood samples could be obtained, before cardiac biomarker could rise, or in rare cases cardiac biomarkers were not collected.
Type 4a: Myocardial infarction related to percutaneous coronary intervention (PCI)
Myocardial infarction associated with PCI is arbitrarily defined by elevation of cTn values >5 x 99th percentile URL in patients with normal baseline values (≤99th percentile URL) or a rise of cTn values >20% if the baseline values are elevated and are stable or falling. In addition, either (i) symptoms suggestive of myocardial ischaemia, or (ii) new ischaemic ECG changes or new LBBB, or (iii) angiographic loss of patency of a major coronary artery or a side branch or persistent slow- or no-flow or embolization, or (iv) imaging demonstration of new loss of viable myocardium or new regional wall motion abnormality are required.
Type 4b: Myocardial infarction related to stent thrombosis
Myocardial infarction associated with stent thrombosis is detected by coronary angiography or autopsy in the setting of myocardial ischaemia and with a rise and/or fall of cardiac biomarkers values with at least one value above the 99th percentile URL.
Type 5: Myocardial infarction related to coronary artery bypass grafting (CABG)
Myocardial infarction associated with CABG is arbitrarily defined by elevation of cardiac biomarker values >10 x 99th percentile URL in patients with normal baseline cTn values (≤99th percentile URL). In addition, either (i) new pathological Q waves or new LBBB, or (ii) angiographic documented new graft or new native coronary artery occlusion, or (iii) imaging evidence of new loss of viable myocardium or new regional wall motion abnormality.

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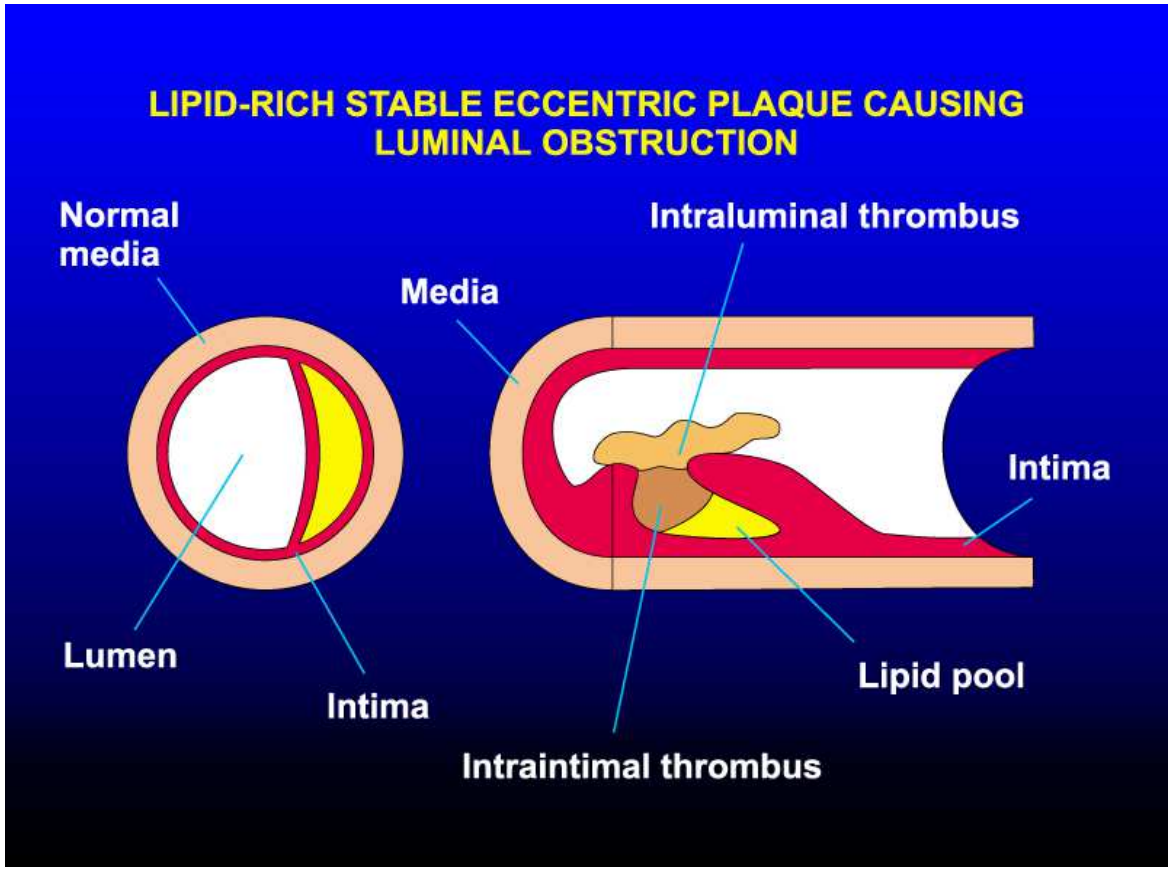
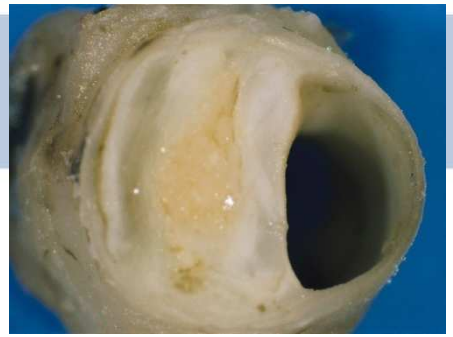
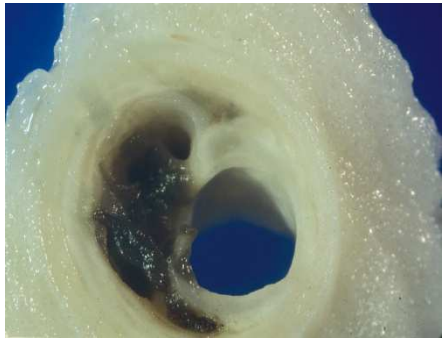
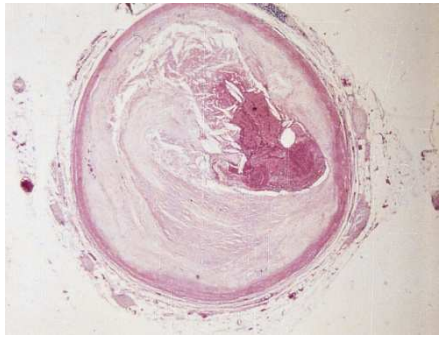
Sindromi coronariche acute

Placca fissurata









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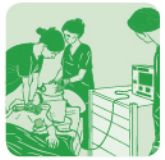

Sindromi coronariche acute

Sindromi causate dallo stesso processo patologico:

- Angina instabile
- Infarto miocardico senza sopraslivellamento ST
- Infarto miocardico con sopraslivellamento ST

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IL DOLORE ANGINOSO

Dolore da ischemia cardiaca

- oppressivo, costrittivo
- retrosternale, epigastrico
- irradiato a collo, mandibole, braccia, dorso
- associato a dispnea, nausea, vomito, sudorazione
- possibili sintomi aspecifici e sfumati, anche isolati

Attenzione a:

- "indigestione" inspiegata
- donne
- diabetici
- anziani

Possibili sintomi atipici !

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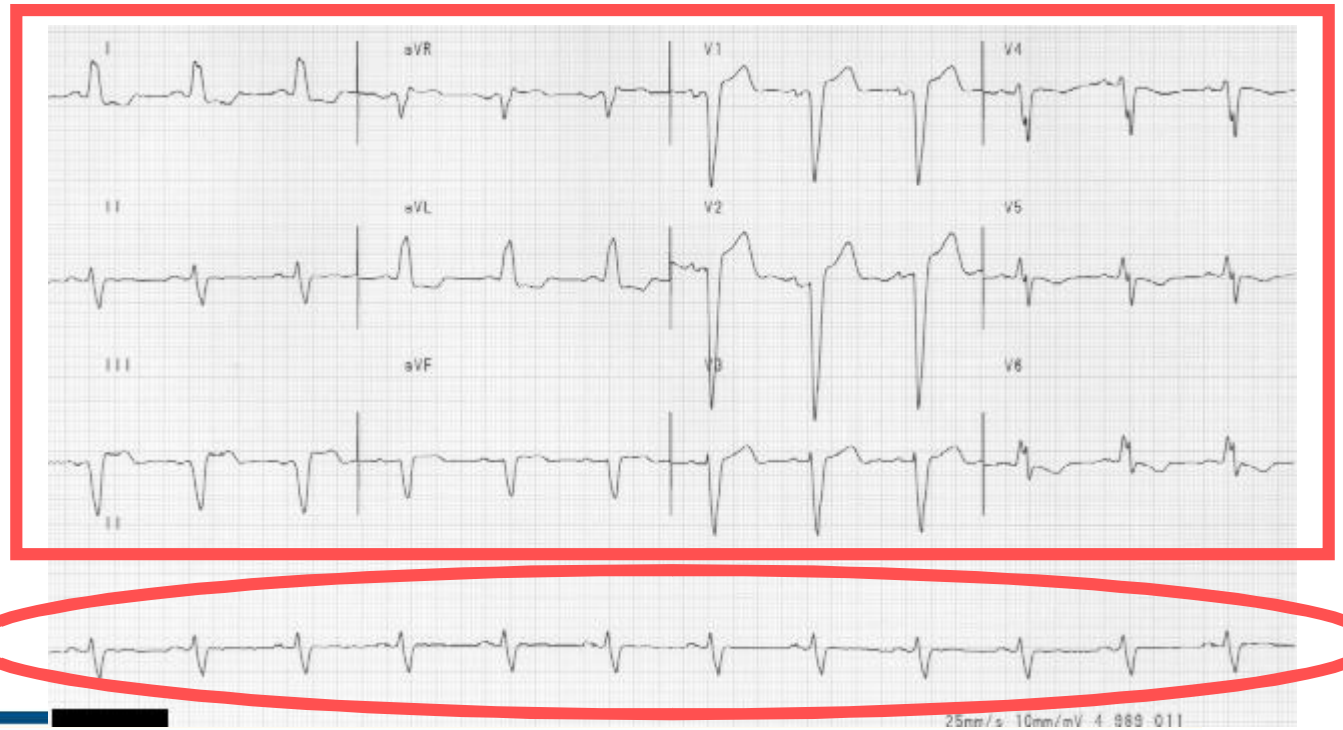
Diagnosi di SCA

Diagnosi di SCA con ECG 12 non traccia monitor



12-Lead ECG

Rhythm Strip

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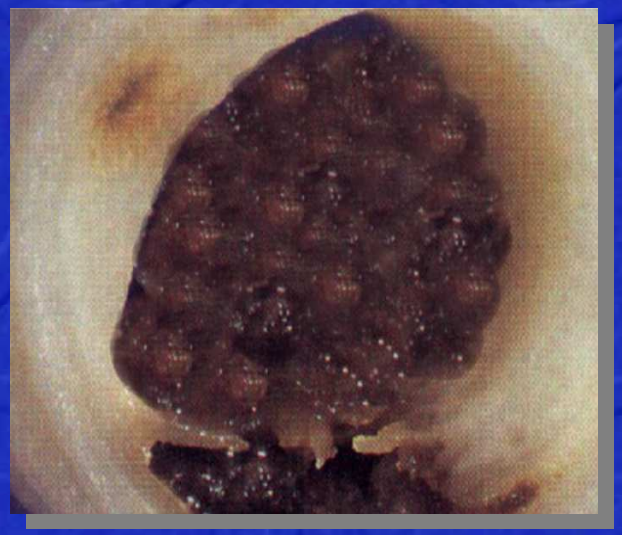
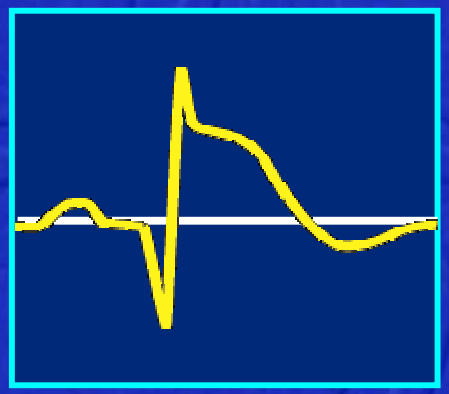
ECG

ble 4 Recommendations for initial diagnosis

Recommendations	Class [a]	Level [b]	Ref [c]
A 12-lead ECG must be obtained as soon as possible at the point of FMC, with a target delay of ≤10 min.	I	B	17, 19
ECG monitoring must be initiated as soon as possible in all patients with suspected STEMI.	I	B	20, 21
Blood sampling for serum markers is recommended routinely in the acute phase but one should not wait for the results before initiating reperfusion treatment.	I	C	-

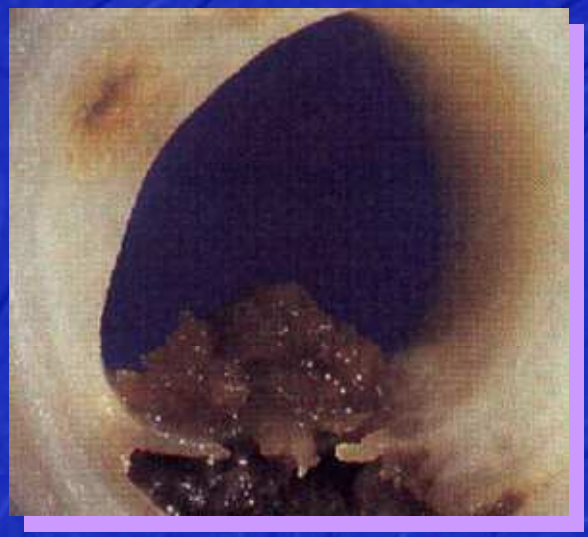
SCA CON SOPRASLIVELLAMENTO PERSISTENTE DELL' ST

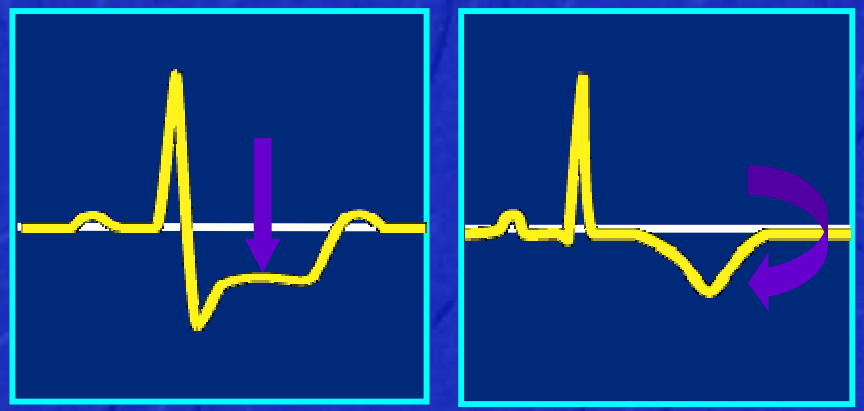




CK - MB or Troponin ↑

SCA SENZA SOPRASLIVELLAMENTO DEL TRATTO ST





Troponin elevated or not

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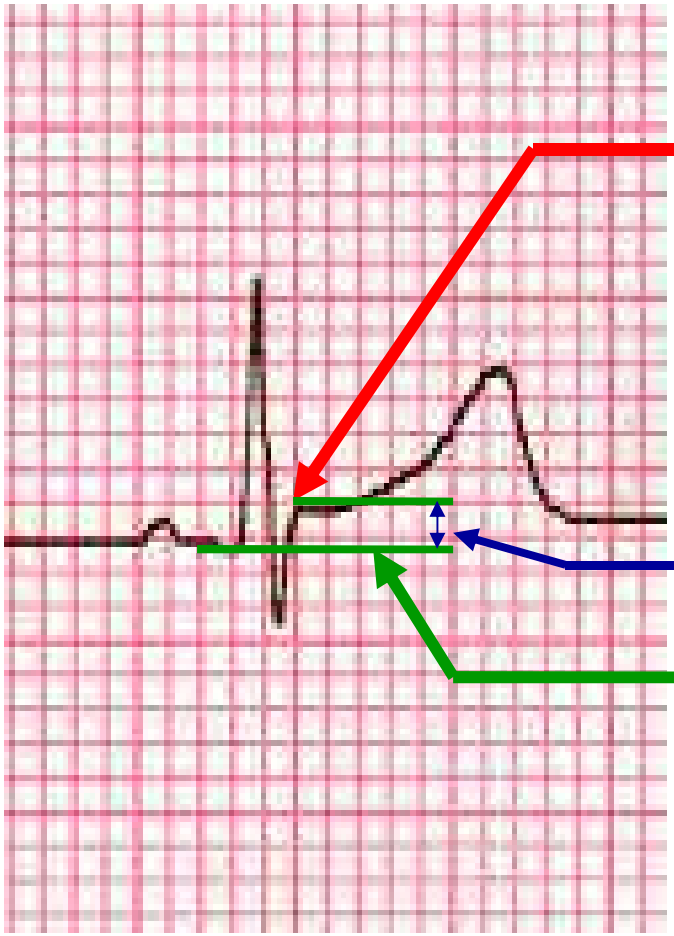
Misurazione del segmento ST elevato



Punto J

Elevazione di ST

Riferimento linea isoelettrica

1 quadrato piccolo = 1 mm
1 mm = 0,1 mV = 0,04 sec

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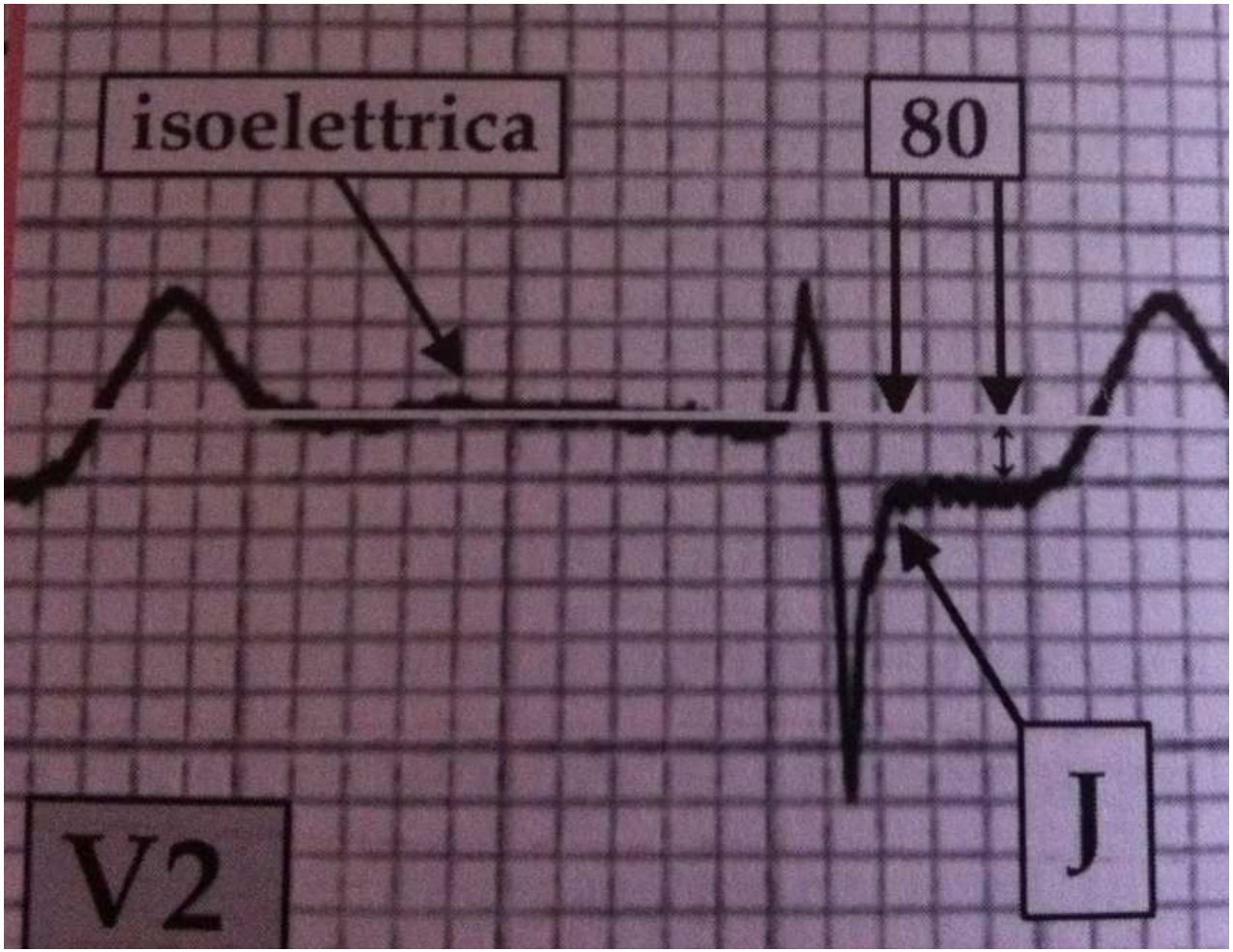
ST sottolivellato



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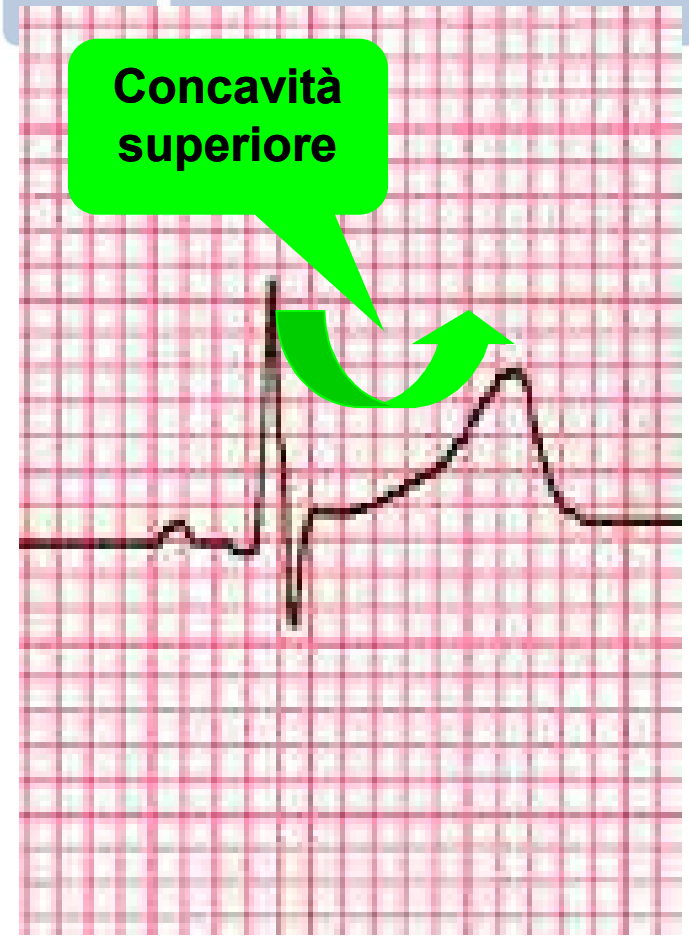
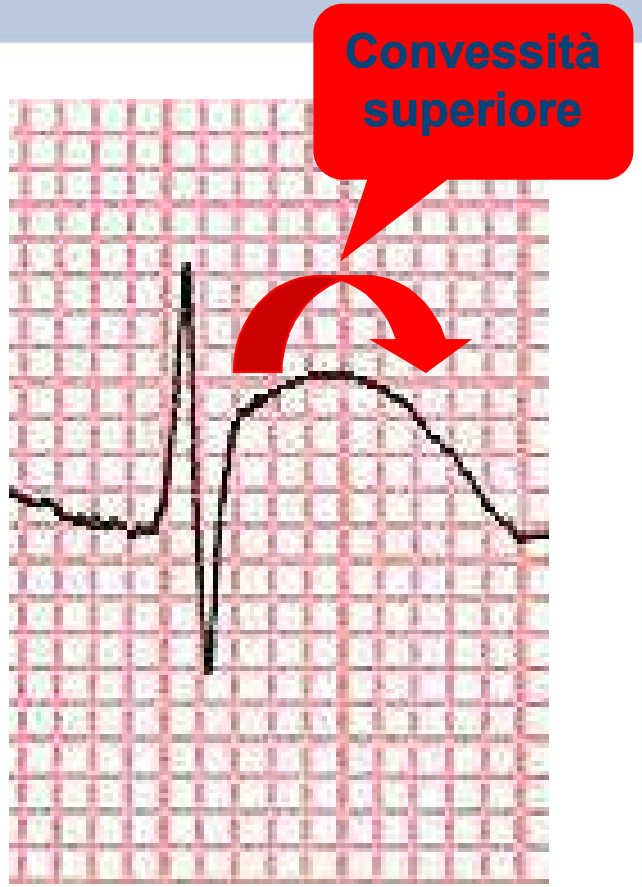
Alterazioni del tratto ST





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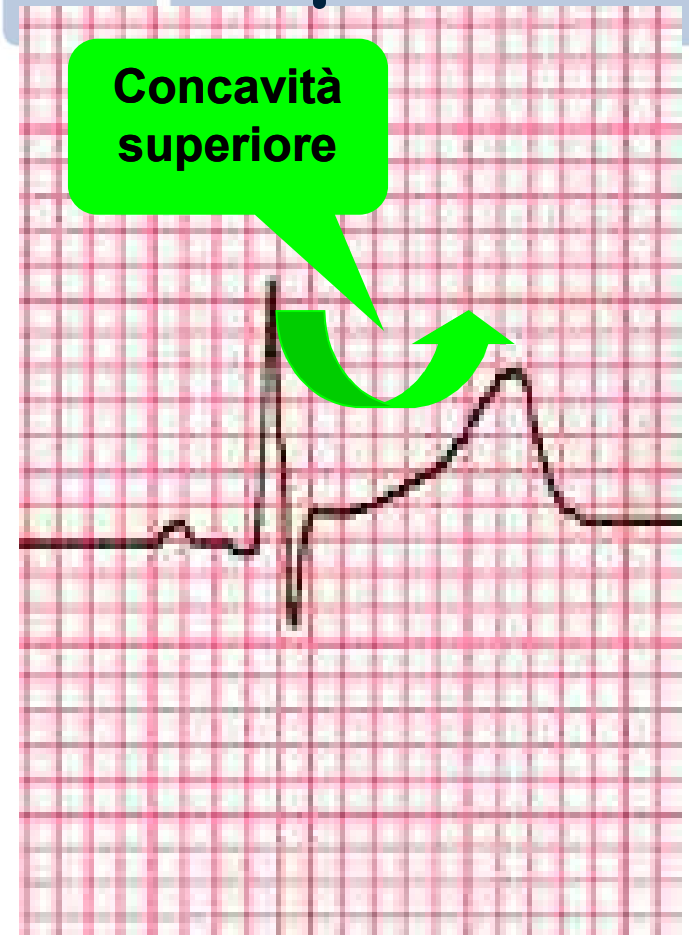
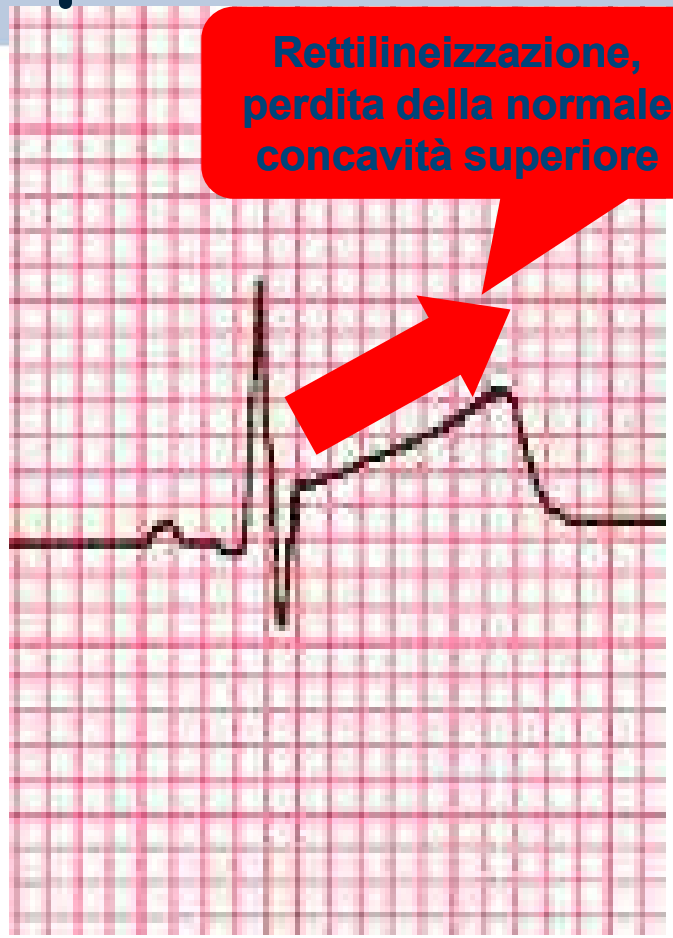
Ripolarizzazione precoce





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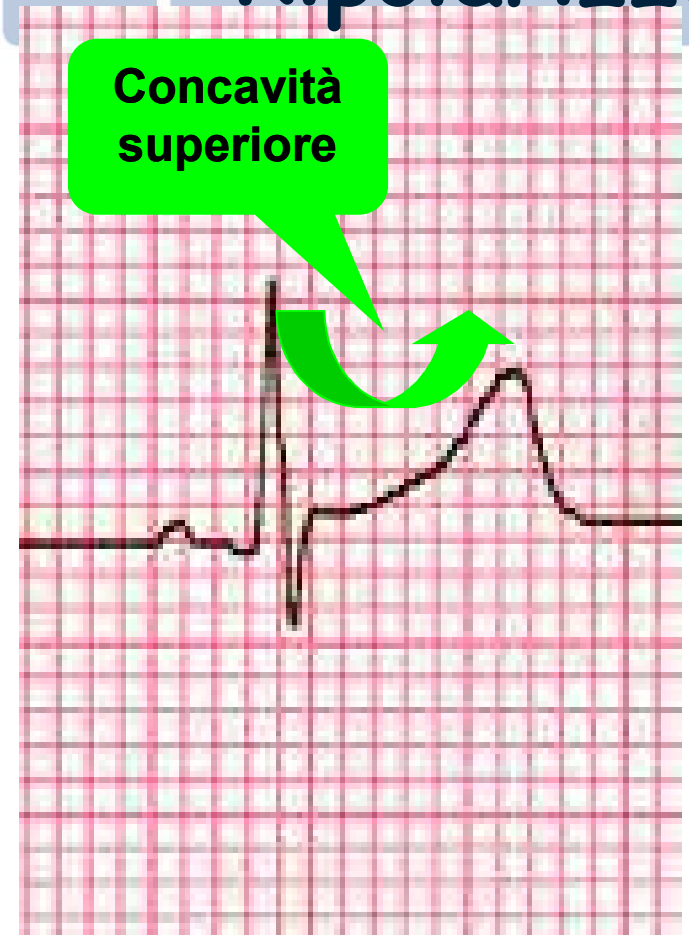
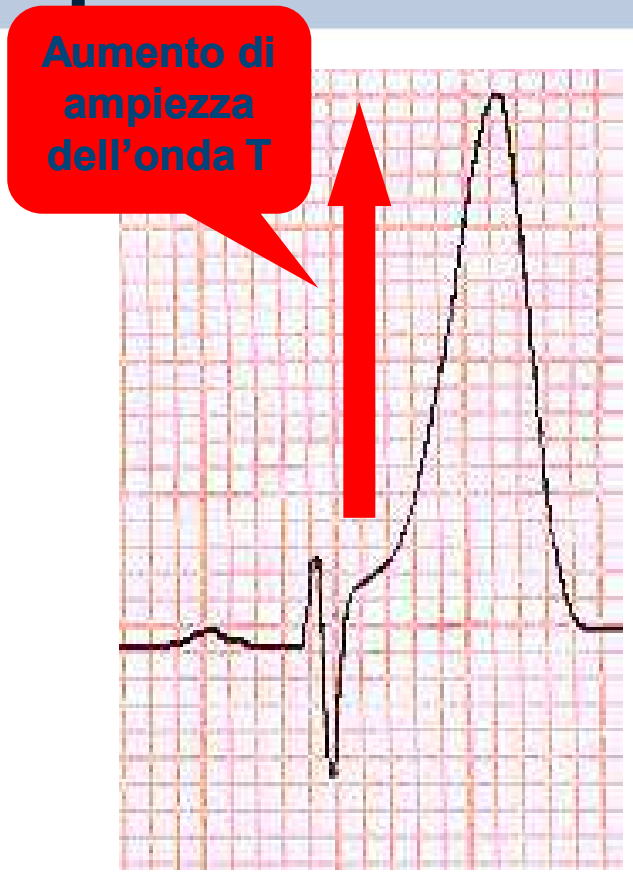
Ripolarizzazione precoce





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TEMPI

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Indicazioni alla terapia riperfusiva

Dolore < 12 h con:

- tratto ST sopraslivellato:
  - ✓ > 0.2 mV in 2 derivazioni precordiali contigue
  - ✓ > 0.1 mV in 2 o più derivazioni periferiche
- blocco di branca sinistra di nuova insorgenza
- onda R dominante e depressione del tratto ST in V1-V3 (IMA posteriore)

Oltre 12 ore se:

dolore ischemico persistente o ripreso e sopralivellamento di ST all'ECG

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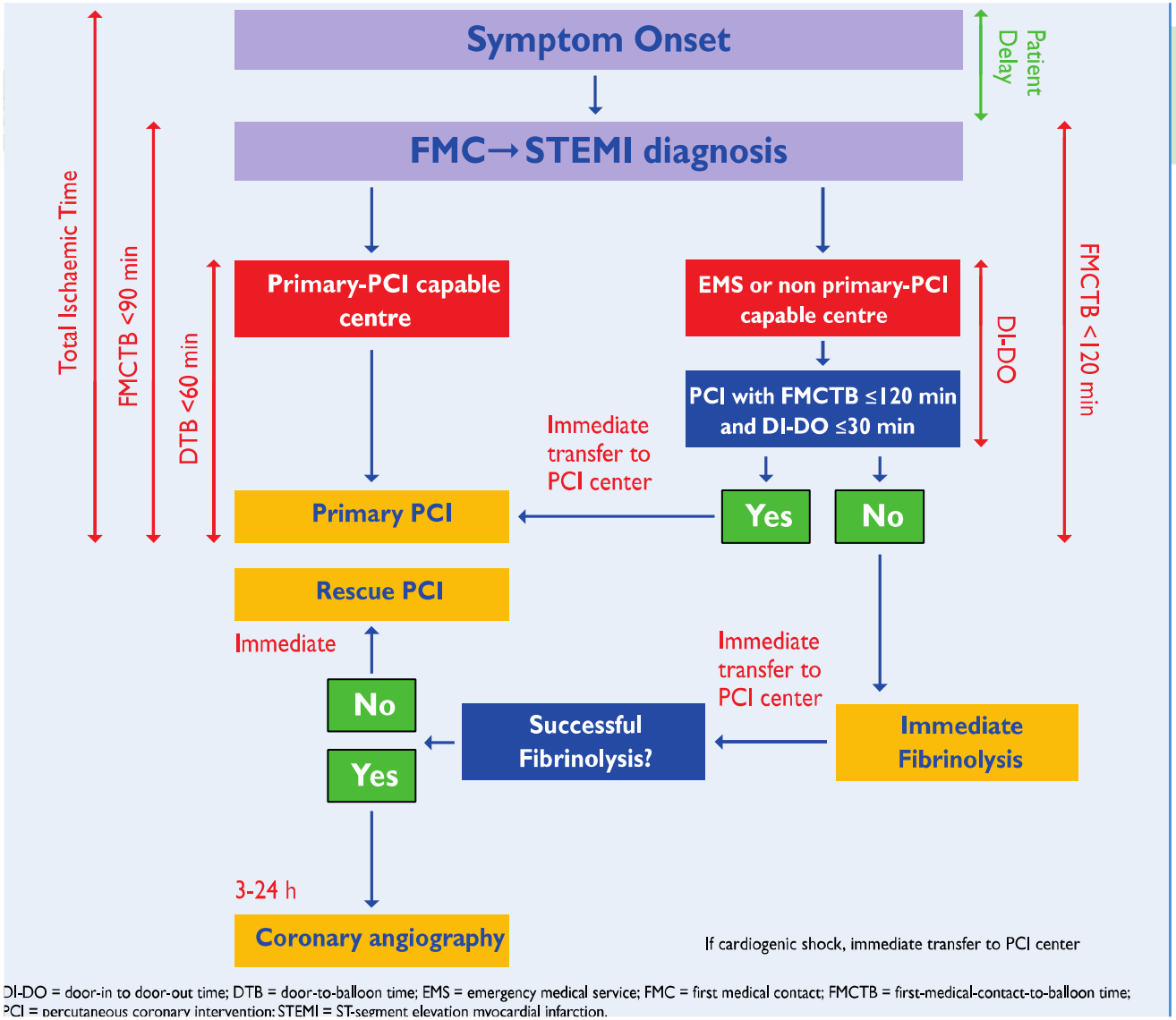

DI-DO = door-in to door-out time; DTB = door-to-balloon time; EMS = emergency medical service; FMC = first medical contact; FMCTB = first-medical-contact-to-balloon time; PCI = percutaneous coronary intervention; STEMI = ST-segment elevation myocardial infarction.

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Table 13 Risk criteria mandating invasive strategy in NSTE-ACS

Very-high-risk criteria
• Haemodynamic instability or cardiogenic shock
• Recurrent or ongoing chest pain refractory to medical treatment
• Life-threatening arrhythmias or cardiac arrest
• Mechanical complications of MI
• Acute heart failure
• Recurrent dynamic ST-T wave changes, particularly with intermittent ST-elevation
High-risk criteria
• Rise or fall in cardiac troponin compatible with MI
• Dynamic ST- or T-wave changes (symptomatic or silent)
• GRACE score >140
Intermediate-risk criteria
• Diabetes mellitus
• Renal insufficiency (eGFR <60 mL/min/1.73 m^2)
• LVEF <40% or congestive heart failure
• Early post-infarction angina
• Prior PCI
• Prior CABG
• GRACE risk score >109 and <140
Low-risk criteria
• Any characteristics not mentioned above

CABG = coronary artery bypass graft; eGFR = estimated glomerular filtration rate; GRACE = Global Registry of Acute Coronary Events; LVEF = left ventricular ejection fraction; PCI = percutaneous coronary intervention; MI = myocardial infarction.

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SINDROMI CORONARICHE ACUTE
- TERAPIA -

A,B,C,D,E

Morfina (sedazione del dolore)

ASA sempre, se non controindicato

Nitrato s.l. (no se ipotensione)

O_2

Diamo subito una MANO
al nostro paziente!

e cerchiamo di mettergli vicino
al più presto un DEFIBRILLATORE

ADP-inibitori:

CLOPIDOGREL
PRASUGREL
TICAGRELOR

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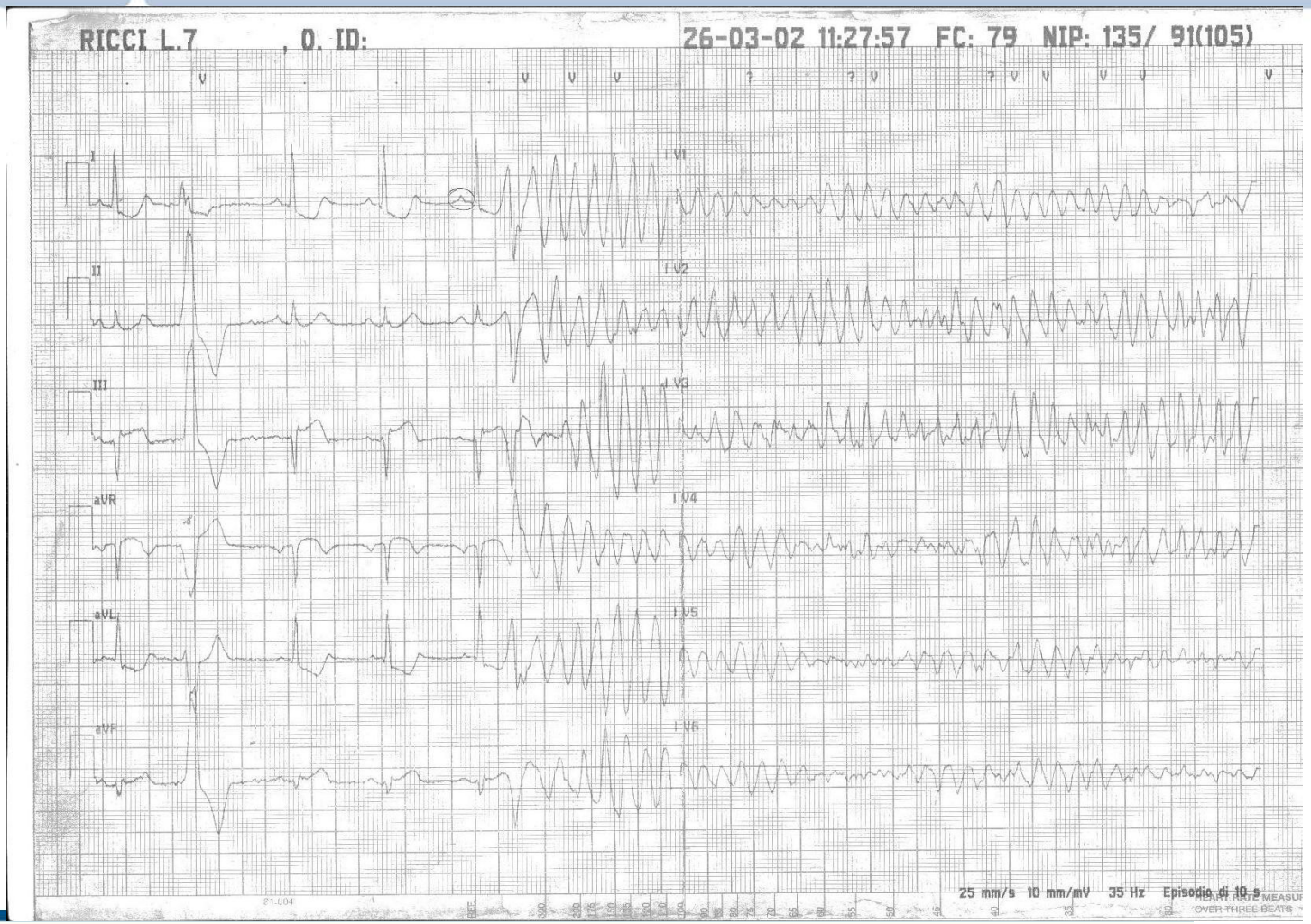
! ! L'infarto può evolvere nell'arresto cardiaco



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ECG

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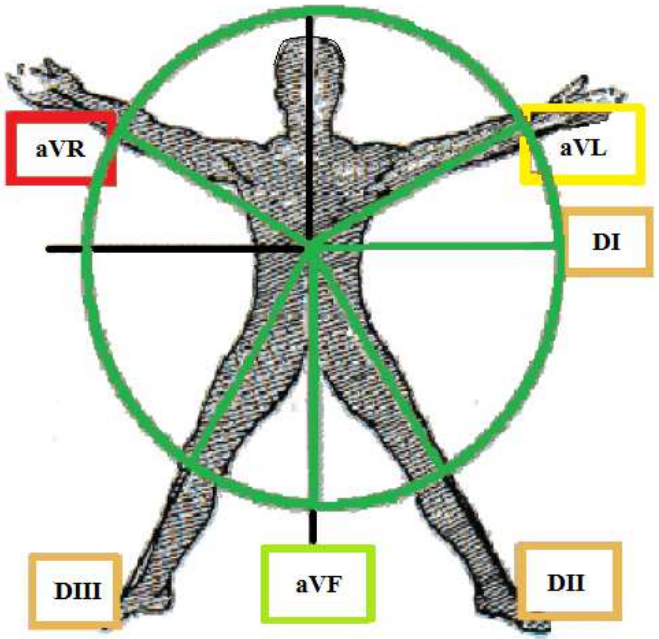
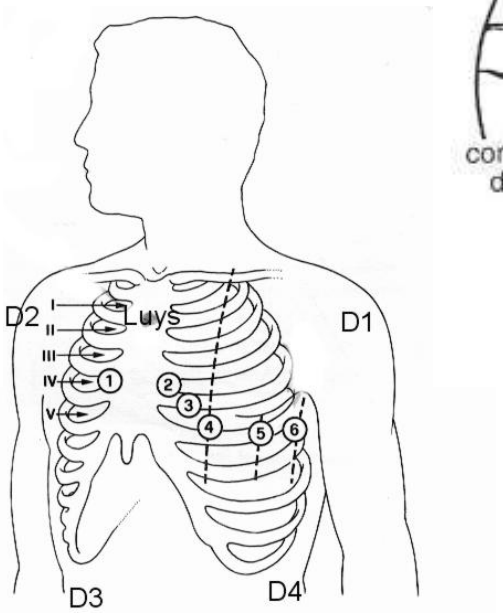
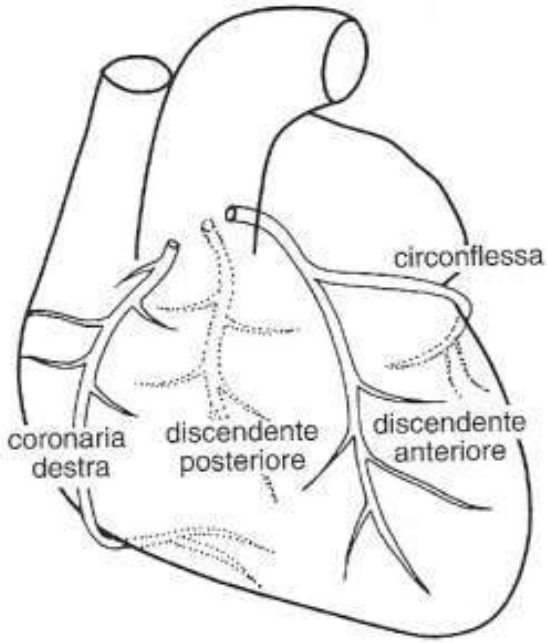
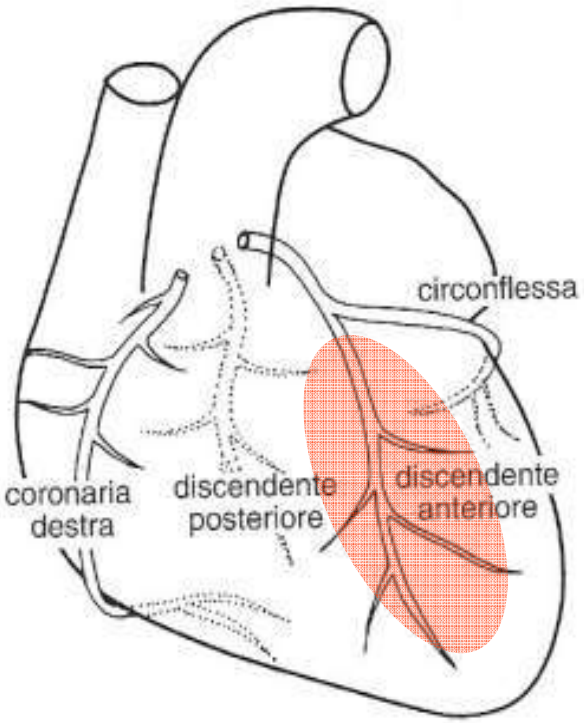
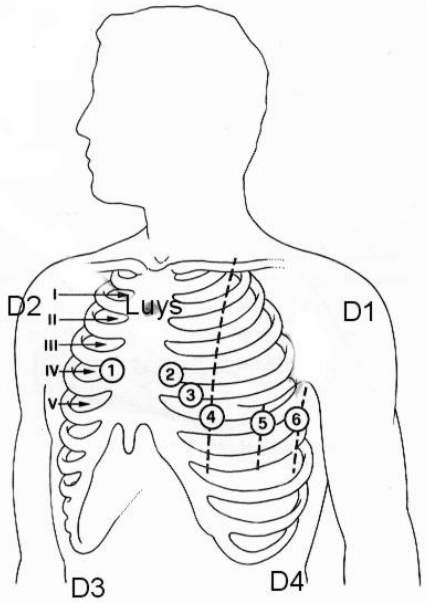
Localizzazione dell'infarto anteriore

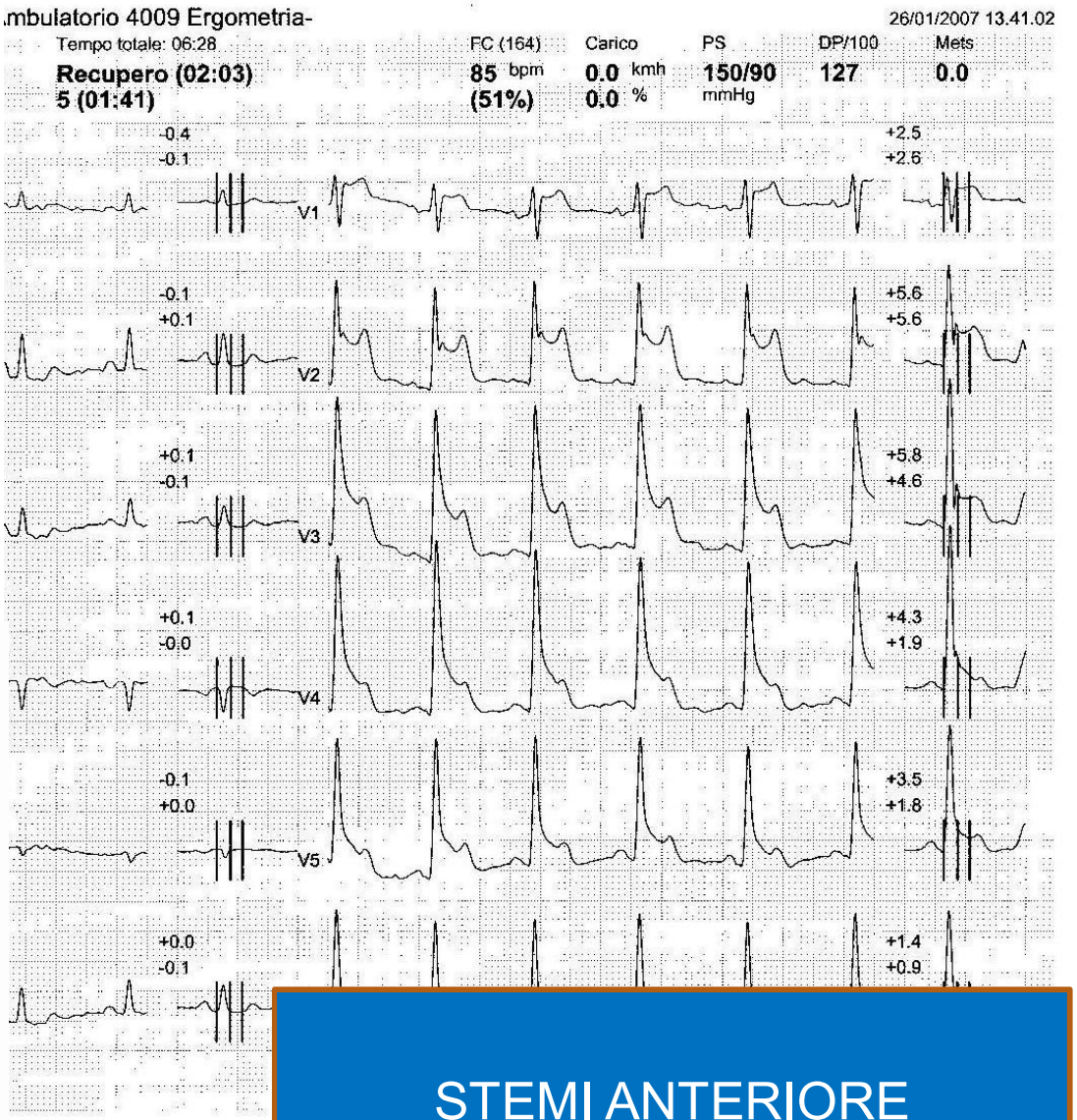












STEMI ANTERIORE

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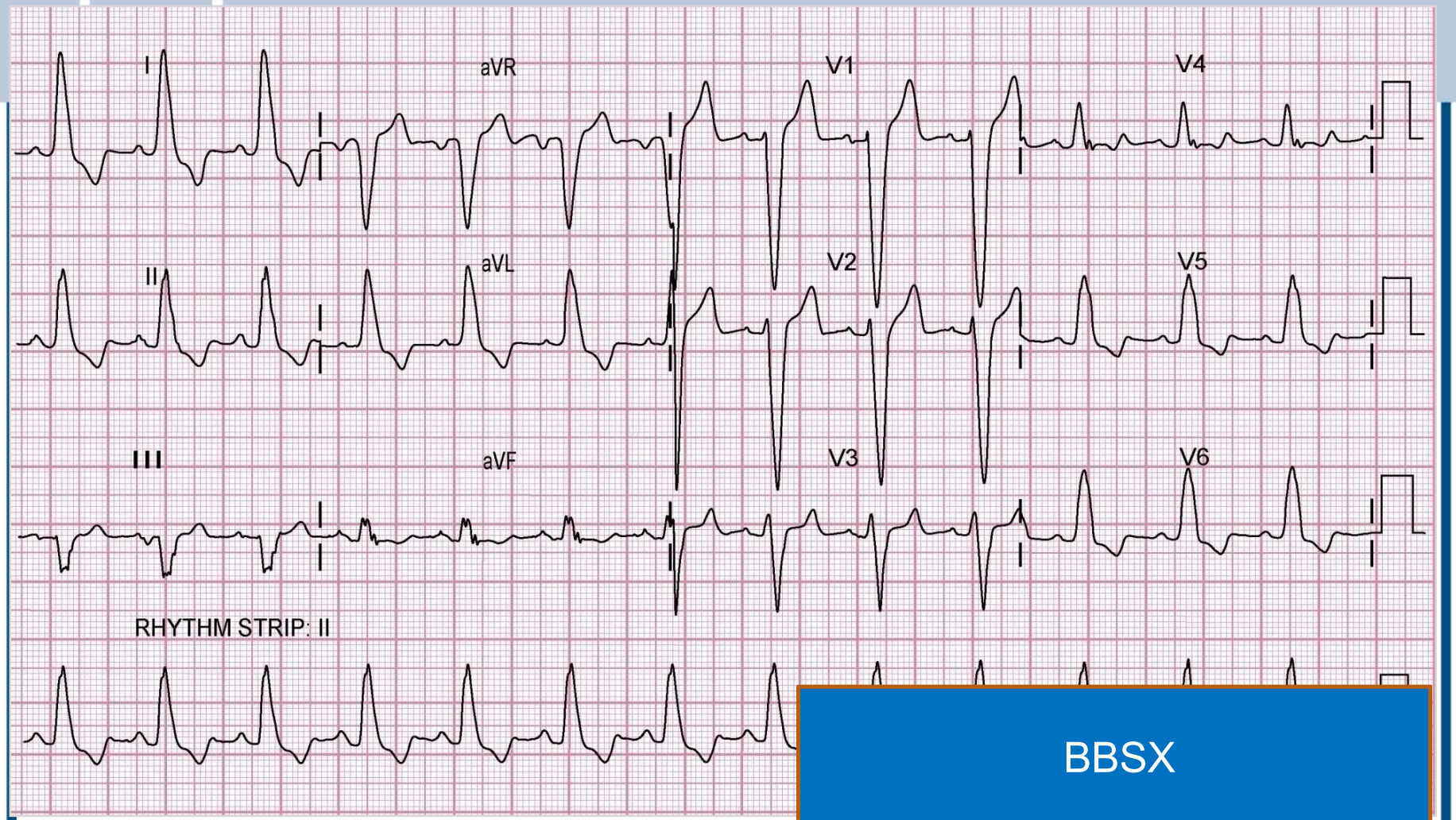
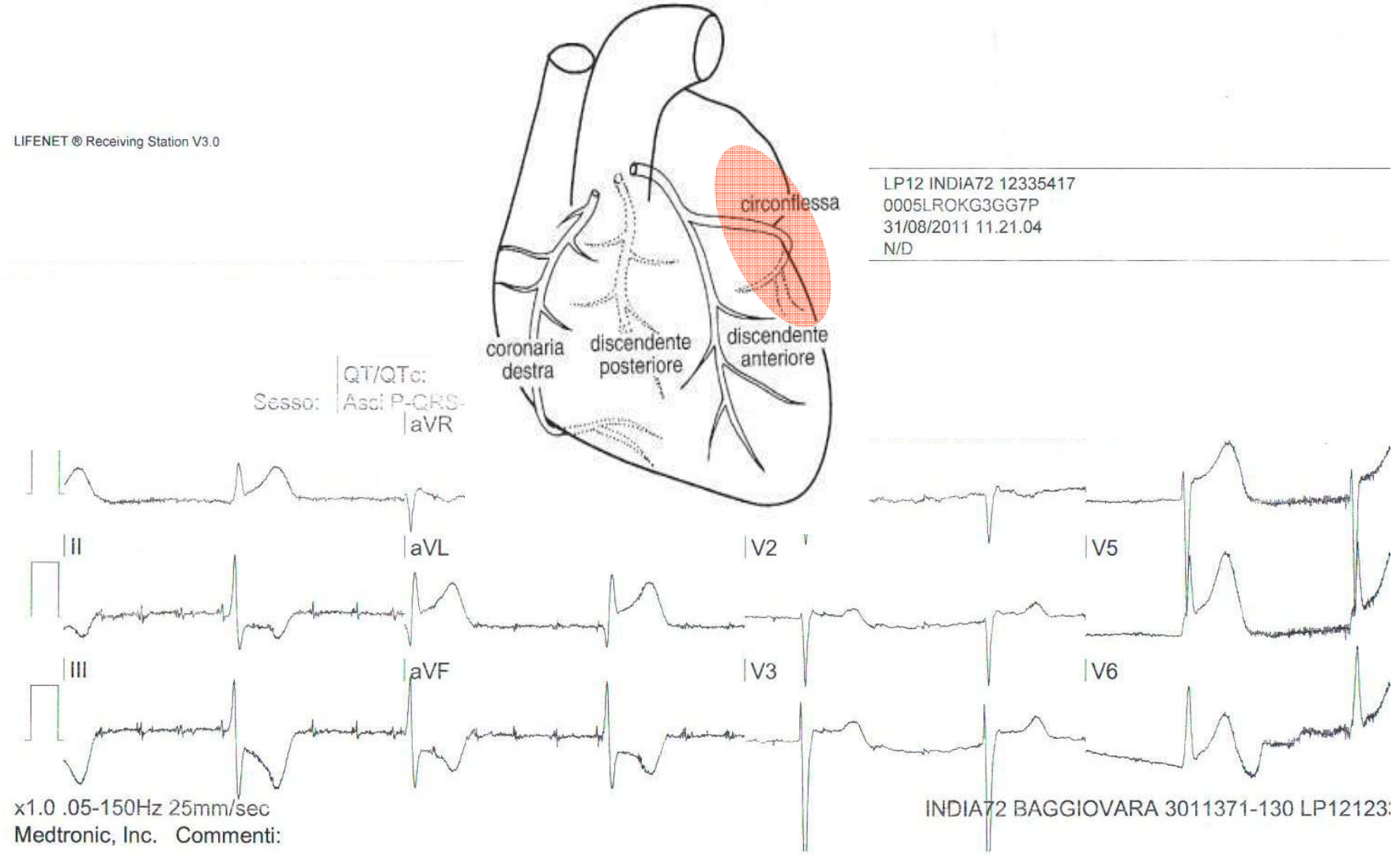
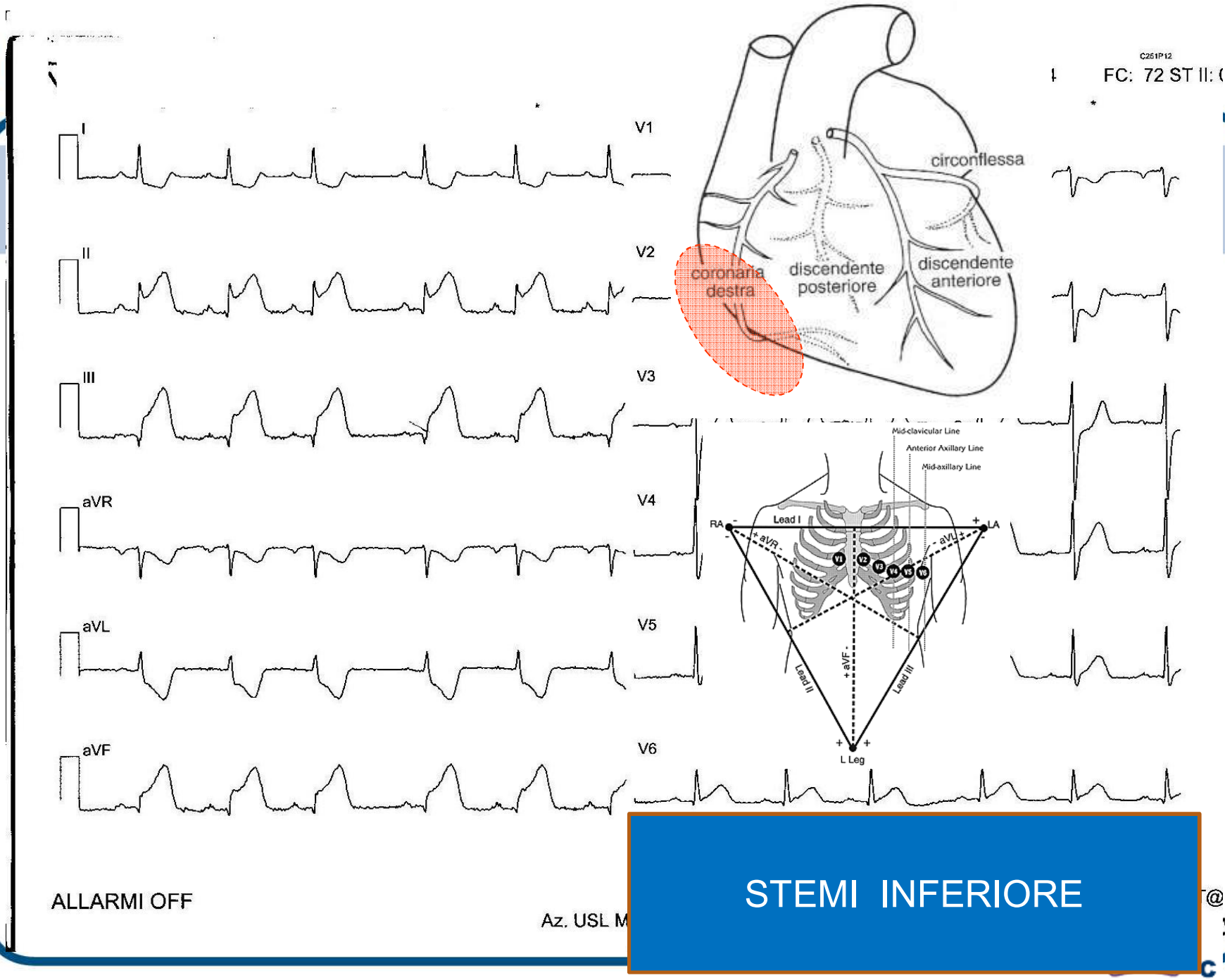


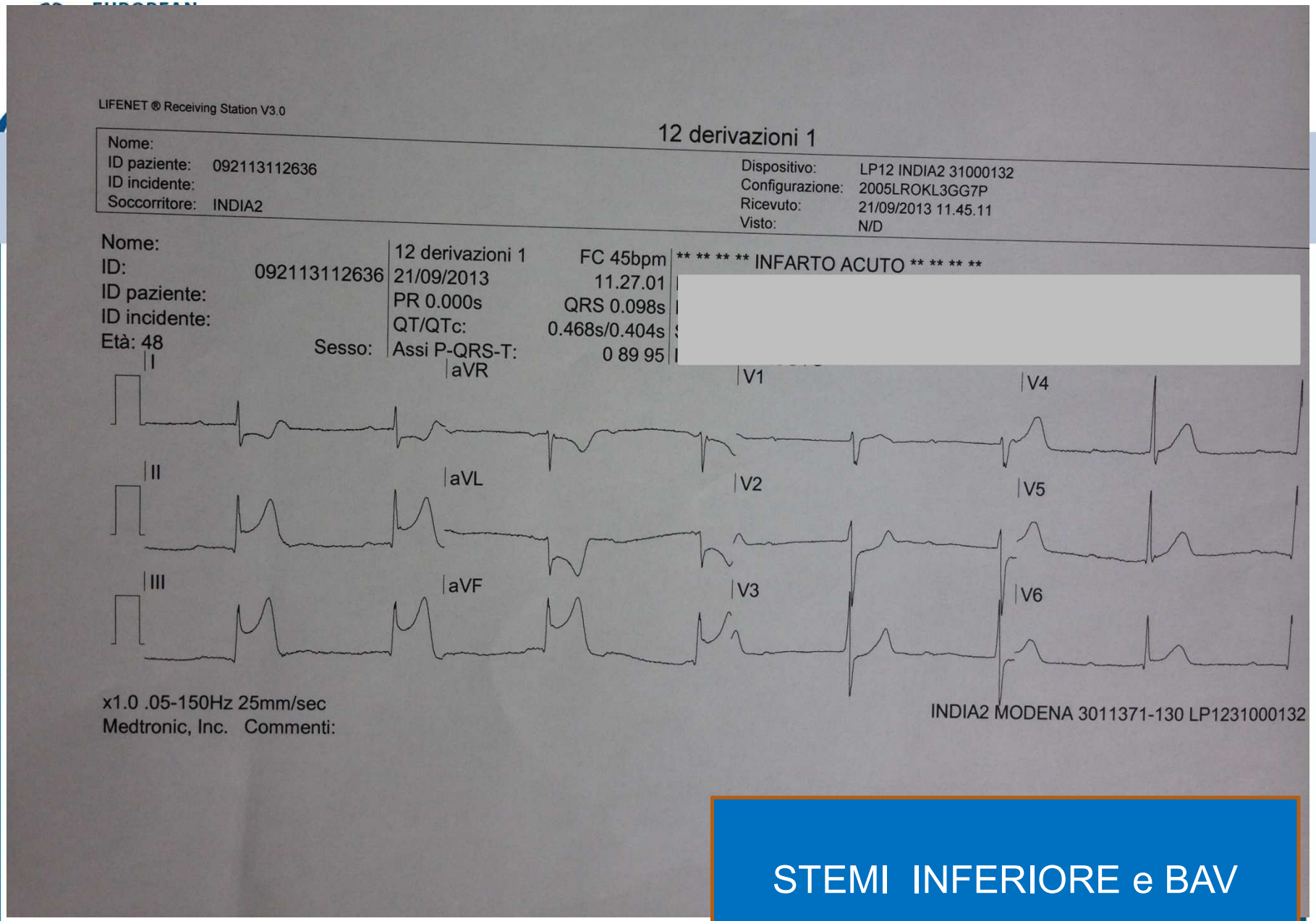
BBSX



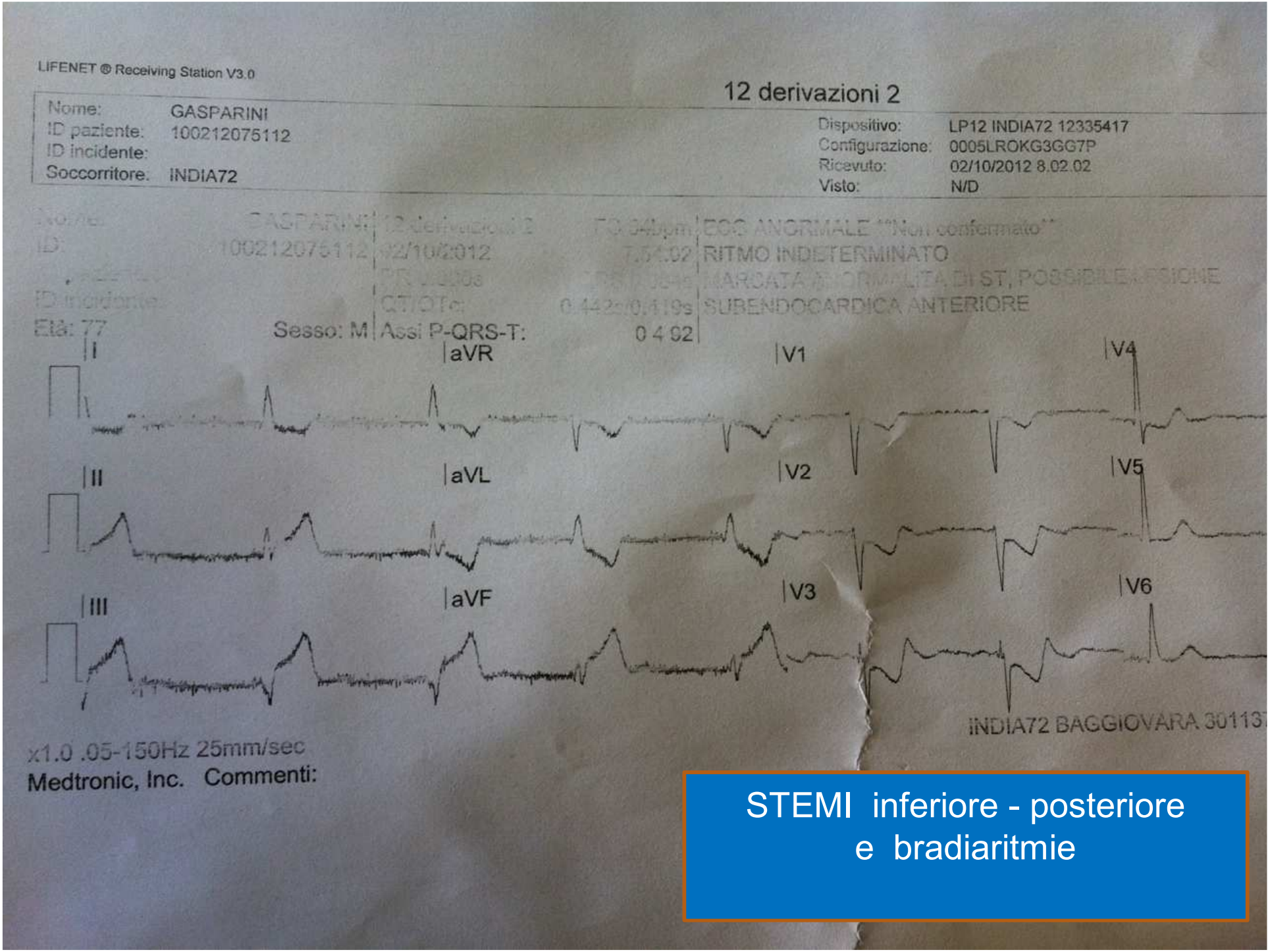
STEMI antero-laterale



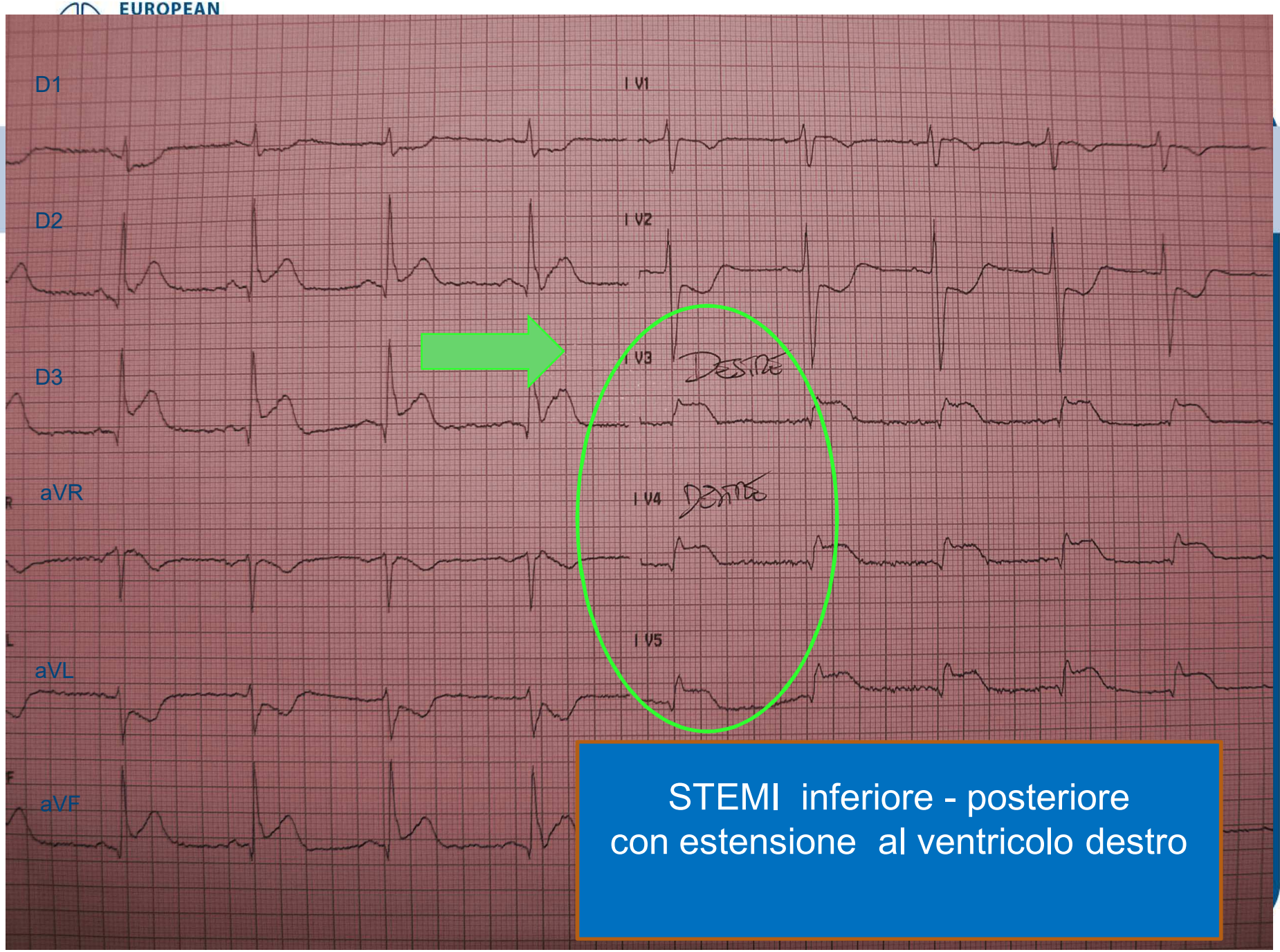
STEMI INFERIORE



STEMI INFERIORE e BAV



STEMI inferiore - posteriore
e bradiaritmie


D1
aVR
D2
aVL
D3
aVF
I V1
I V2
I V3
I V4
I V5
STEMI inferiore - posteriore
con estensione al ventricolo destro

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STEMI con coinvolgimento del VDx

Di solito associato ad IMA inferiore (ST sopralivellato D_2,D_3,aVF)

Registrare sempre le derivazioni precordiali destre in IMA inferiore!

Fisiopatologia: Vdx acinetico - non riesce a "precaricare" il VSn
- si dilata e "schiaccia" il VSn

→ Ipotensione
Bassa Portata

Clinica: Bassa Portata Ipotensione fino allo Shock
Non stasi polmonare (bassa Pressione Capillare Polmonare)
Turgore vene giugulari (alta Pressione Venosa Centrale)
Spesso associato BAV avanzato

Terapia: Infusione di fluidi (litri!) + Amine (Dobutamina e Dopamina)
Pacing se BAV
Riperfusione (se possibile PTCA primaria)

Attenzione ai Nitrati !

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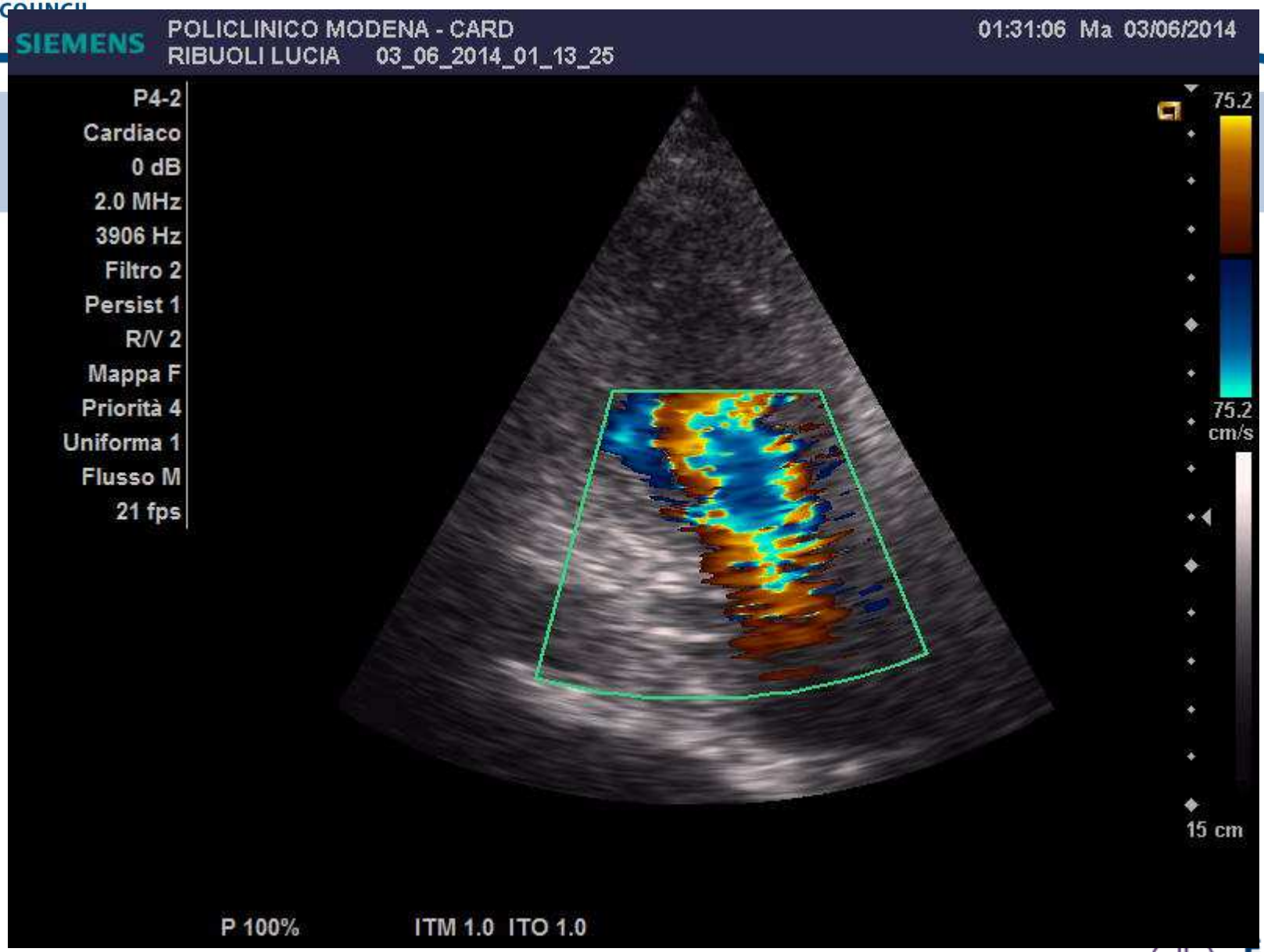
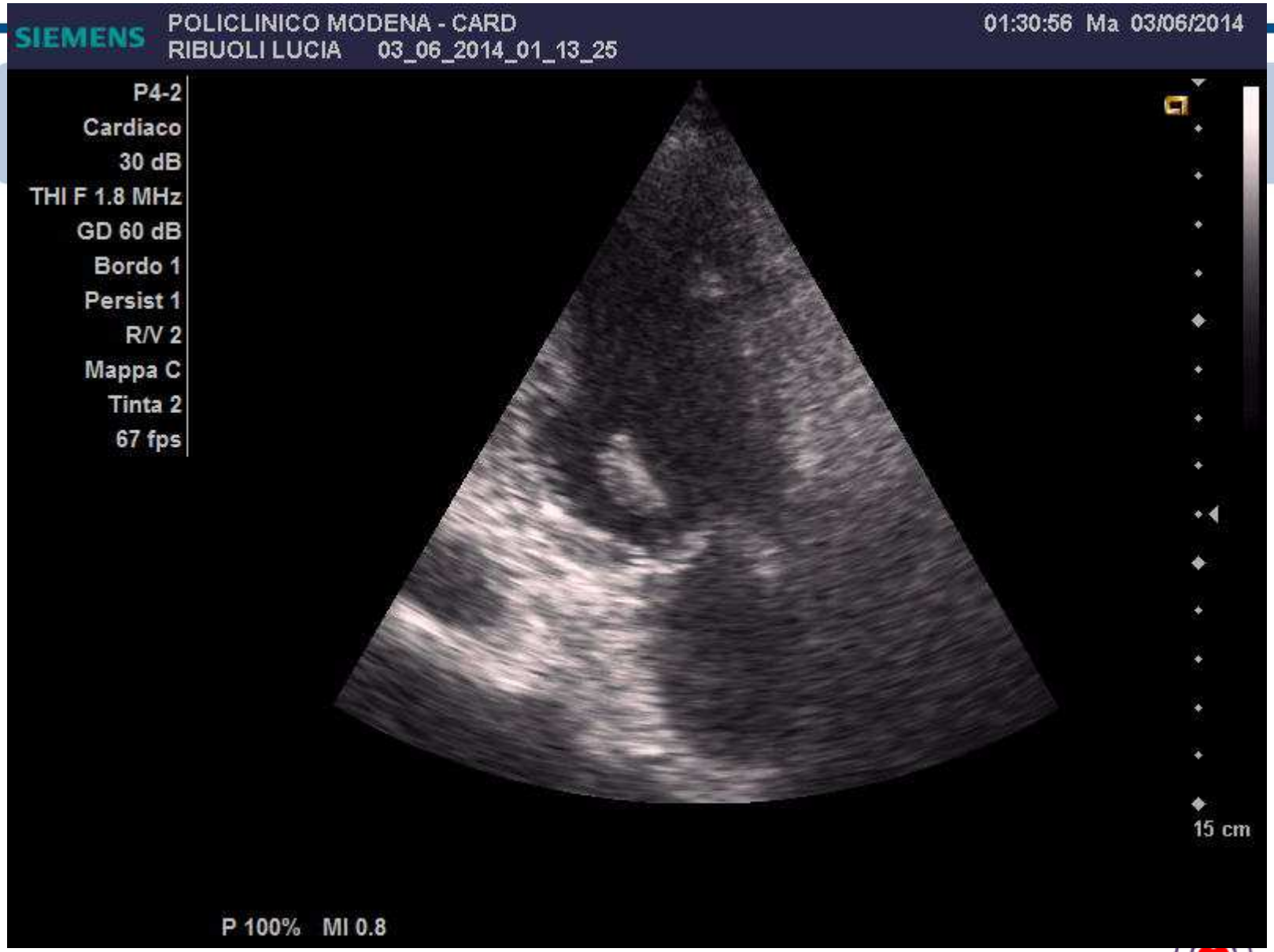
STEMI INFERIORE

Paziente in presentazione Killip IV…….


SIEMENS
POLICLINICO MODENA - CARD
RIBUOLI LUCIA 03_06_2014_01_13_25
01:31:06 Ma 03/06/2014
P4-2
Cardiaco
0 dB
2.0 MHz
3906 Hz
Filtro 2
Persist 1
R/V 2
Mappa F
Priorità 4
Uniforma 1
Flusso M
21 fps
75.2
75.2
cm/s
15 cm
P 100%
ITM 1.0 ITO 1.0

EUROPEAN RESUSCITATION

STEMI INFERIORE



ERC

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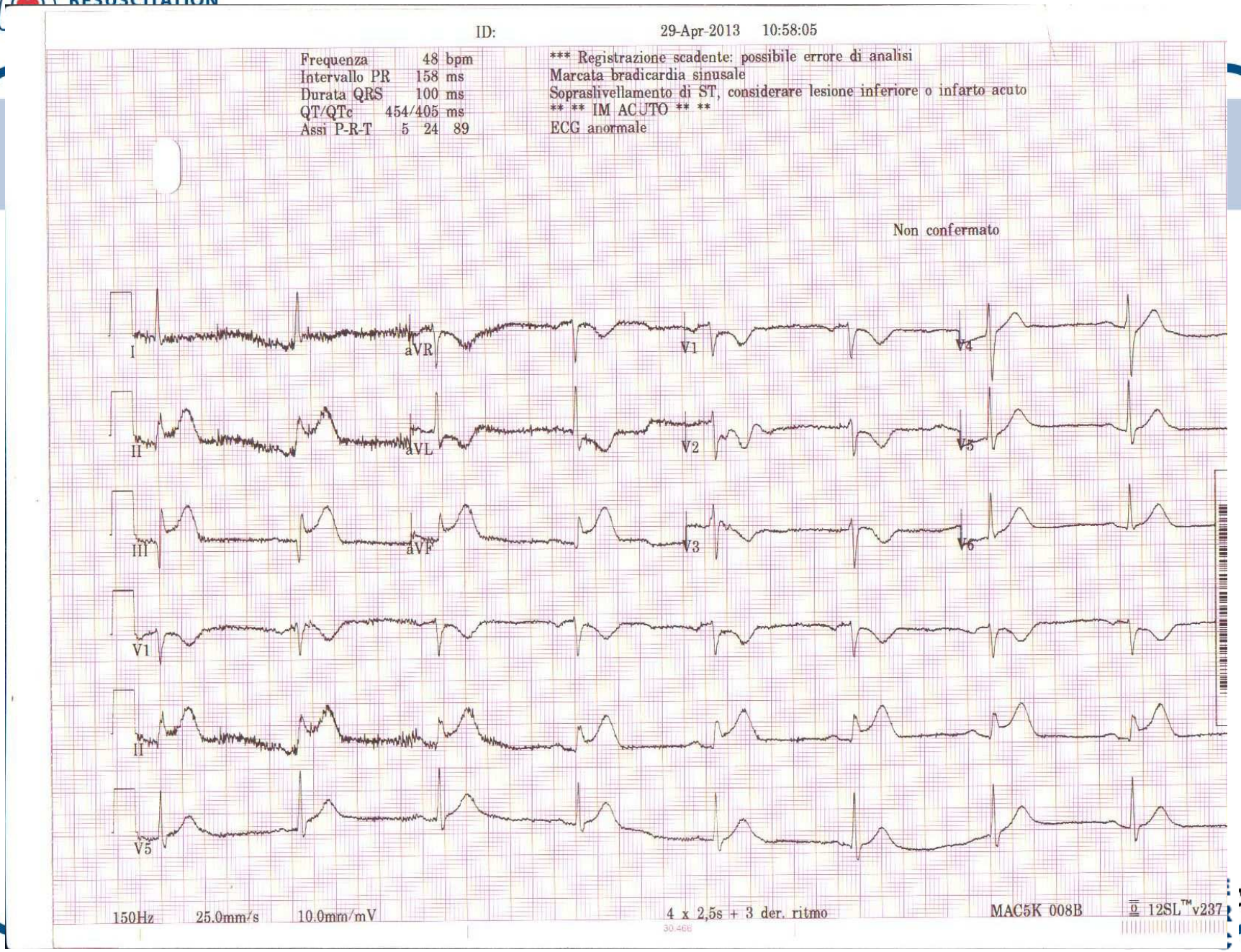
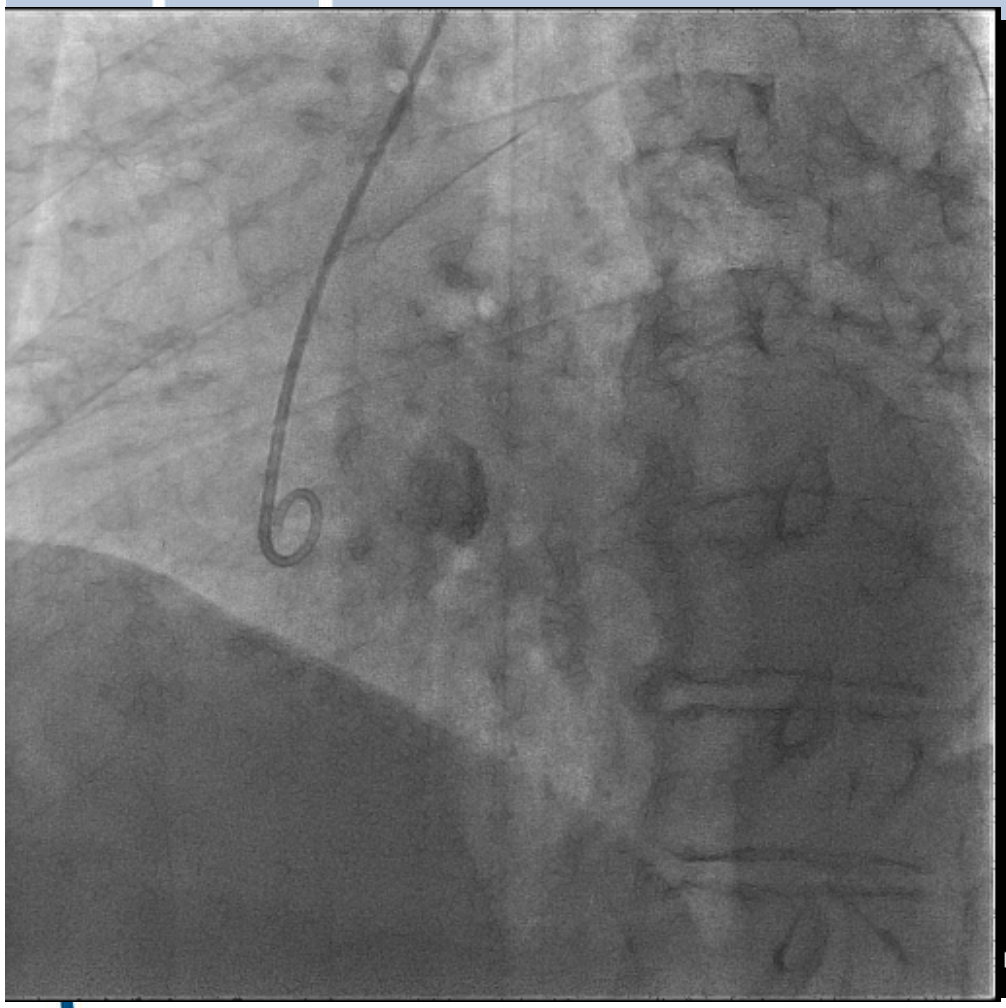
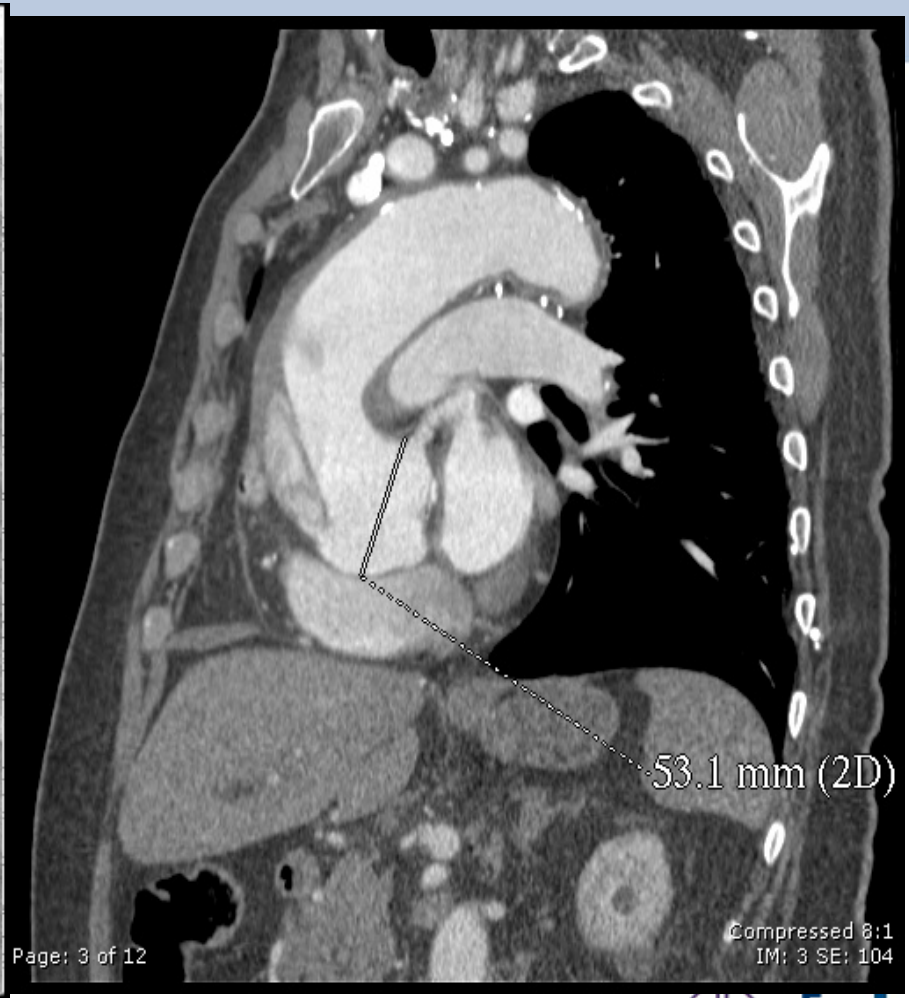
STEMI INFERIORE

Paziente in presentazione Killip IV…….


ID:
29-Apr-2013 10:58:05
Frequenza 48 bpm
Intervallo PR 158 ms
Durata QRS 100 ms
QT/QTc 454/405 ms
Assi P-R-T 5 24 89
*** Registrazione scadente: possibile errore di analisi
Marcata bradicardia sinusale
Sopraslivellamento di ST, considerare lesione inferiore o infarto acuto
** ** IM ACUTO ** **
ECG anormale
Non confermato
I
aVR
V1
V4
II
aVL
V2
V5
III
aVF
V3
V6
V1
II
V5
150Hz
25.0mm/s
10.0mm/mV
4 x 2,5s + 3 der. ritmo
MAC5K 008B
12SL™v237

Dissezione aortica





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Ruolo Ecocardiogramma

Fase iniziale

	STEMI		UA-NSTEMI	
Echocardiography may assist in making the diagnosis in uncertain cases but should not	IIb	C	Echocardiography is recommended to evaluate regional and global LV function and to rule in or rule out differential diagnoses.[d]	I	C

Dopo la rivascolarizzazione

After the acute phase		
All patients should have an echocardiography for assessment of infarct size and resting LV function,	I	B

STEMI in classe IV killip

Urgent echocardiography/Doppler must be performed to detect mechanical complications, assess systolic function and loading conditions.	I	C

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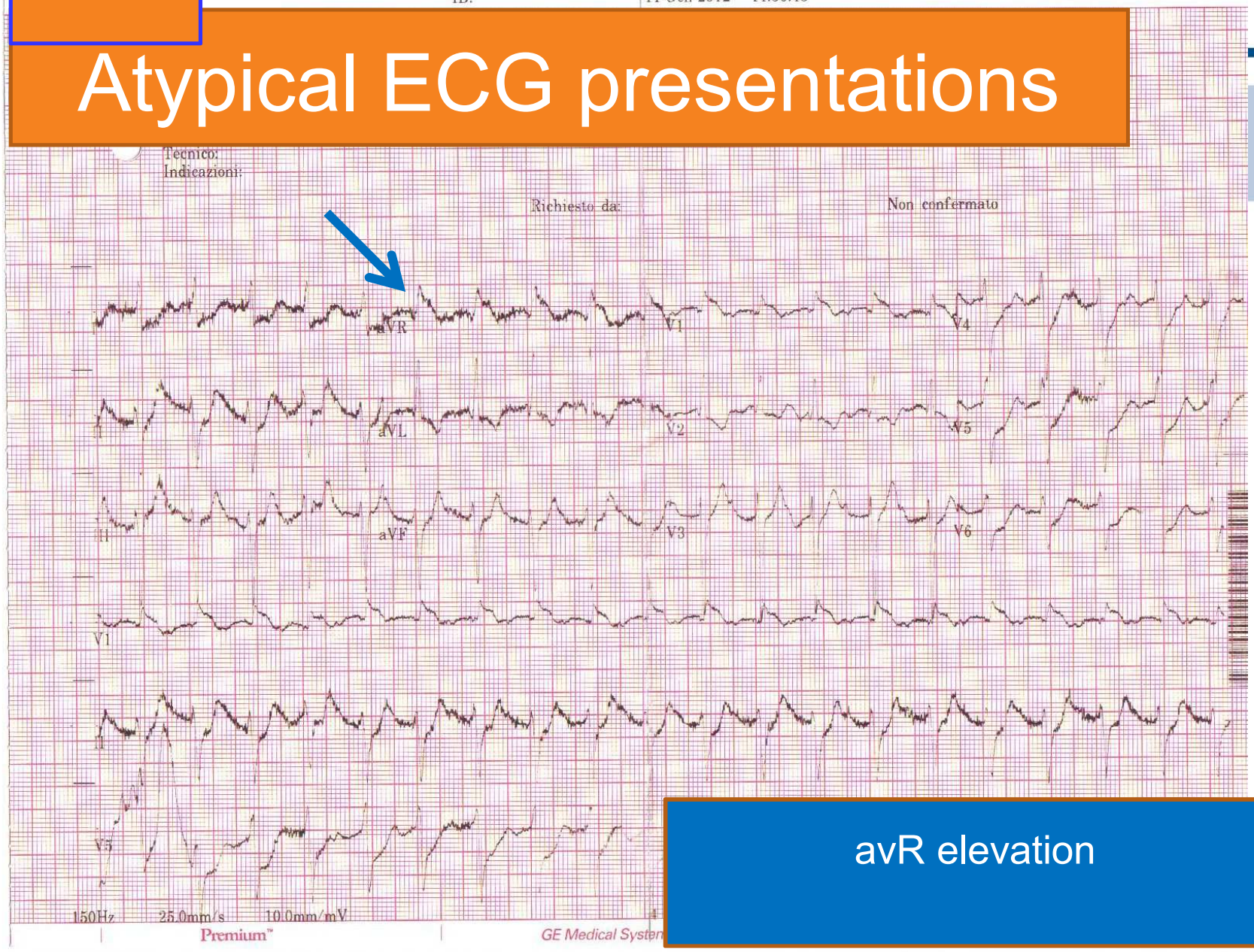
Table 5 Atypical ECG presentations that deserve prompt management in patients with signs and symptoms of ongoing myocardial ischaemia

• LBBB
• Ventricular paced rhythm
• Patients without diagnostic ST-segment elevation but with persistent ischaemic symptoms
• Isolated posterior myocardial infarction
• ST-segment elevation in lead aVR

- **Hyper-acute T waves**

Atypical ECG presentations



avR elevation

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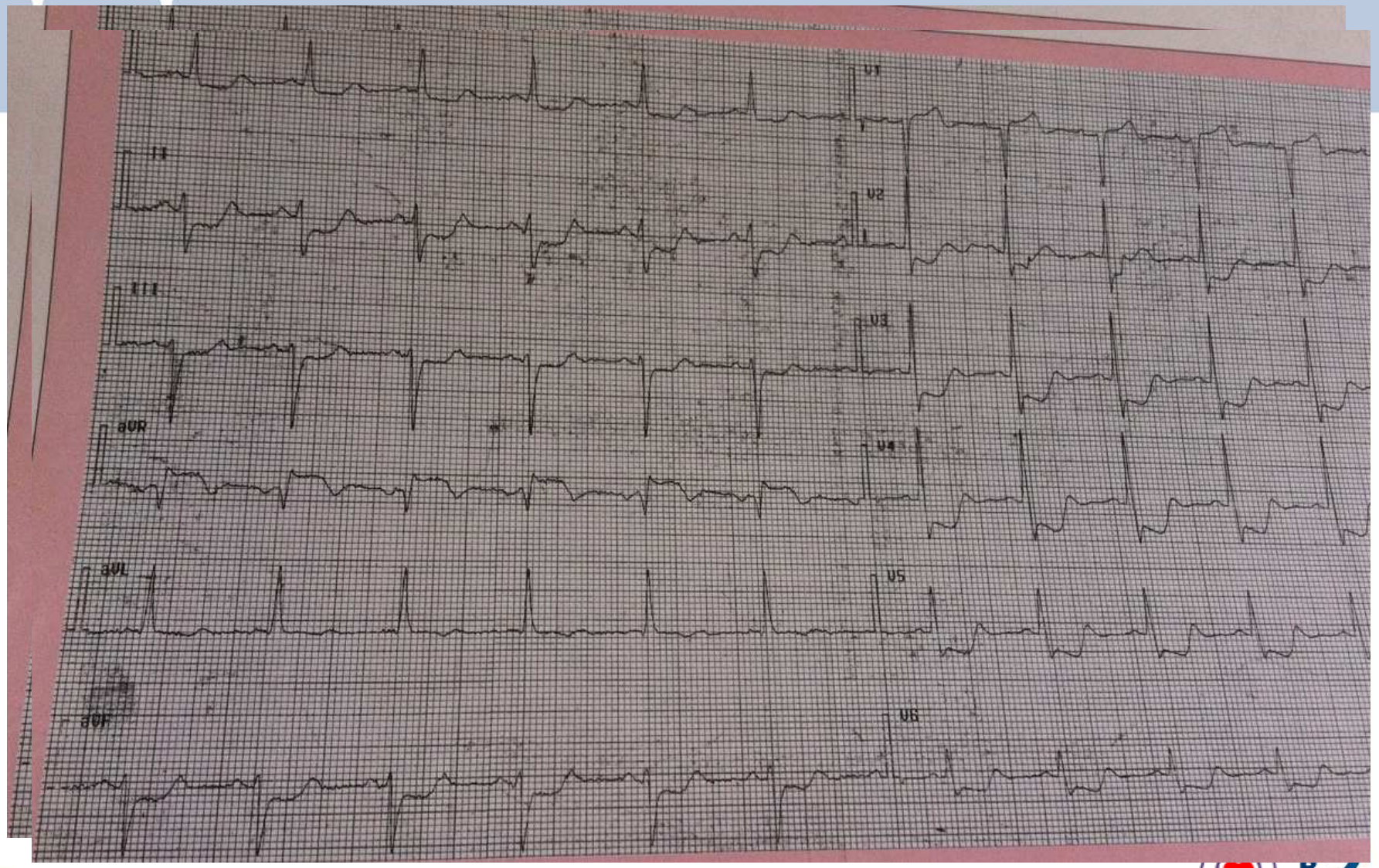
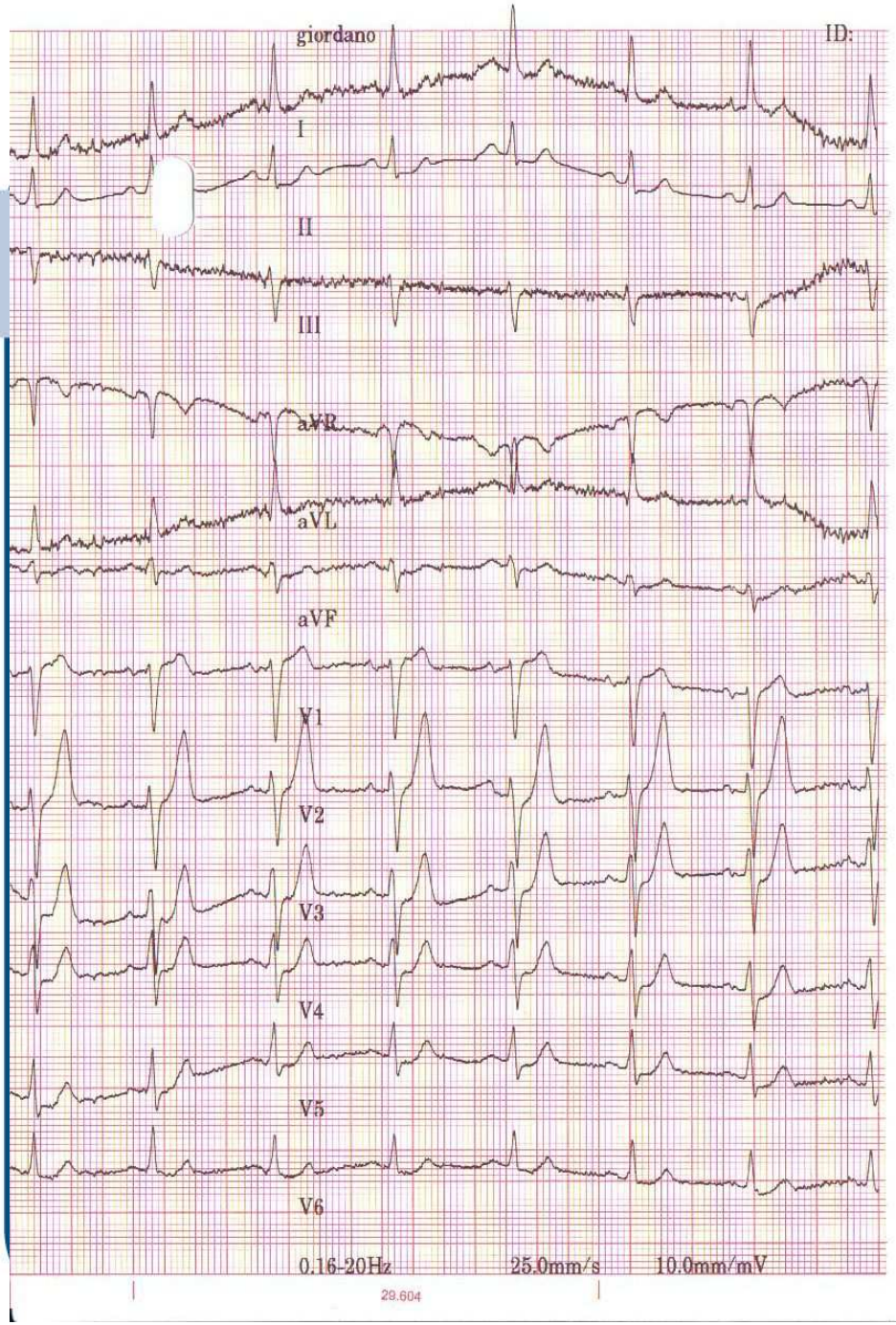
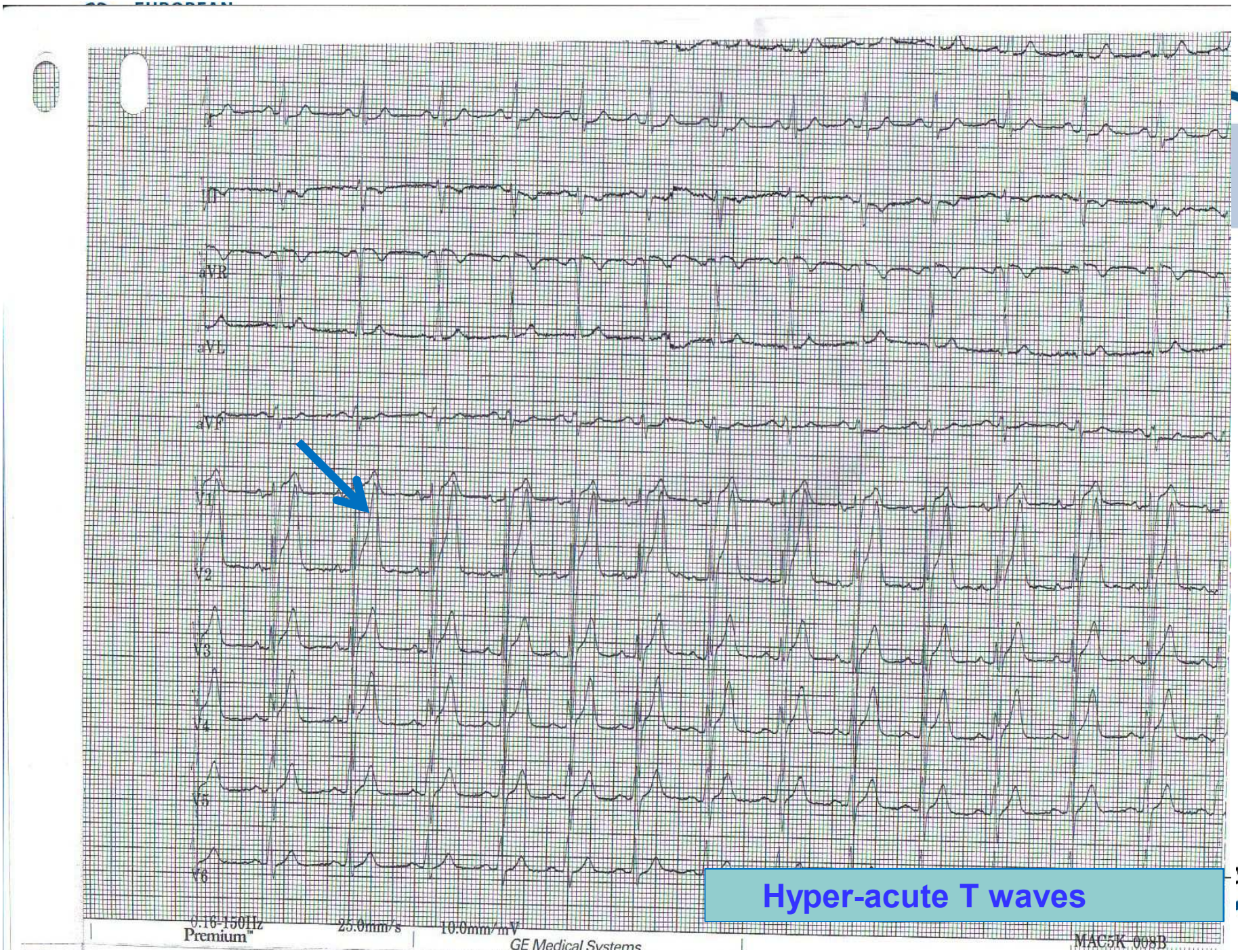




Atypical ECG presentations

Pz sesso maschile di 54 AA
Presentazione
In PS per dolore al torace persistente



Hyper-acute T waves

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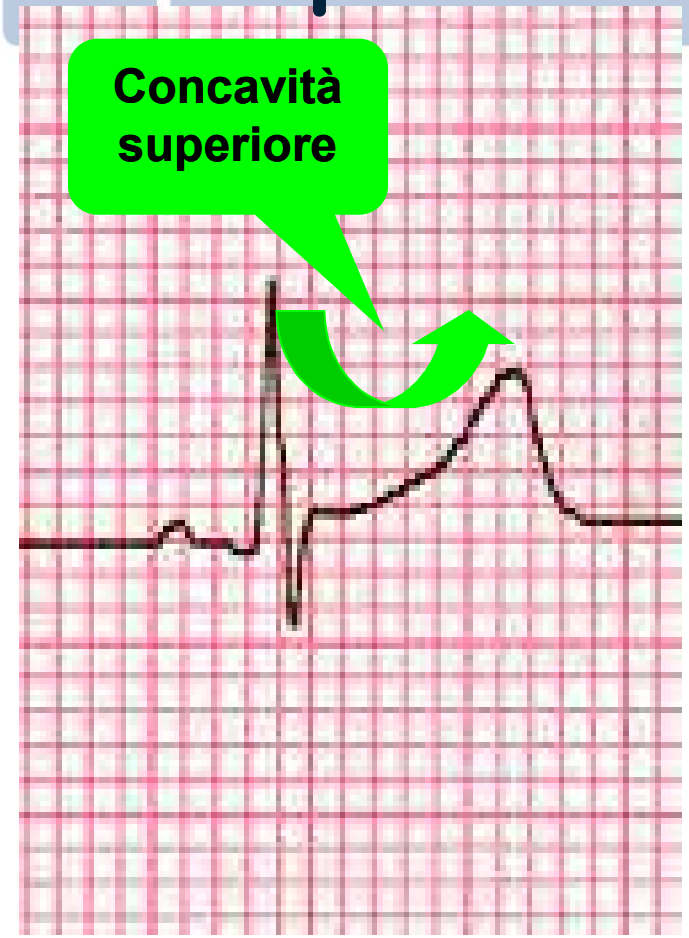
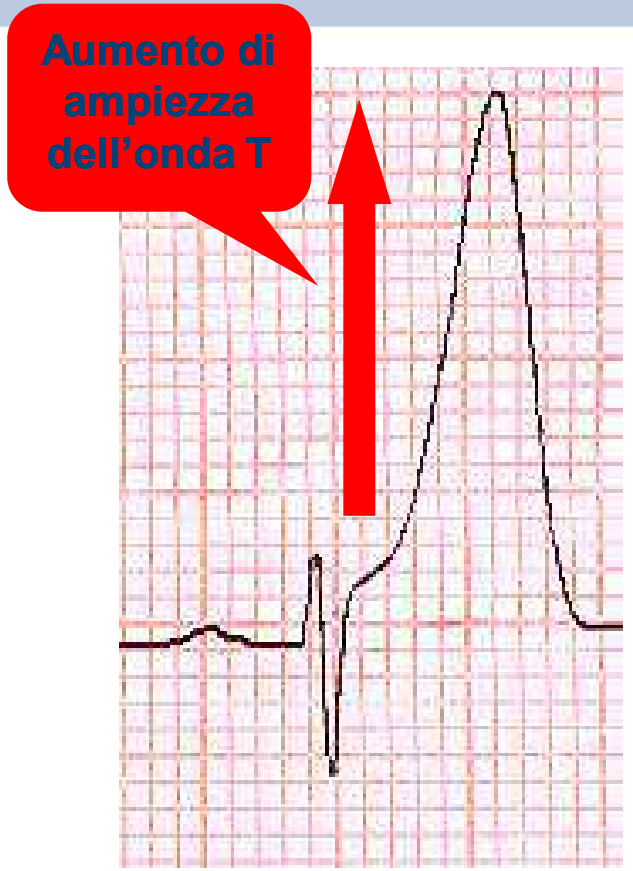
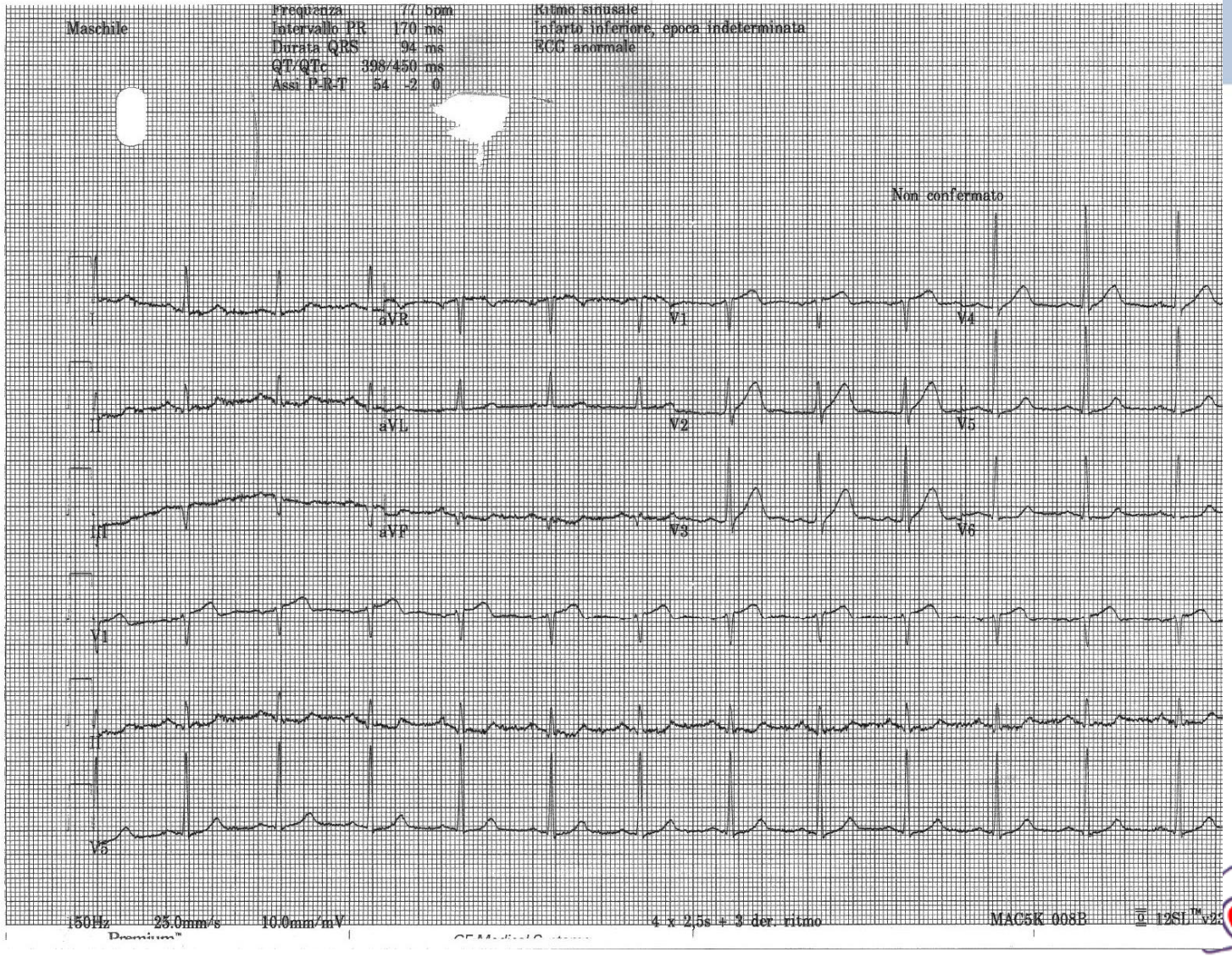
Ripolarizzazione precoce





Atypical ECG presentations

2



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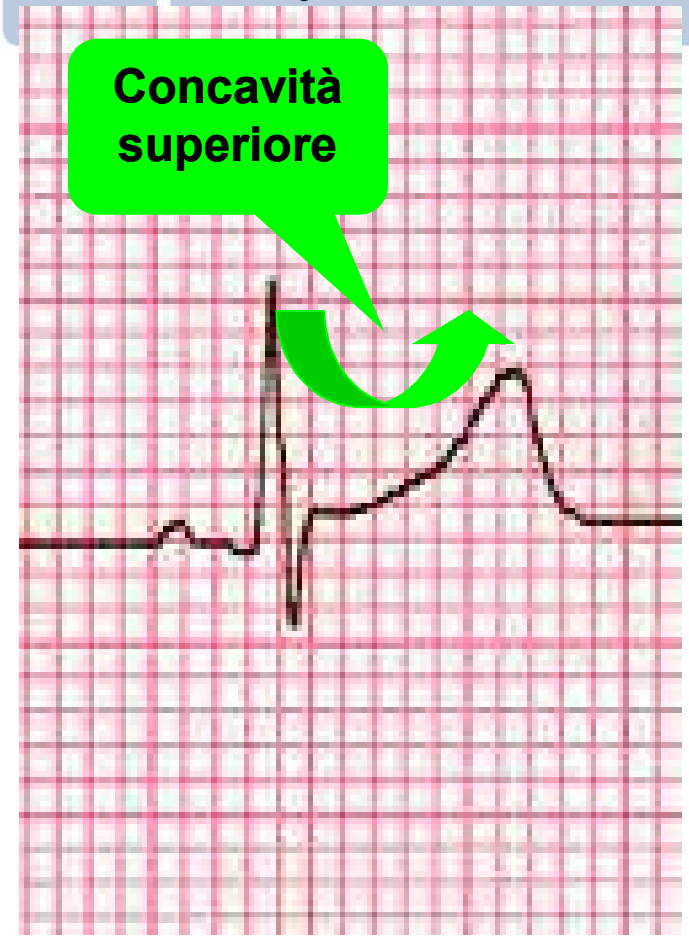
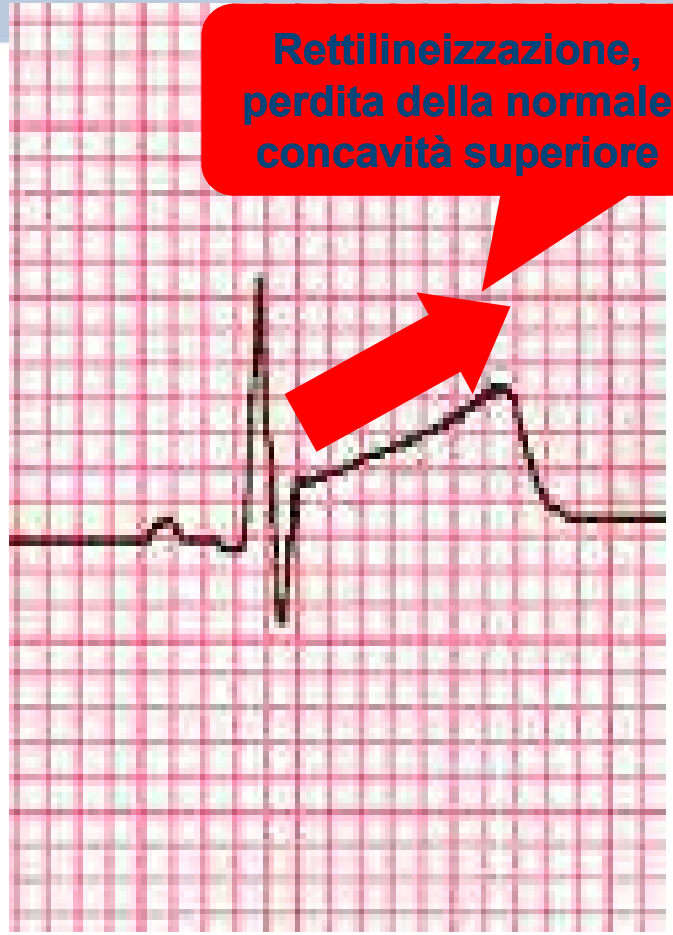
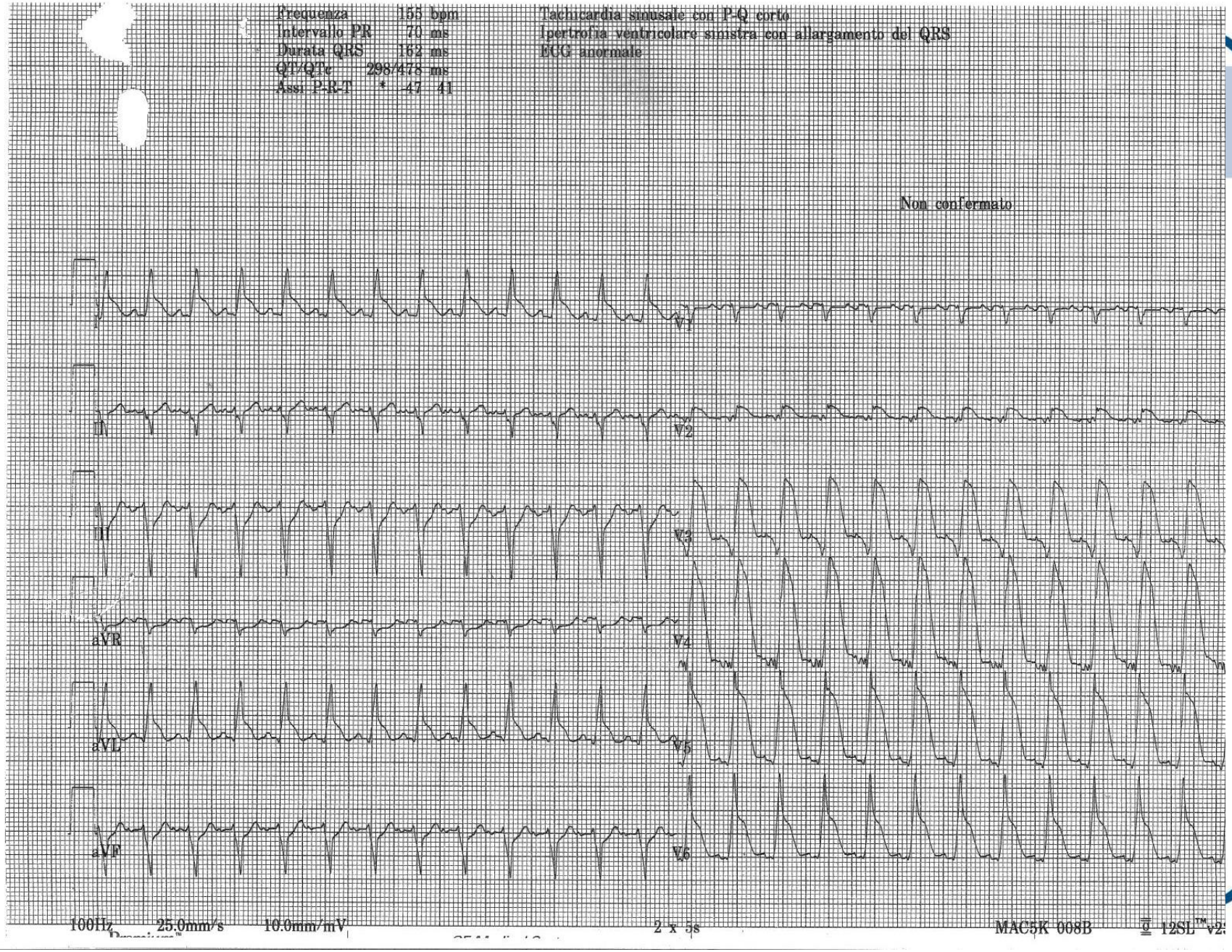
Ripolarizzazione precoce






Frequenza 155 bpm
Intervallo PR 70 ms
Durata QRS 162 ms
QT/QTc 298/478 ms
Assi P-R-T * -47 41
Tachicardia sinusale con P-Q corto
Ipertrofia ventricolare sinistra con allargamento del QRS
ECG anormale
Non confermato
I
II
III
aVR
aVL
aVF
V1
V2
V3
V4
V5
V6
100Hz
25.0mm/s
10.0mm/mV
2 x 5s
MAC5K 008B
12SL™ V2

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DOMANDE?

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CONCLUSIONI:

- Diagnosi precoce nelle SCA : attenzione alle presentazioni atipiche
- Ruolo ECG 12 derivazioni: PRECOCE,RIPETUTO (se I negativo), ruolo dell'ECG nel ROSC
- Inizia precocemente la terapia riperfusiva se indicata
- Terapia di base delle SCA

ERC

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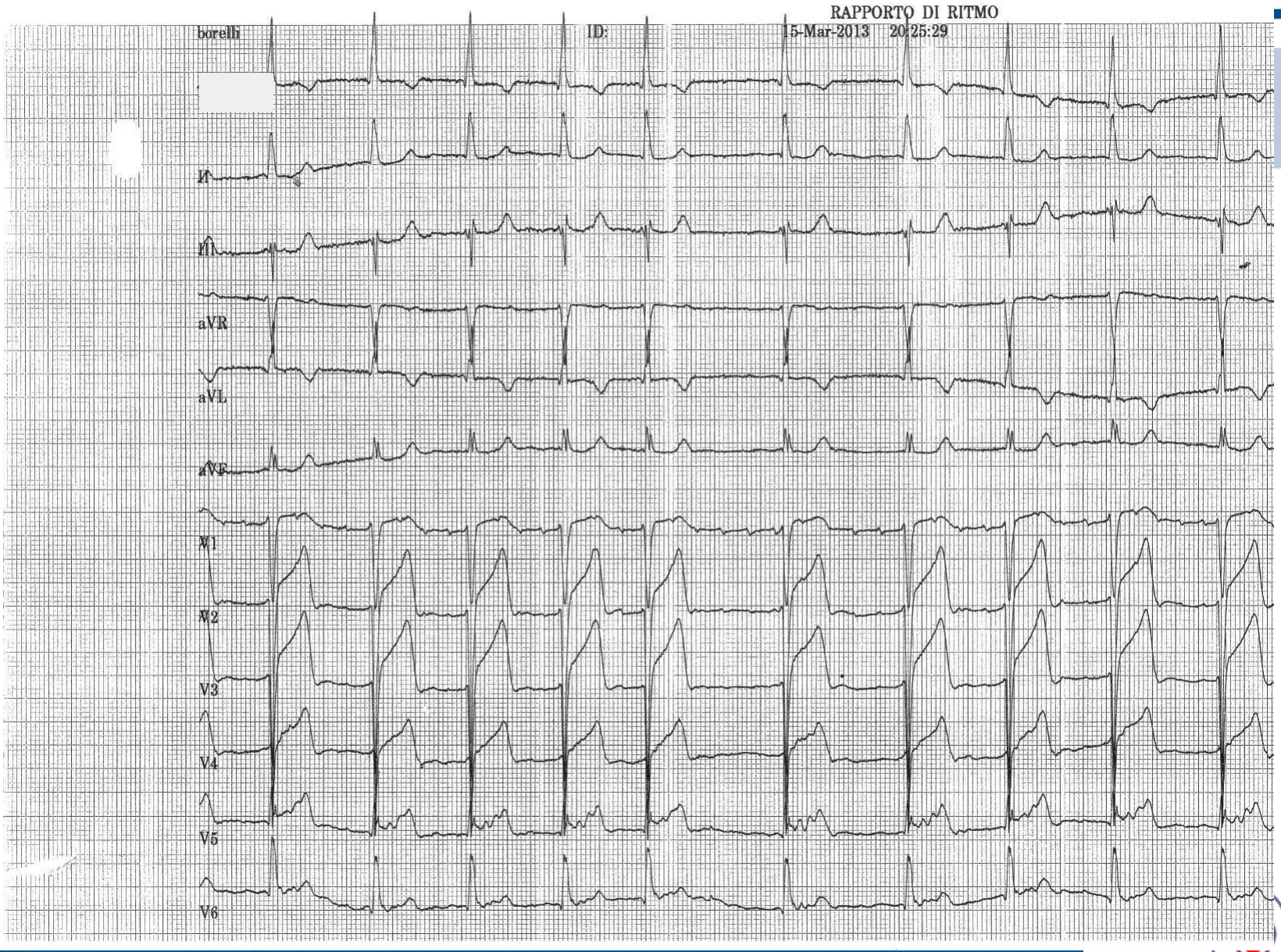
CLINICA

CLINICA

CLINICA

CLINICA

ERC


RAPPORTO DI RITMO
borelli
ID:
15-Mar-2013 20:25:29
I
II
aVR
aVL
aVF
V1
V2
V3
V4
V5
V6

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CARDIOMIOPATIA IPERTROFICA

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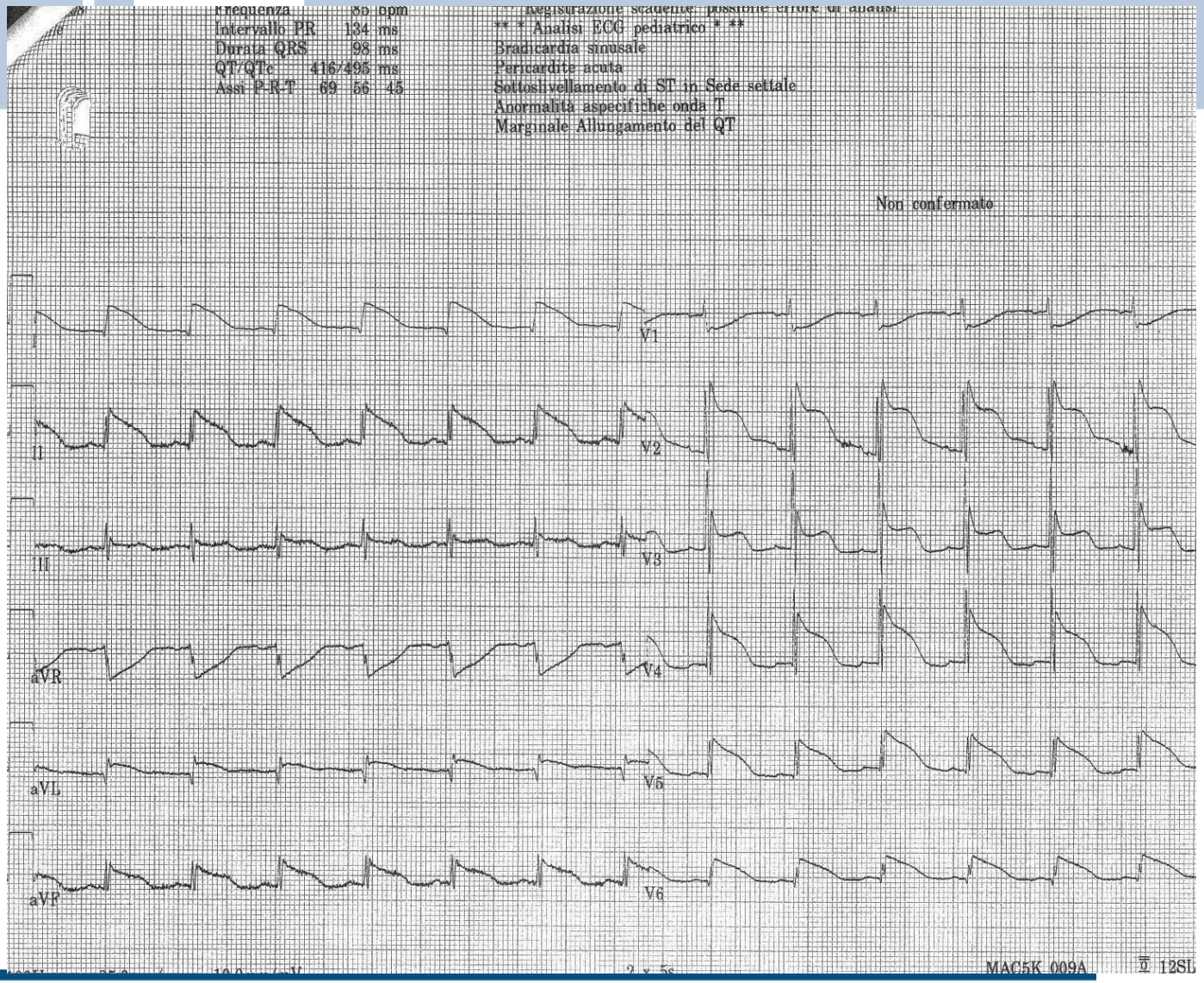

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ESA

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E
R
C

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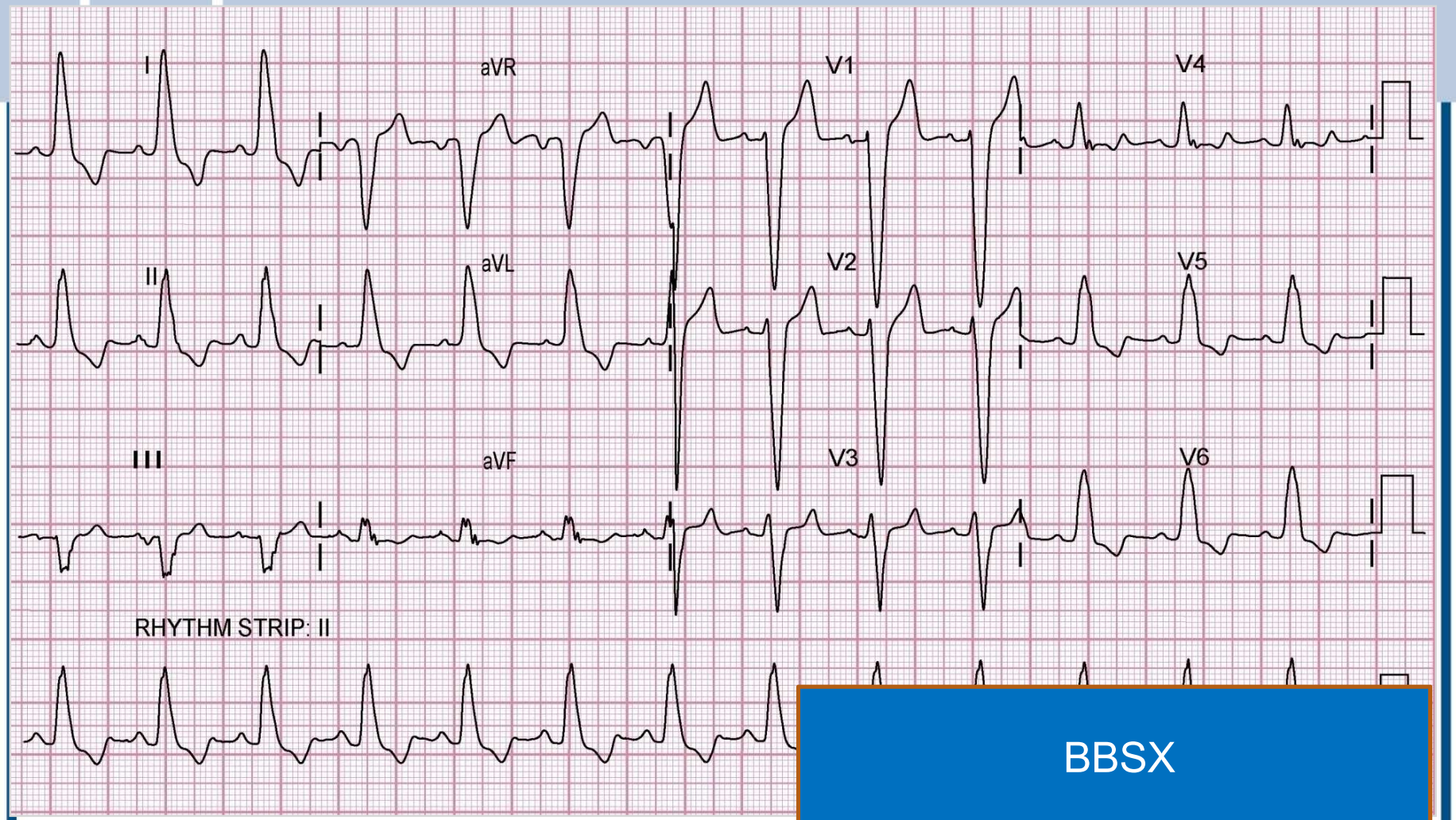

BBSX

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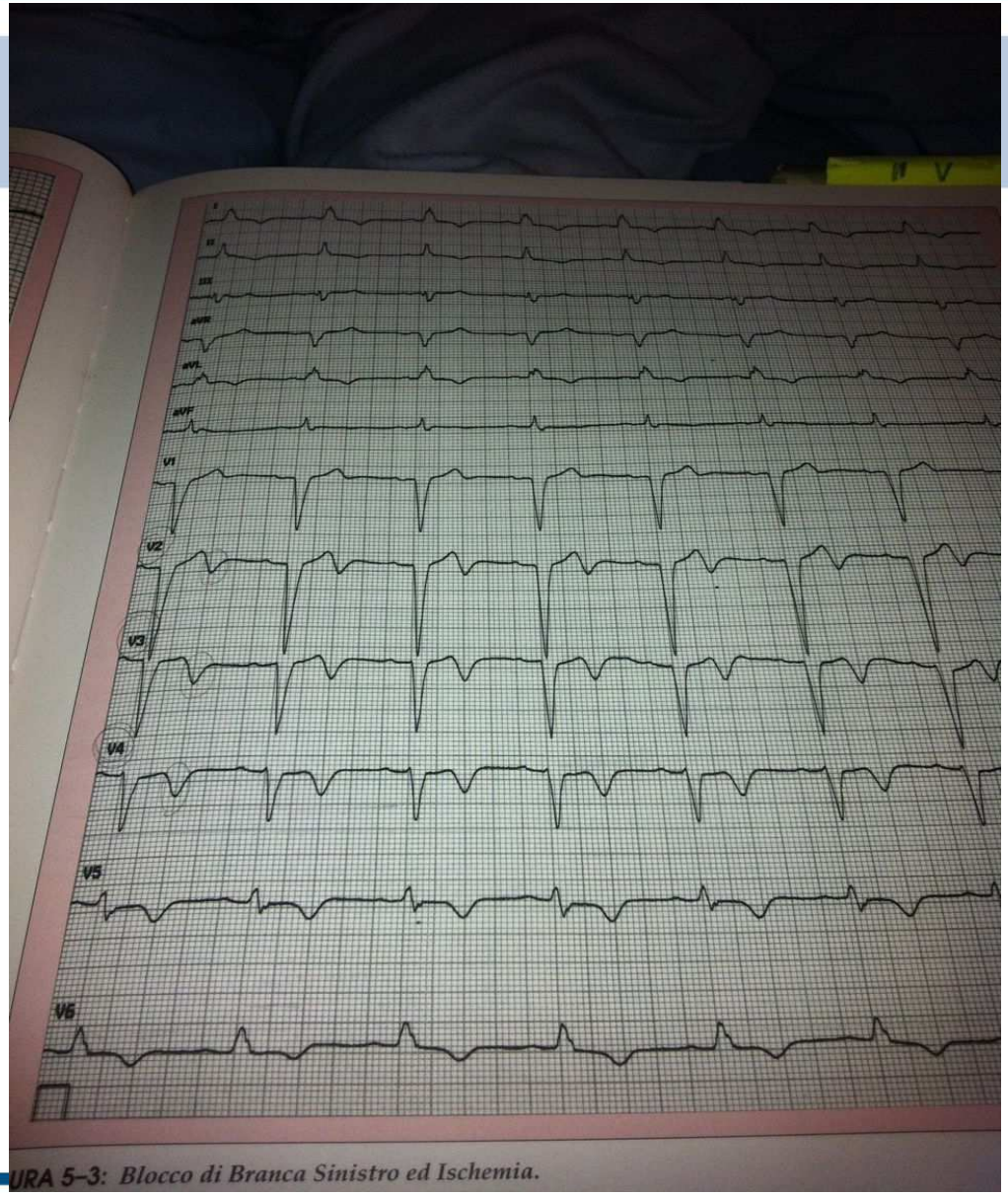
BBSX omofasico



URA 5–3: *Blocco di Branca Sinistro ed Ischemia.*