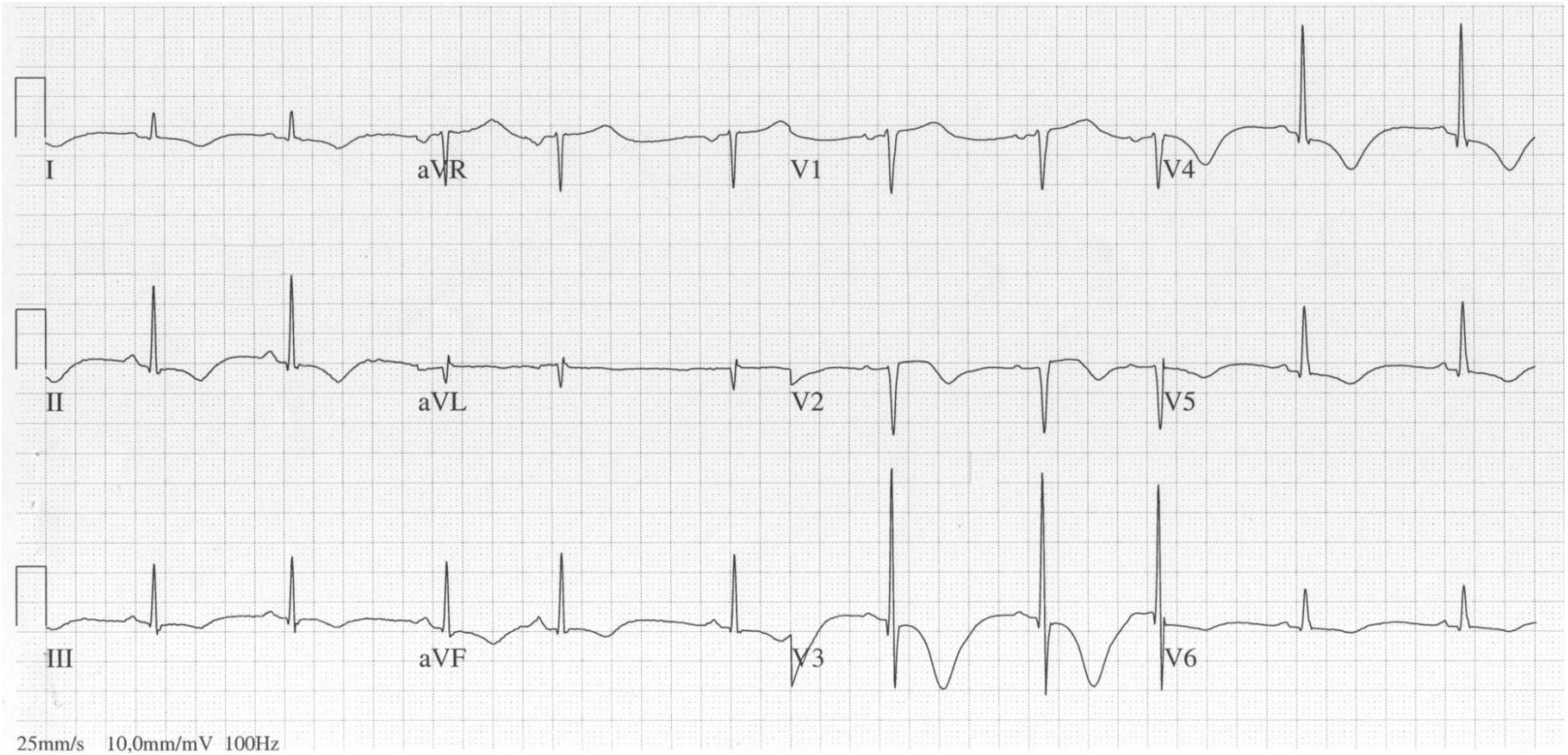
Cas clinique

- Une patiente de 64 ans; 52 kg 1m 67, est hospitalisée pour douleur thoracique constrictive qui ont débuté il y a 2 jours. Elle est dyspnéique.
- Pas de cardiopathie connue. DNID. Tabagique.
- Trt antidépresseurs et neuroleptiques depuis 3 ans
- Elle a perdu son époux il y a 3 jours.
- Il existe de discrets crépitants aux 2 bases.
- L'ECG est le suivant:


I
aVR
V1
V4
II
aVL
V2
V5
III
aVF
V3
V6
25mm/s 10,0mm/mV 100Hz

1ère Question

A) C’est un SCA ST-

J’adapte la CAT sur un SCA

B) C’est un Tako-tsubo

Je ne met pas en route de trt AAP

C) C’est possiblement un Tako-tsubo

Mais je fais comme pour un SCA.

D) Cà n’est ni un Tako-tsubo ni un SCA

C’est un trouble métabolique sévère.

Tako-tsubo = >> 2% des urgences “coronariennes”.

Mais ne peut être confirmé qu’après exclusion d’une coronaropathie

Donc même si doute: traîter comme un SCA

Takotsubo: critères diagnostic Mayo-Clinic

4 critères qui doivent être tous présents

Akinésie/dyskinésie des segments apicaux et moyens avec des anomalies de cinétiques s'étendant au delà de la distribution vasculaire d'une seule coronaire

Absence de lésions coronaires

Modifications ECG nouvelles

Absence de trauma cérébral récent, de saignement intracranien, de phéochomocytome de myocardite de de CMH

2eme Question

La perte d’un proche est évocatrice d’un Takotsubo

A) OUI

B) NON

Tako-tsubo: Facteurs déclenchants

Stress Emotionel	Stress Physique
Décès ou maladie grave d'un proche	Exacerbation d'une maladie
Divorce, Dispute, colère	Procédures invasives
Attaque à main armée, vol	Asthme, PNX
Perte financière/ Perte d'emploi	Douleur intense
Accident de voiture	Excercice physique intense
Fête surprise	ETT de stress
Prise de parole	Prise de cocaine
Perte au jeu/Gain au jeu	Crise d'epilepsie
Catastrophe naturelle	Anesthésie générale
Rapport sexuel	Anaphylaxie
Enfermé dans un endroit étroit	

Risk of Acute Myocardial Infarction After the Death of a Significant Person in One's Life

The Determinants of Myocardial Infarction Onset Study

Elizabeth Mostofsky, MPH, ScD; Malcolm Maclure, ScD; Jane B. Sherwood, RN; Geoffrey H. Tofler, MD; James E. Muller, MD; Murray A. Mittleman, MD, DrPH

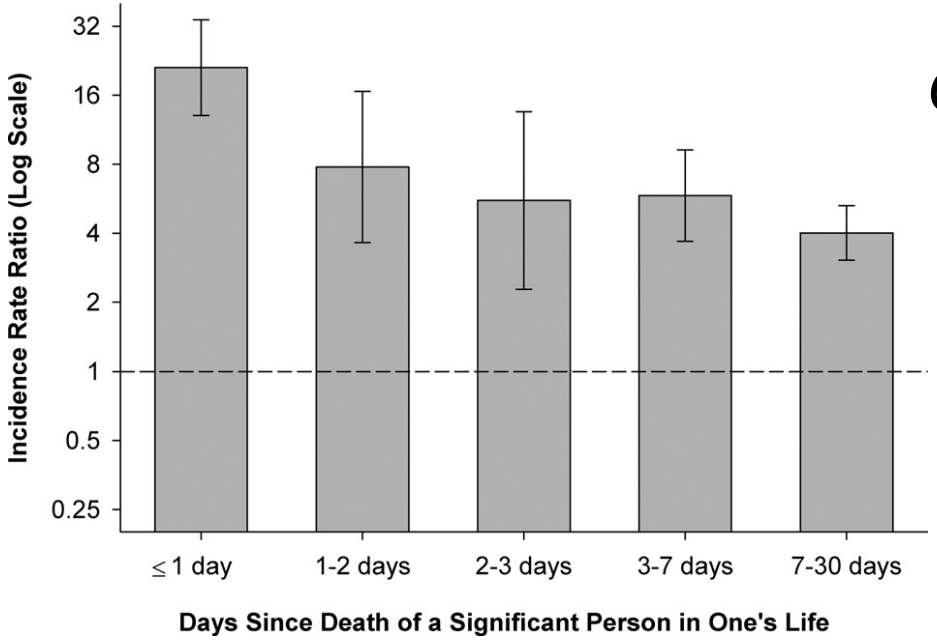


Figure. Time of onset of acute myocardial infarction (MI) after the loss of a significant person in one's life. Each of the hazard periods before MI onset was assessed as an independent hazard period, and each window was compared with exposure during the control period of 1 to 6 months. Error bars indicate the 95% confidence limits; dashed line indicates baseline risk.

Circulation. 2012;125:491-496

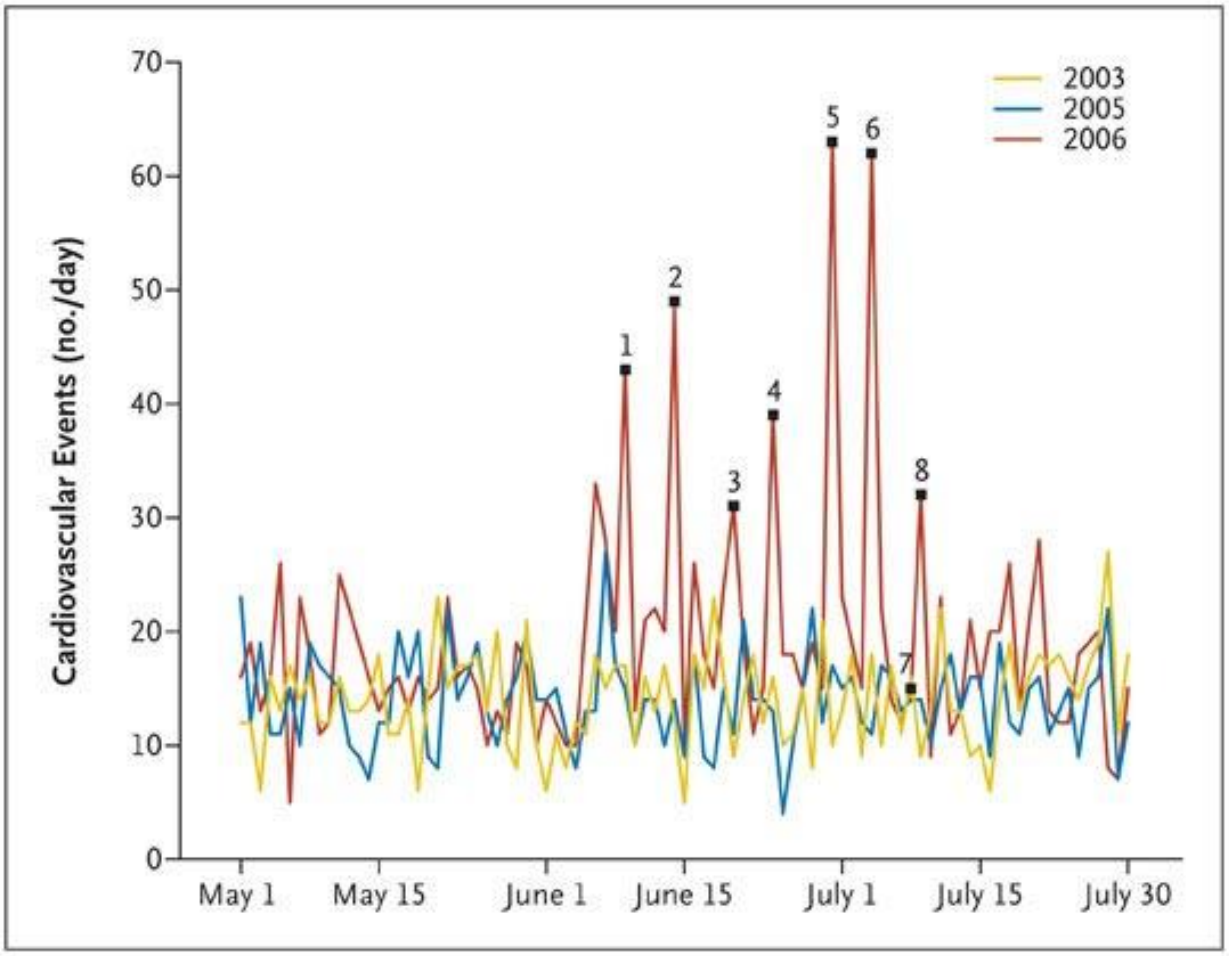
Circulation
JOURNAL OF THE AMERICAN HEART ASSOCIATION

A moins que ça ne soit des Takotsubo….

Cardiovascular Events during World Cup Soccer

Ute Wilbert-Lampen et al

N Engl J Med Volume 358(5):475-483 January 31, 2008



Wilbert-Lampen U et al. N Engl J Med 2008;358:475-483


Gagner
delargentfacile
À l'ordre de : le chanceux
N° :12588
DATE : juillet 2011
*** Dix Milles Euros ***
10,000.00 €
5468643516


SCIENCEphotoLIBRARY


Gagner
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À l'ordre de : le chanceux
N° :12588
DATE : juillet 2011
*** Dix Milles Euros ***
10,000.00 €
5468643516


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Il a des jours de chance !!

3ème Question

La prise d'antidépresseurs et/ou neuroleptiques est un élément qui doit ou peut orienter vers un Tako-Tsubo ?

A) OUI

B) NON

Troubles de l'humeur et Takotsubo

Anxiodepressive Disorders and Chronic Psychological Stress Are Associated With Tako-Tsubo Cardiomyopathy

– New Physiopathological Hypothesis –

Clément Delmas, MD; Olivier Lairez, MD, PhD; Emmanuel Mulin, MD; Thomas Delmas, PhD; Nicolas Boudou, MD; Nicolas Dumonteil, MD; Caroline Biendel-Picquet, MD; Jérôme Roncalli, MD, PhD; Meyer Elbaz, MD, PhD; Michel Galinier, MD, PhD; Didier Carrié, MD, PhD

Table 3. Psychiatric Diagnosis vs. Presence of TTC

Psychiatric status	TTC (n=45), n (%)	ACS (n=50), n (%)	P-value
Psychiatric diagnosis (MINI)			
Current and/or past MDD	33 (73)	13 (26)	<0.001
Current major depressive disorder	24 (53)	9 (18)	<0.001
Past major depressive disorder	24 (53)	11 (22)	0.002
Generalized anxiety disorders	12 (26)	3 (6)	0.01

MDD, major depressive disorder; MINI, Mini International Neuropsychiatric Interview. Other abbreviations as in Table 1.

Troubles de l'humeur et Takotsubo

Prevalence of psychiatric disorders in tako-tsubo cardiomyopathy:

Doyen D et al. **Eur Heart J 2012**

	Tako-Tsubo (n=70)	SCA (n=53)	p
ATCD psychiatriques	**64%**	**28%**	**0.001**

4ème Question

De façon générale, quelle est l'anomalie ECG la moins plausible avec un Tako-Tsubo?

A) Des ondes T négatives en antérieur
B) Des ondes T négatives en Inférieur
C) Un sus décalage ST en Antérieur
D) Un sous décalage ST en Antérieur
E) Un QT long

Eitel I et al. JAMA 2011;306:277-286 (256 pts)

Anomalies ECG	
Sus décalage ST	**42%**
Inversion T	**38%**
Sous décalage ST	**2%**

ECG du Tako-Tsubo

Ça peut ressembler à un ST+ antérieur → **Mais pas de miroir**

ECG du Tako-Tsubo

Ça peut ressembler à un ST+ antérieur	**➔ Mais pas de miroir**
Ça peut ressembler à une menace IVA	**➔ Mais T négatives diffuses**

ECG du Tako-Tsubo

Ça peut ressembler à un ST+ antérieur	**➔ Mais pas de miroir**
Ça peut ressembler à une menace IVA	**➔ Mais T négatives diffuses**
Ça peut ressembler à une myocardite	**➔ Mais il y a des ondes Q**

ECG du Tako-Tsubo

Ça peut ressembler à un ST+ antérieur	**➔ Mais pas de miroir**
Ça peut ressembler à une menace IVA	**➔ Mais T négatives diffuses**
Ça peut ressembler à une myocardite	**➔ Mais il y a des ondes Q**
Ça peut ressembler à un péricarde au début	**➔ Mais pas de sous décalage PQ**

ECG du Tako-Tsubo

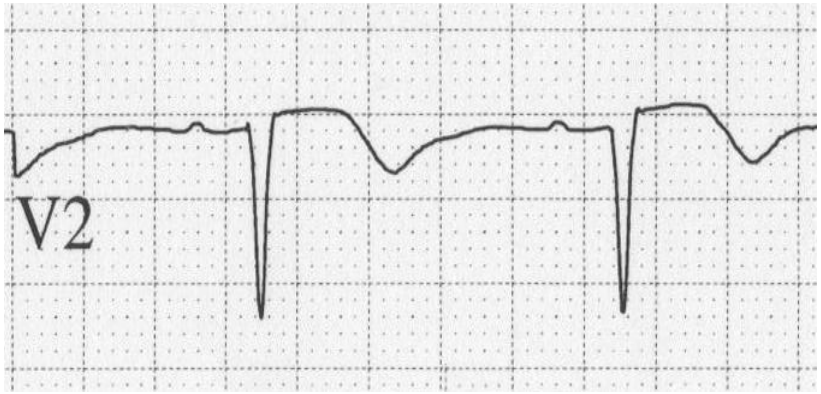
Ça peut ressembler à un ST+ antérieur	**➔ Mais pas de miroir**
Ça peut ressembler à une menace IVA	**➔ Mais T négatives diffuses**
Ça peut ressembler à une myocardite	**➔ Mais il y a des ondes Q**
Ça peut ressembler à un péricarde au début	**➔ Mais pas de sous décalage PQ**
Ça peut ressembler à une sequelle septale	**➔ Mais l'onde Q disparaît**

ECG du Tako-Tsubo

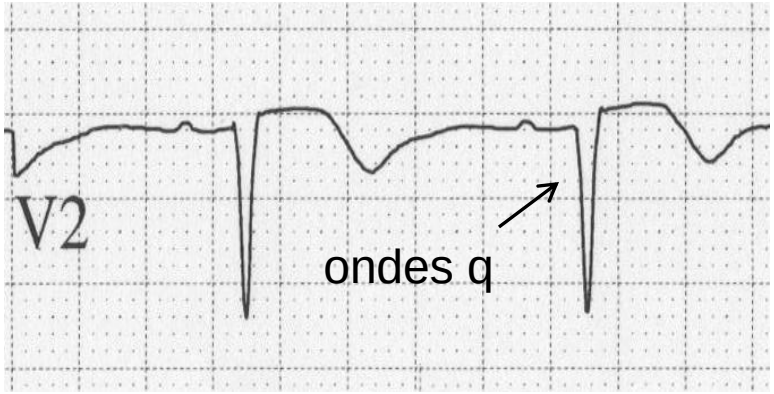
Ça peut ressembler à un ST+ antérieur	**➔ Mais pas de miroir**
Ça peut ressembler à une menace IVA	**➔ Mais T négatives diffuses**
Ça peut ressembler à une myocardite	**➔ Mais il y a des ondes Q**
Ça peut ressembler à un péricarde au début	**➔ Mais pas de sous décalage PQ**
Ça peut ressembler à une sequelle septale	**➔ Mais l'onde Q disparaît**
Ça peut ressembler à rien du tout	**➔…C'est très caractéristique**

Takotsubo: ECG

Sus-décalage ST antérieur minime



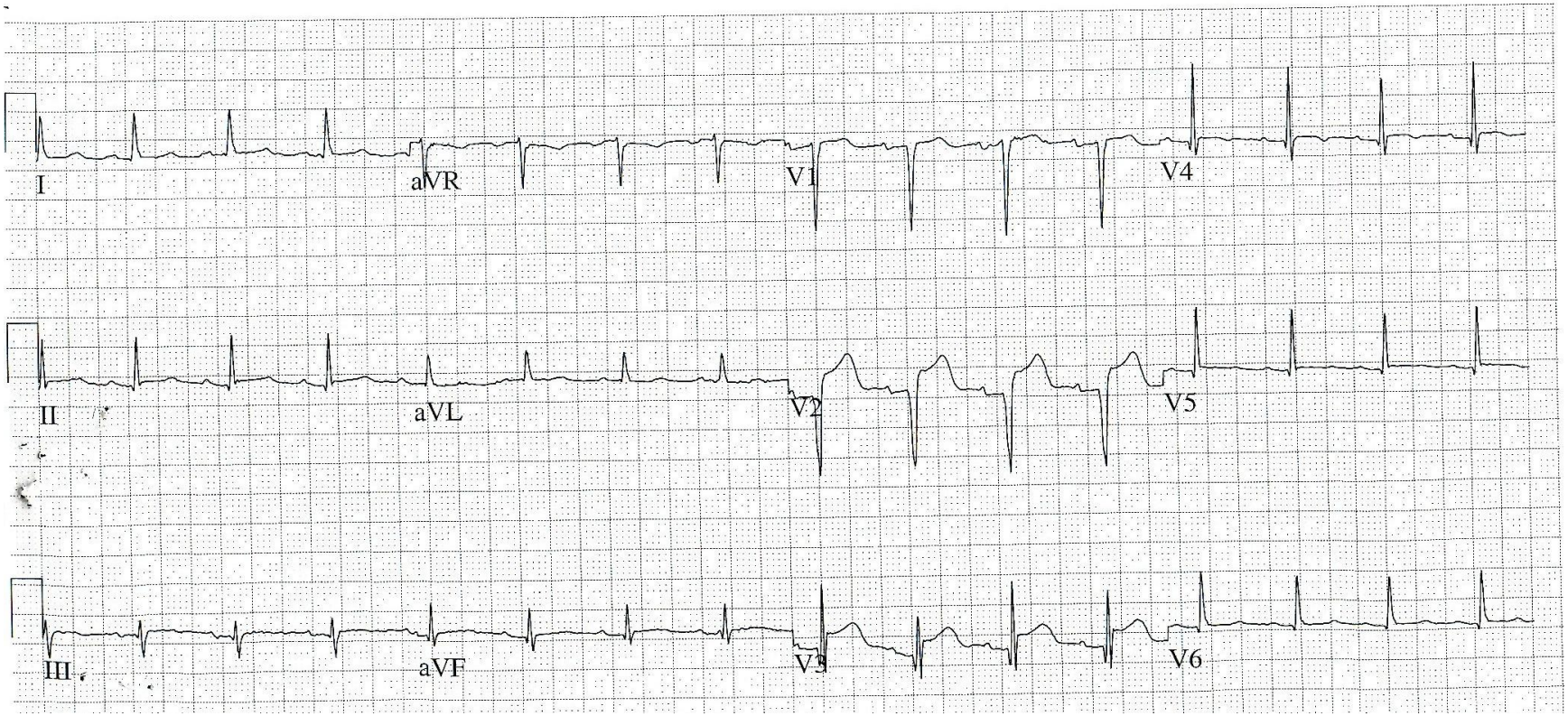
Ondes q antérieures



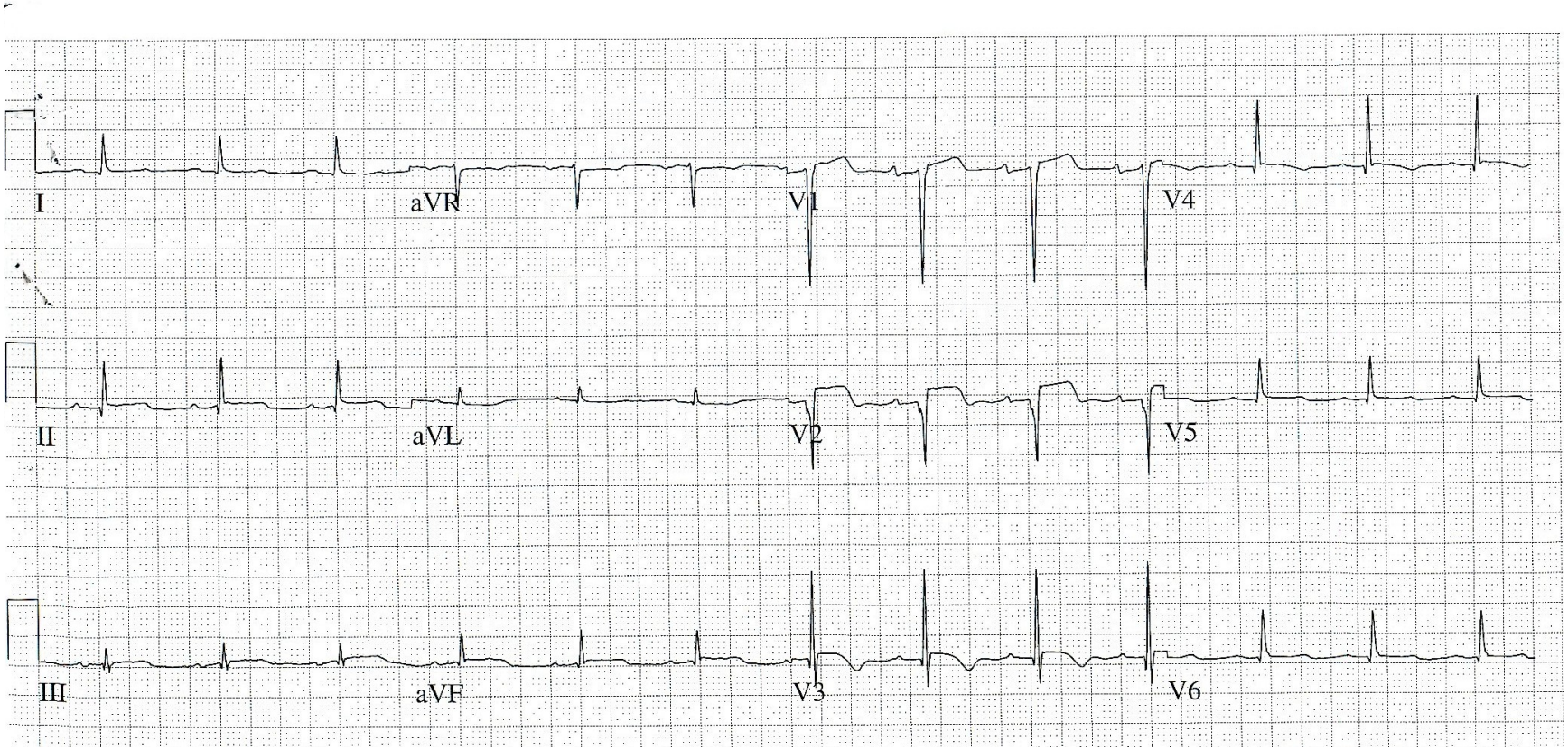
Ondes T négatives profondes

QT allongé

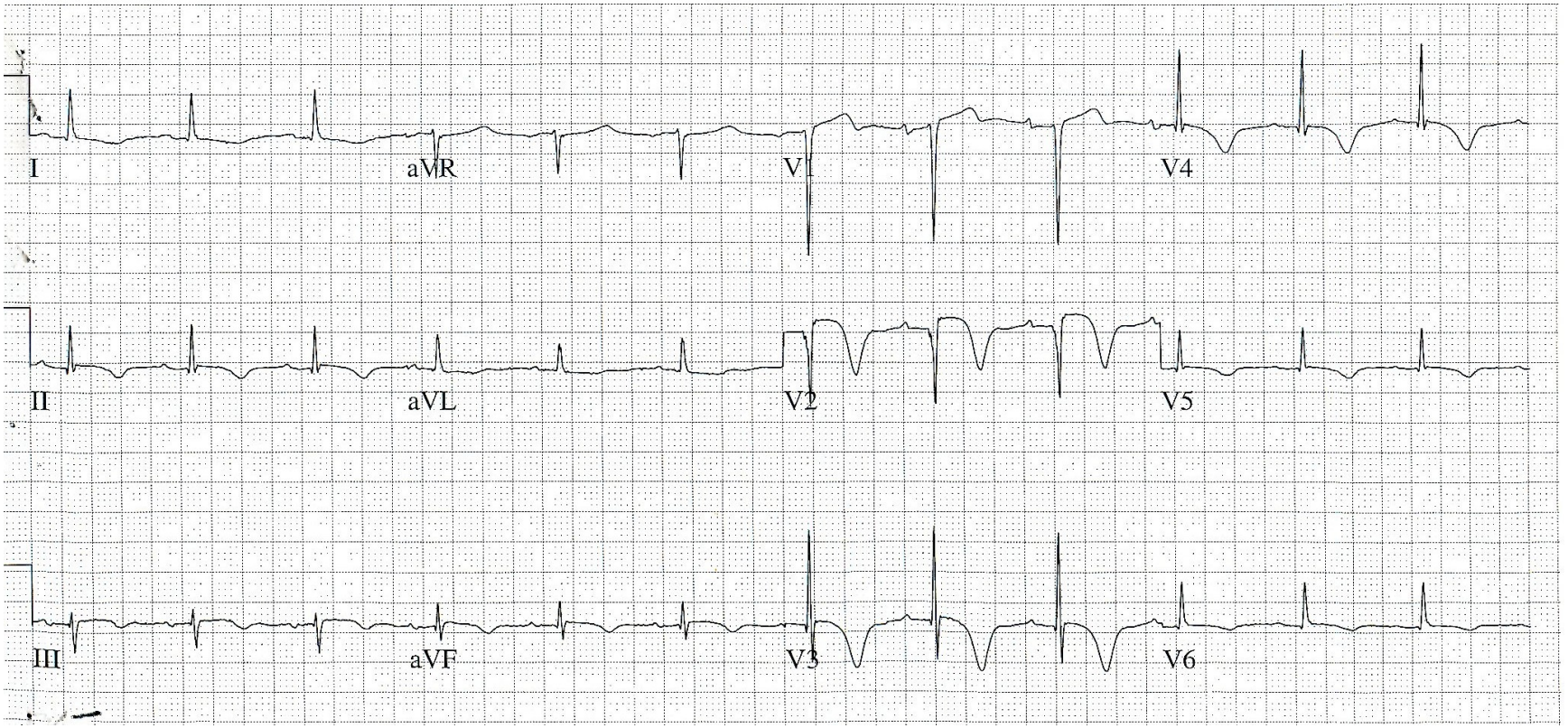
Mme G **20 Juin 2009** H0



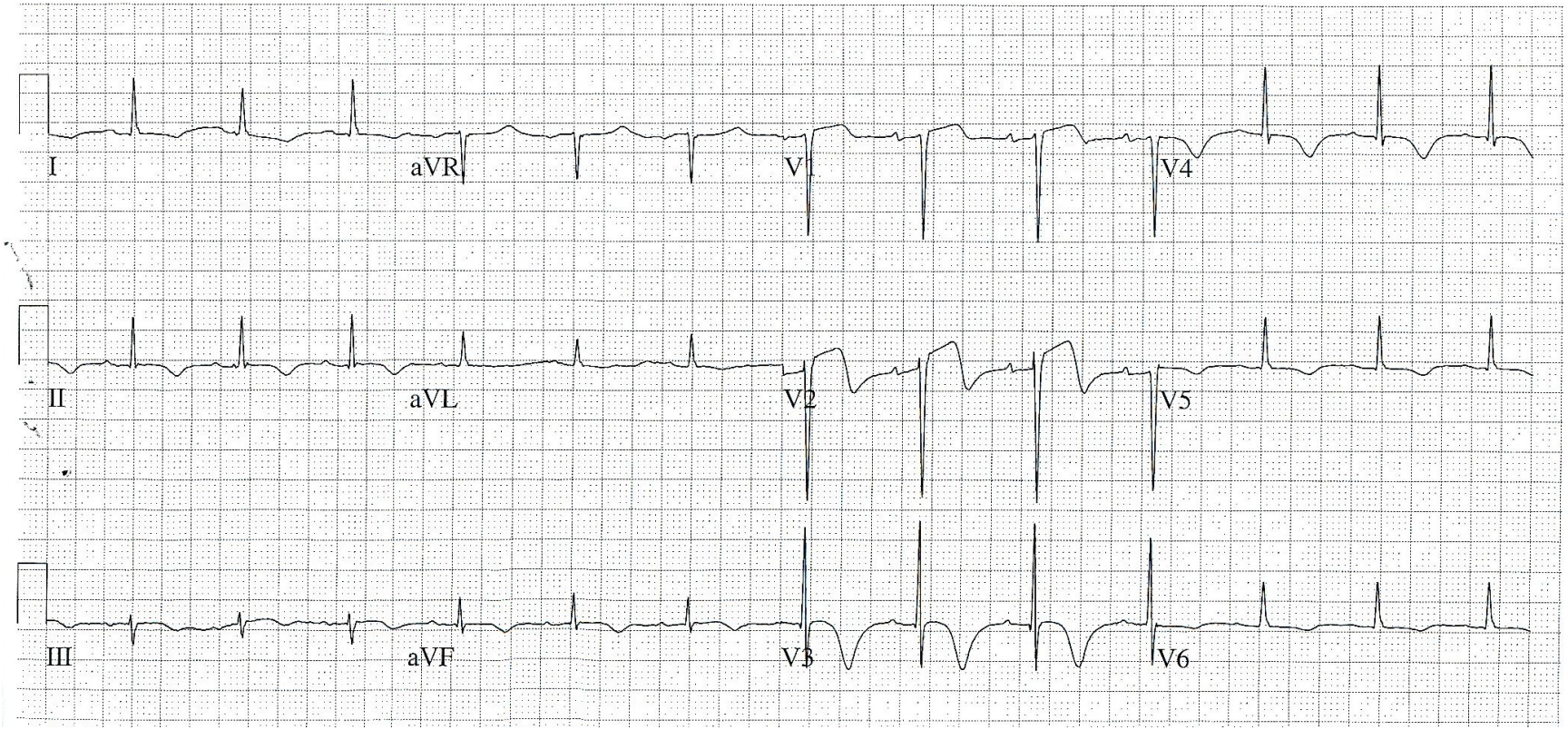
Mme G **20 Juin 2009** H20



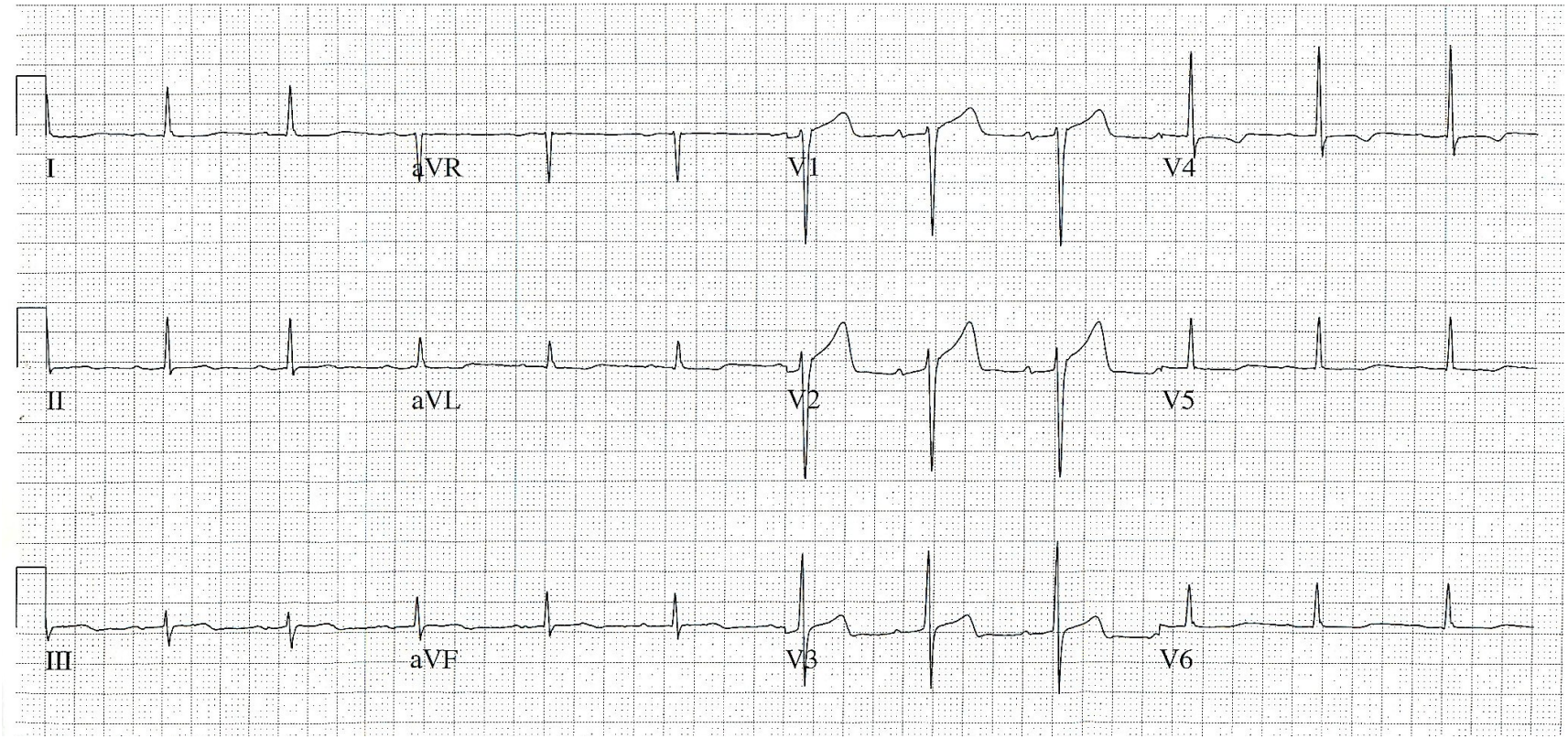
Mme G **21 Juin 2009** H24



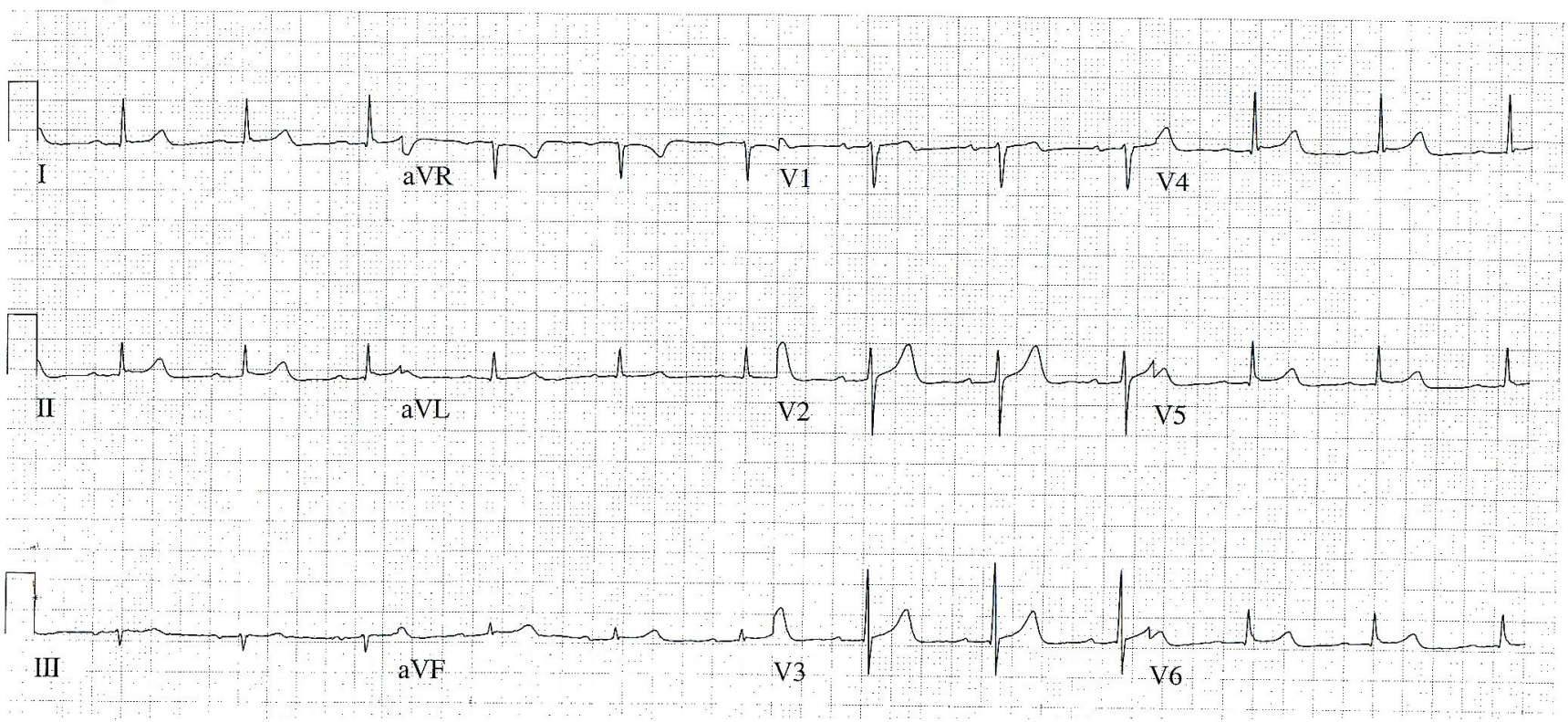
Mme G **22 Juin 2009** H48



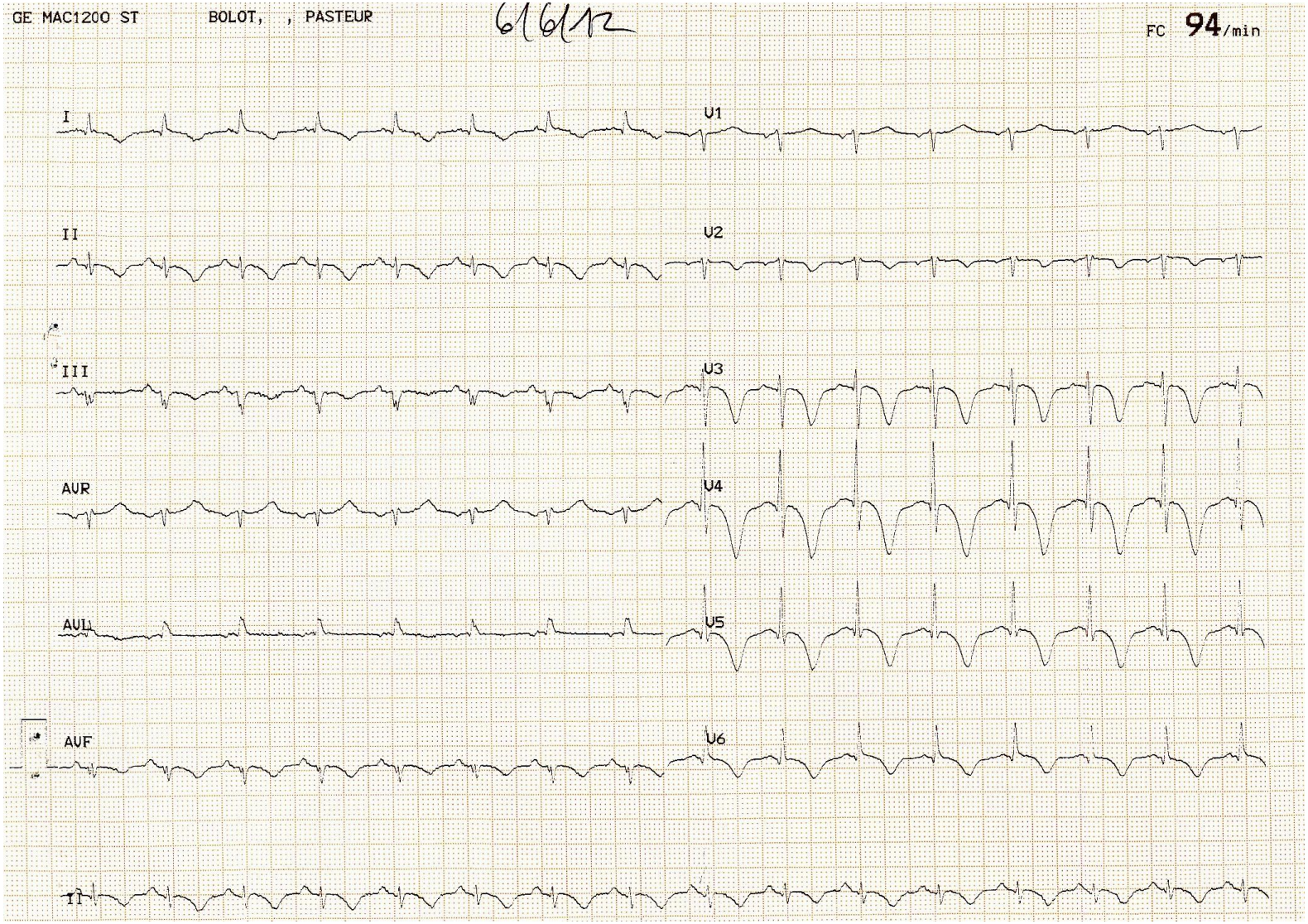
Mme G **24 Juin 2009** J4



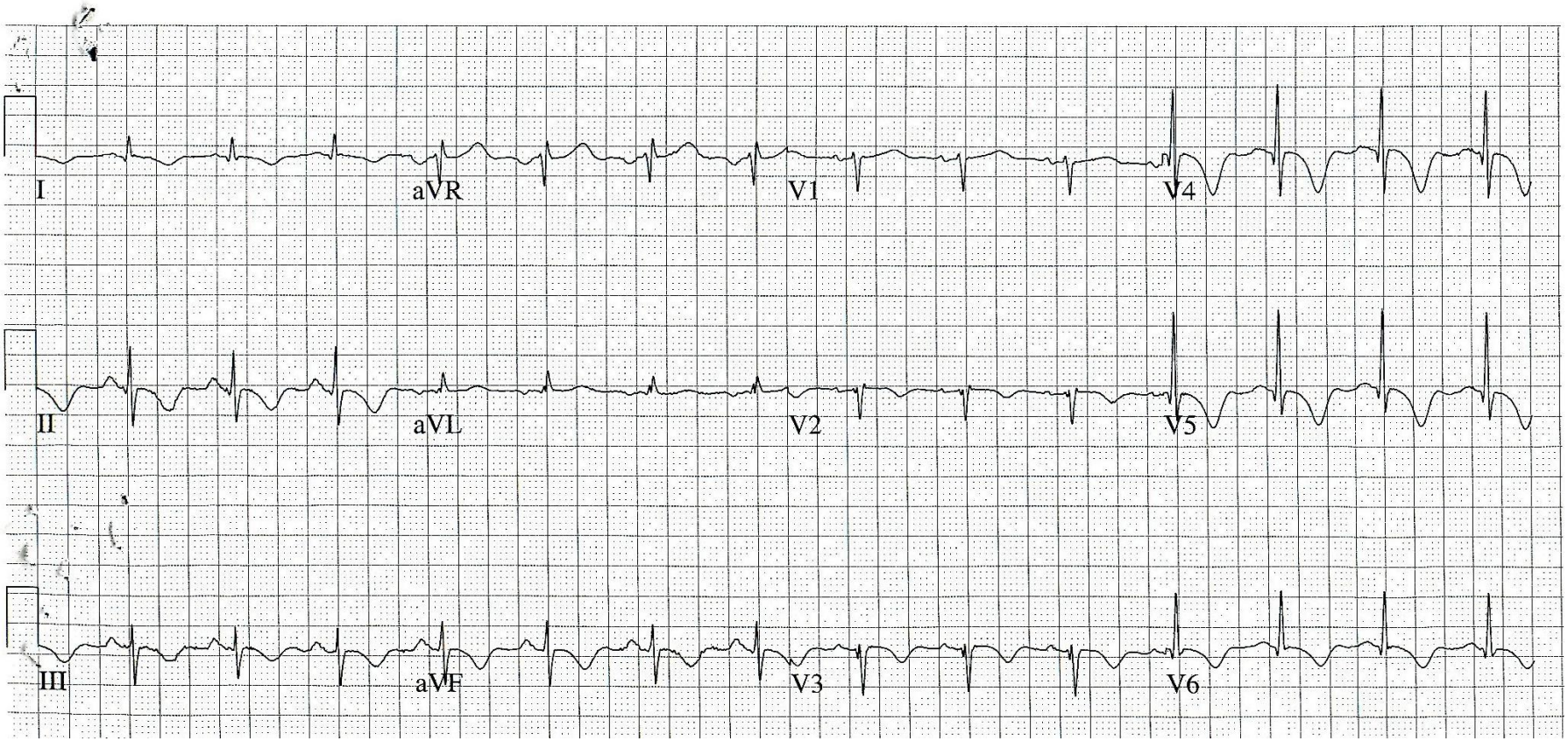
Mme G **07 Juillet 2010** J18



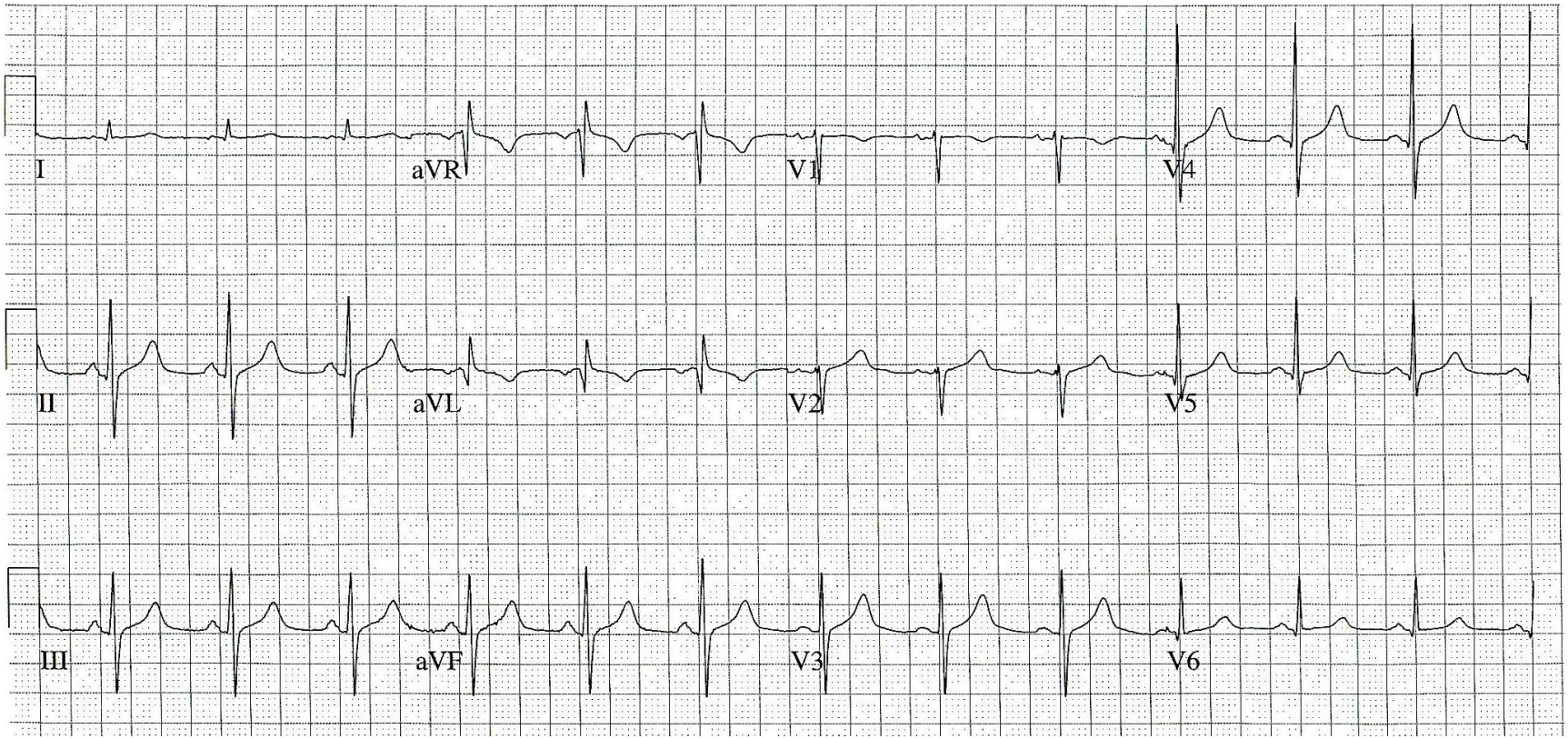
Mme B: **H0** (le 6 Juin 2012)

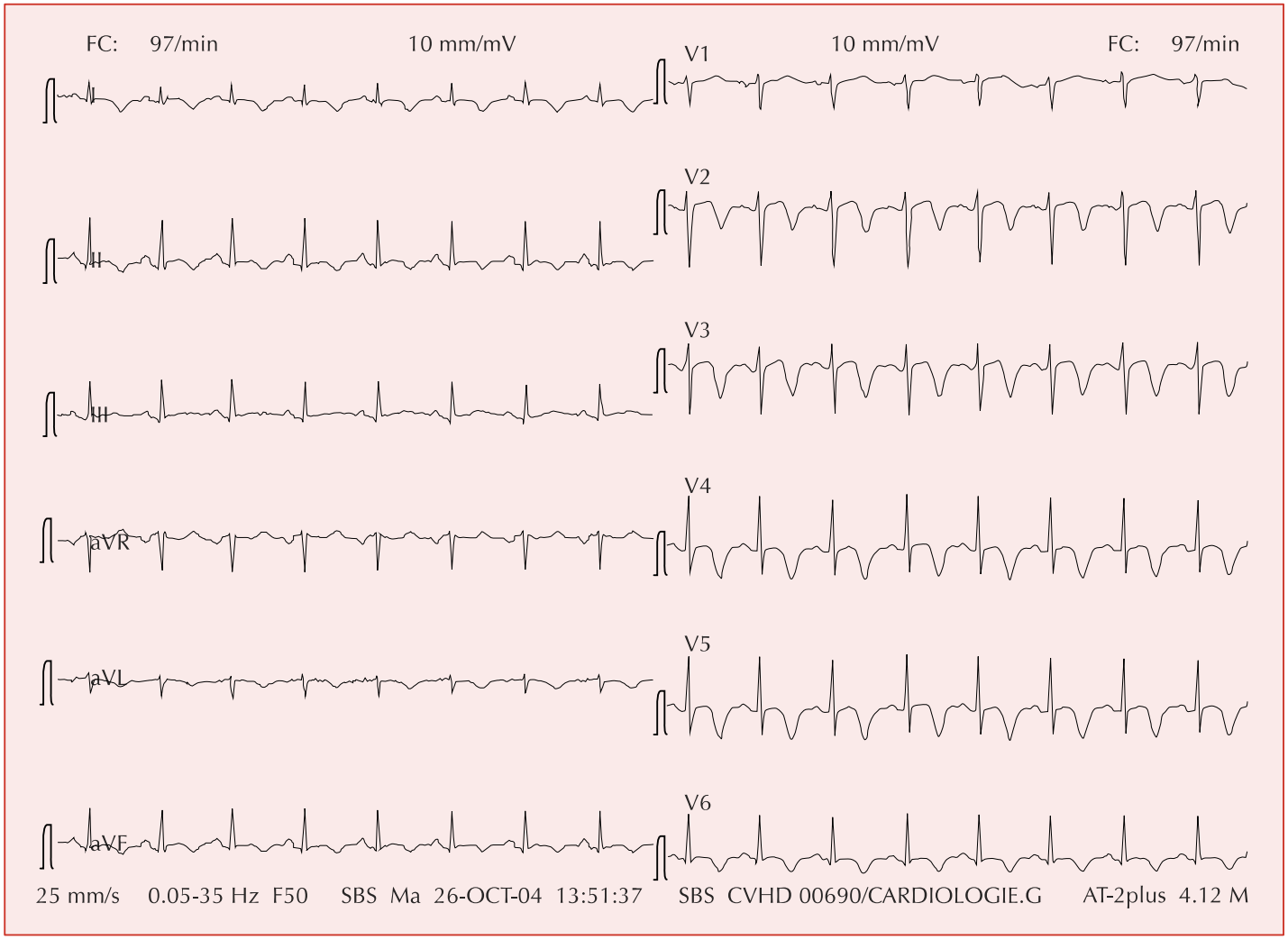


Mme B: **H20** (7 juin 2012 7h44)

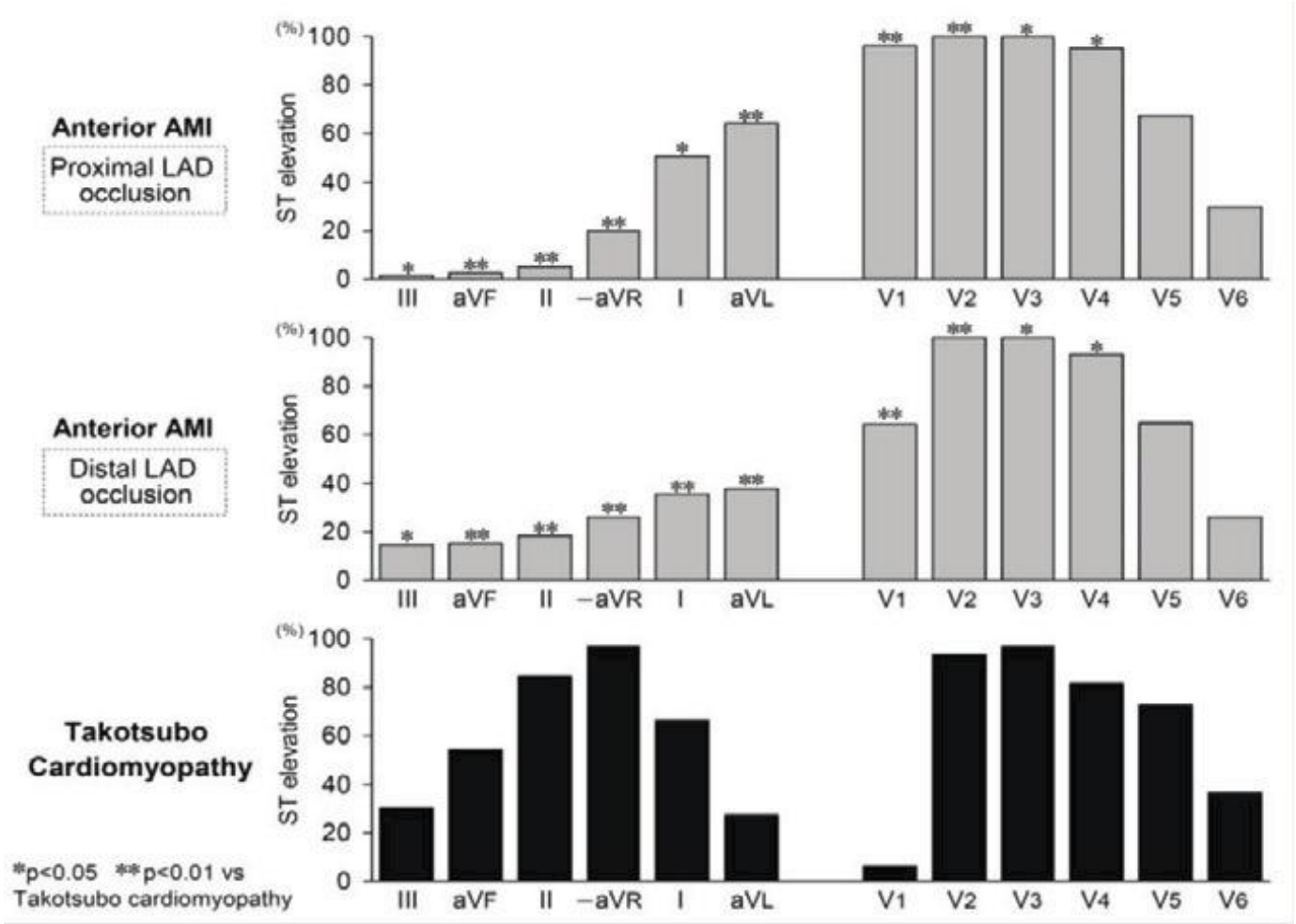


Mr B: **J4** (11 Juin 2012 7h50)



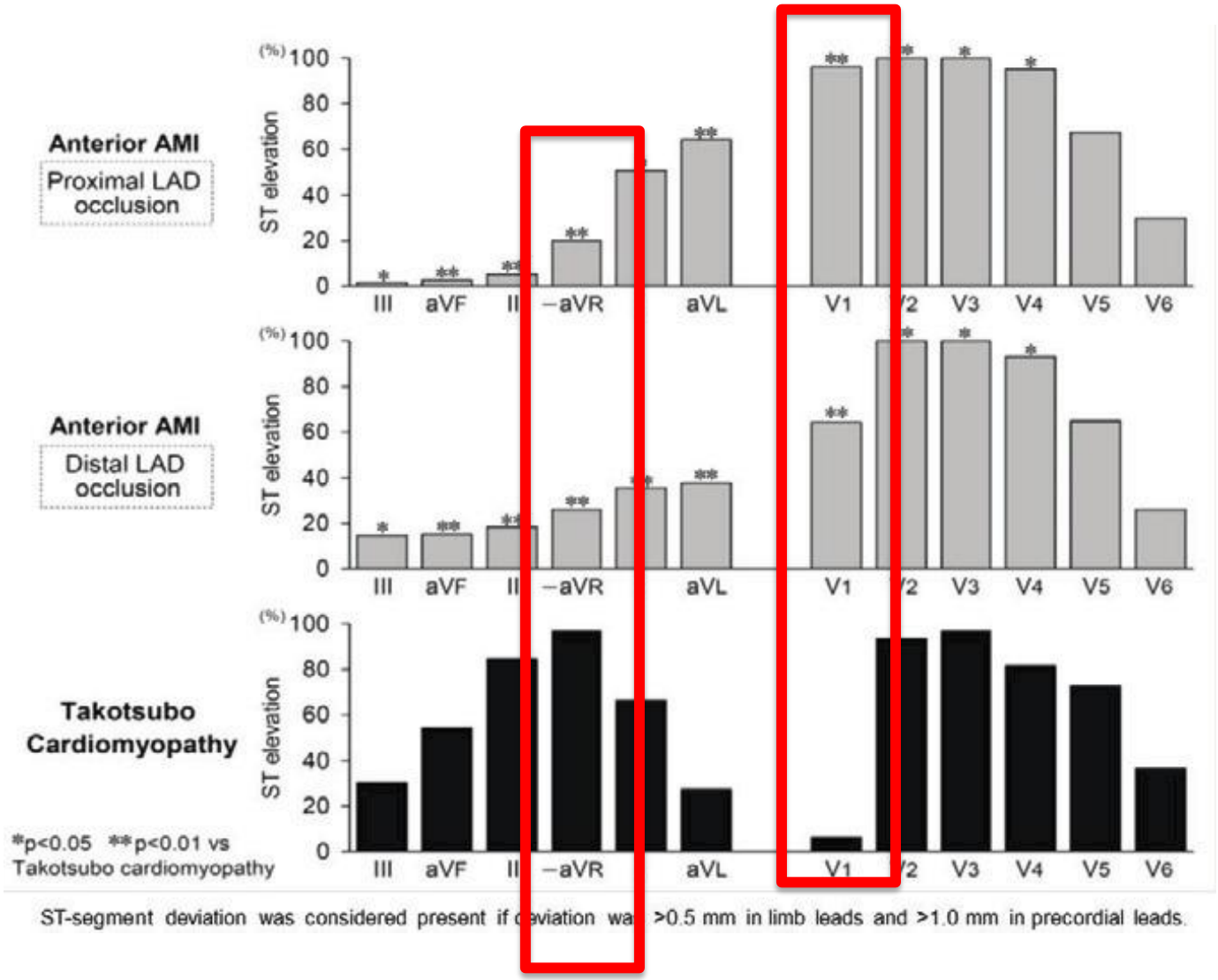

FC: 97/min
10 mm/mV
V1
10 mm/mV
FC: 97/min
V2
II
V3
III
V4
aVR
V5
aVL
V6
aVF
25 mm/s 0.05-35 Hz F50 SBS Ma 26-OCT-04 13:51:37 SBS CVHD 00690/CARDIOLOGIE.G AT-2plus 4.12 M

Localisation du Sus dec. IVA prox **vs** IVA moy **vs** Takotsubo



ST-segment deviation was considered present if deviation was >0.5 mm in limb leads and >1.0 mm in precordial leads.

Localisation du Sus dec. IVA prox **vs** IVA moy **vs** Takotsubo



ST-segment deviation was considered present if deviation was >0.5 mm in limb leads and >1.0 mm in precordial leads.

Modification du ST en aVR
sans modification du ST en V1

....distingue (rait) le Takotsubo d'une IVA

Sensibilité de 91%
Spécificité de 95%
VPP de 95%

5ème Question

A) Tako Tsubo ?

B) Tako-Tsubo ?

C) Takotsubo ?

D) Tacot sous beau ?

6ème Question

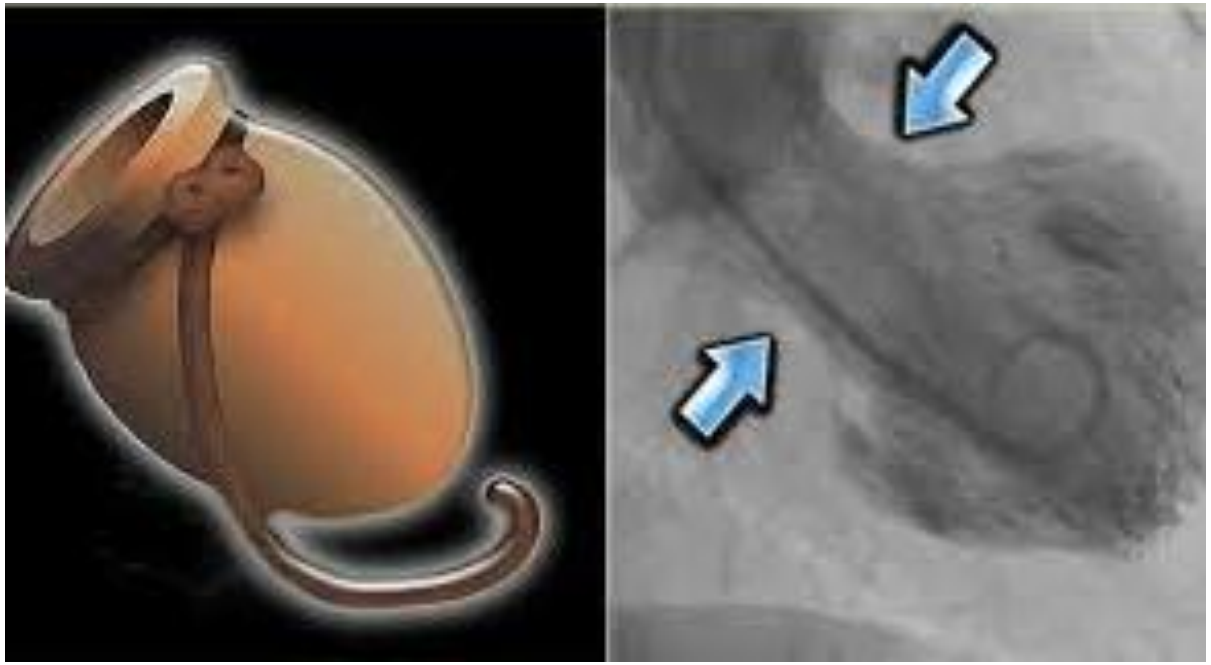
Takotsubo ça veut dire ?

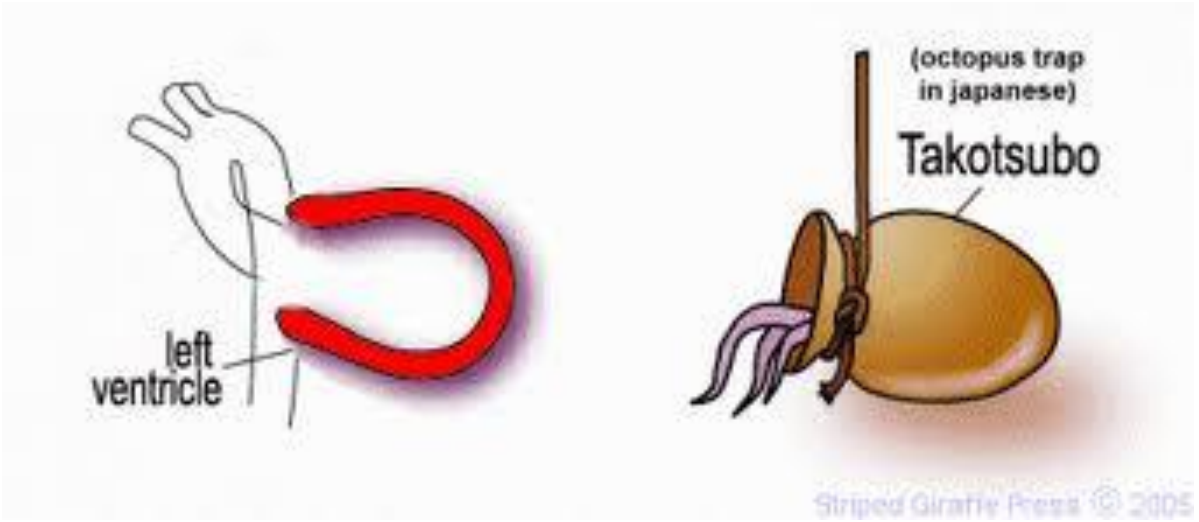
A) Piège à poulpe

B) Piège à requin

C) Piège à thon

D) Piège à con(s)




left
ventricle
(octopus trap
in japanese)
Takotsubo
Striped Giraffe Press © 2005

Takotsubo: un syndrome réçent

- ➔ **1ere description 1990**
- ➔ **1% des patients admis pour ST+ au Japon**
- ➔ **2.2% des ST+ à la Mayo Clinic**
- ➔ **mais jusqu'à 7% des SCA de la femme !!**

Takotsubo: un syndrome réçent

Le contexte

- Femme dans 89%
- Contexte de stress dans 80% des cas
- Trt psychiatrique en cours
- Cancer en cours
- Insuf Respiratoire Aiguë

Takotsubo: ça s’appelle aussi

- **Cardiopathie de Stress**
- **Apical Ballooning Syndrom: ABS**
- **Broken Heart**
- **Cardiopathie catécholergique**

Takotsubo: ça s'appelle aussi

- Apical ballooning
  - Apical ballooning syndrome
  - Acute left ventricular apical ballooning syndrome
  - Left ventricular apical ballooning syndrome
  - Transient left ventricular apical ballooning syndrome
  - Primary apical ballooning
  - Transient apical ballooning
  - Transient apical ballooning syndrome
  - Transient cardiac apical ballooning syndrome
  - Transient left apical ballooning syndrome
  - Transient cardiac ballooning
  - Left apical ballooning syndrome
  - Acute apical ballooning syndrome
  - Cardiac apical ballooning syndrome
  - Apical ballooning
  - Apical ballooning without apical ballooning
  - Apical ballooning cardiomyopathy
  - Reversible apical ballooning of left ventricle
  - Left ventricular ballooning syndrome
  - Mid-ventricular variant of transient apical ballooning
  - Mid-ventricular ballooning syndrome
  - Transient left ventricular mid-portion ballooning
  - Transient mid-ventricular ballooning
  - Transient mid-ventricular ballooning cardiomyopathy
  - Transient left ventricular non-apical ballooning
  - Reverse or inverted left ventricular apical ballooning syndrome
  - Inverted left ventricular apical ballooning syndrome
  - Transient basal ballooning
- Stress cardiomyopathy
  - Acute stress cardiomyopathy
  - Human stress cardiomyopathy
  - Acute & reversible cardiomyopathy provoked by stress
  - Stress-induced cardiomyopathy
  - Stress-induced takotsubo cardiomyopathy
  - Stress-induced apical ballooning syndrome
  - Stress-related left ventricular dysfunction
  - Stress-related cardiomyopathy
  - Stress-related cardiomyopathy syndrome
  - Stress takotsubo cardiomyopathy
  - Emotional stress-induced ampulla cardiomyopathy
  - Mid-ventricular stress cardiomyopathy
  - Atypical transient stress-induced cardiomyopathy
  - Stress-induced myocardial stunning
  - Emotional stress-induced tako-tsubo cardiomyopathy
  - Stress-associated catecholamine induced cardiomyopathy
  - Neurogenic stress syndrome
  - Other
    - Neurogenic stunned myocardium
    - Adrenergic cardiomyopathy
    - Broken heart syndrome
    - Ampulla cardiomyopathy
    - Ampulla-shaped cardiomyopathy
    - "Chestnut-shaped" transient regional left ventricular hypokinesia
    - Ball-shaped spherical dilation of left ventricular apex
    - The artichoke heart
    - Transient mid-ventricular akinesia
    - Transient antero-apical dyskinesia

Takotsubo: ça s'appelle aussi

- Tako-tsubo
  - Takotsubo cardiomyopathy
  - Takotsubo-like cardiomyopathy
  - Takotsubo syndrome
  - Takotsubo disease
  - Takotsubo left ventricular dysfunction
  - Takotsubo-like left ventricular dysfunction
  - Takotsubo-like transient biventricular dysfunction
  - Takotsubo-like transient left ventricular ballooning
  - Takotsubo-shaped cardiomyopathy
  - Takotsubo-shaped hypokinesia of left ventricle
  - Takotsubo-type cardiomyopathy
  - Takotsubo transient left ventricular apical ballooning
  - Mid-ventricular takotsubo cardiomyopathy
  - Mid-ventricular form of takotsubo cardiomyopathy
  - Inverted takotsubo contractile pattern
  - Inverted takotsubo cardiomyopathy
  - Inverted takotsubo pattern
  - Atypical takotsubo cardiomyopathy
  - Reverse takotsubo syndrome
  - Atypical basal type takotsubo cardiomyopathy

7ème Question

A l'entrée la biologie de notre malade donne:

Tp 0,21 U (N 0.03)

BNP 1200 U (N < 100)

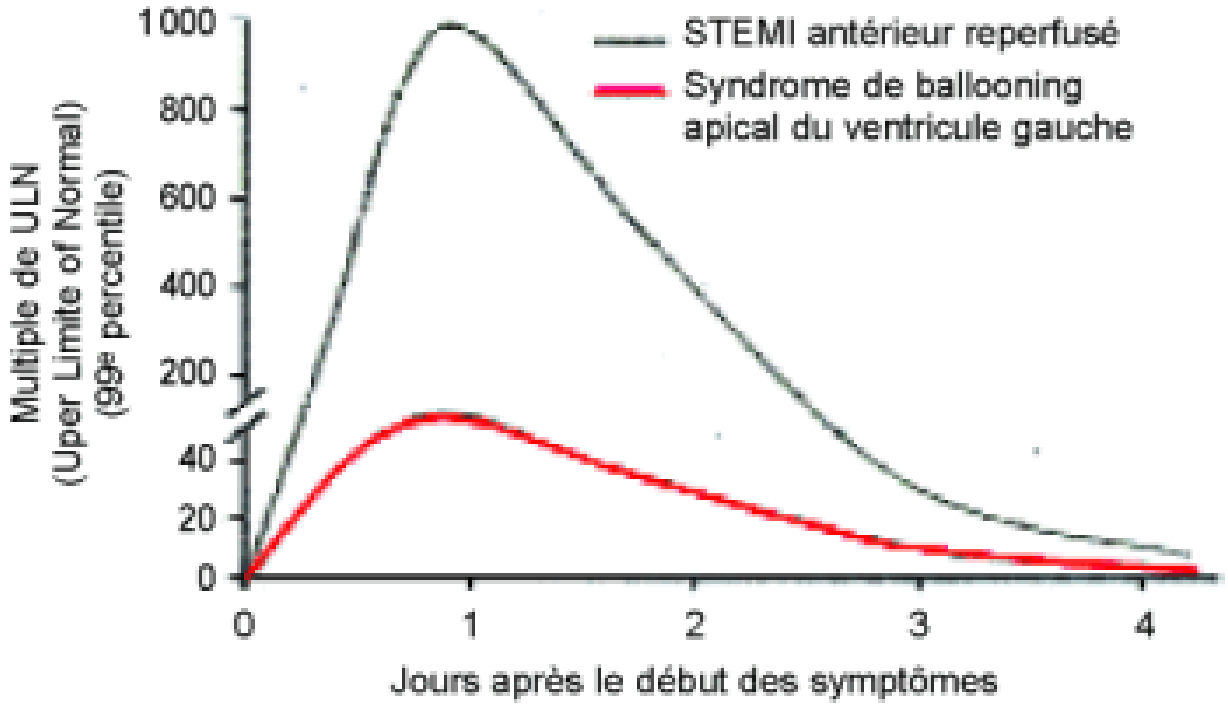
A) C'est un profil de SCA avec dysfonction VG

B) C'est un profil évocateur de Tako-tsubo

C) Dans le Tako-tsubo les enzymes cardiaques ne doivent pas "bouger".

D) Ce profil exclut un Takotsubo

Takotsubo: les marqueurs biologiques



Toute chose égale par ailleurs

La troponine du Tako-tsubo est souvent plus élevée **a l'entrée** que celle du SCA.

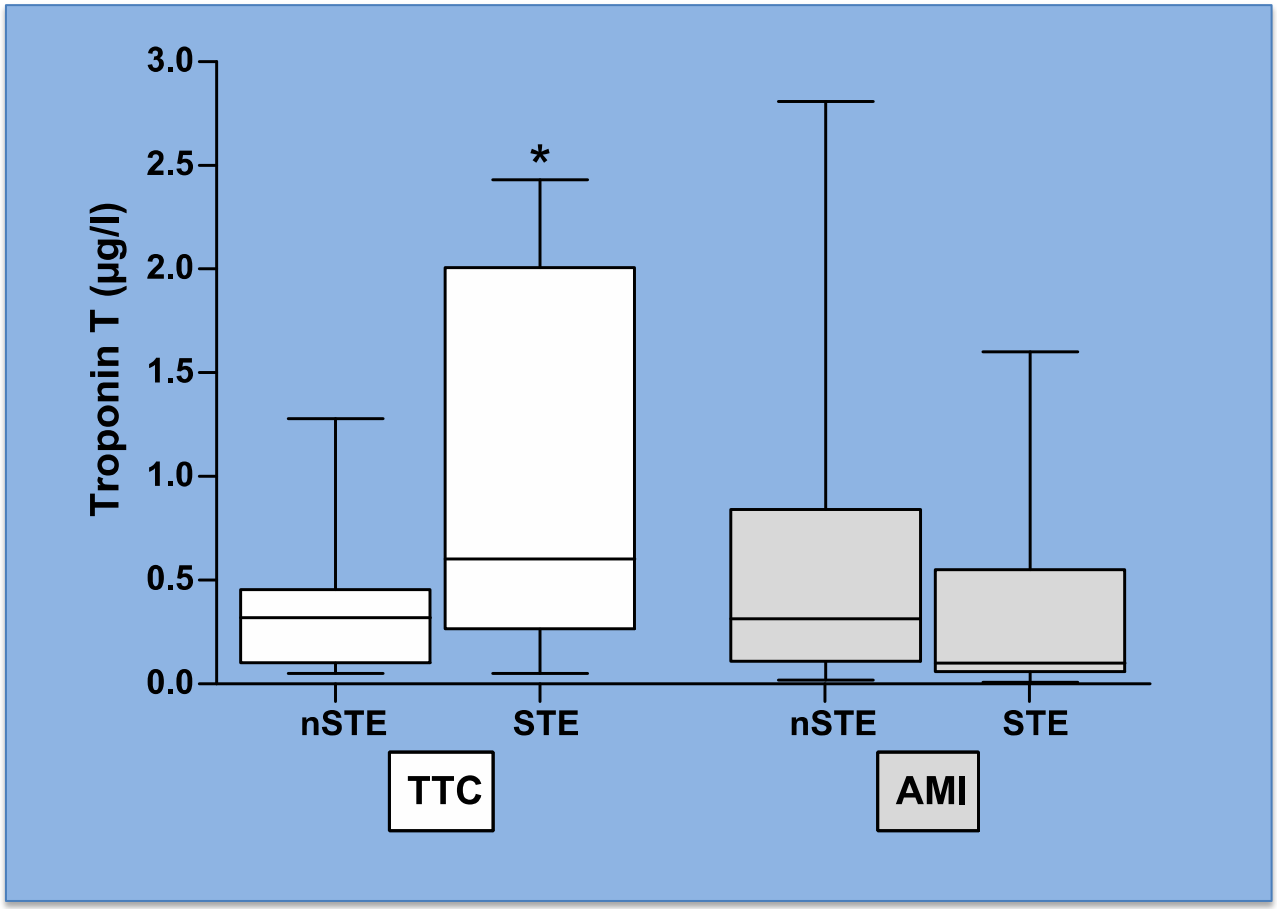
Takotsubo: les marqueurs biologiques

Release patterns of copeptin and troponin in Tako-Tsubo cardiomyopathy

Christof Burgdorf*, Andreas Schubert, Heribert Schunkert, Volkhard Kurowski, Peter W. Radke

Department of Internal Medicine II, University Hospital Schleswig-Holstein, Campus Lübeck, Ratzeburger Allee 160, 23538 Lübeck, Germany

Peptides 34 (2012) 389–394



A l'entrée des patients

Takotsubo: les marqueurs biologiques

Typiquement dans le TakoTsubo

Un petit pic de tropo (**le + souvent < 2U**)

Une grosse élévation du BNP (**svt > 1000**)

Takotsubo: les marqueurs biologiques

Et la Copeptine ?

Hormone de stress par excellence

Tako-Tsubo = Cardiopathie de stress…..

Takotsubo: les marqueurs biologiques

Copeptine Tako-Tsubo Vs SCA

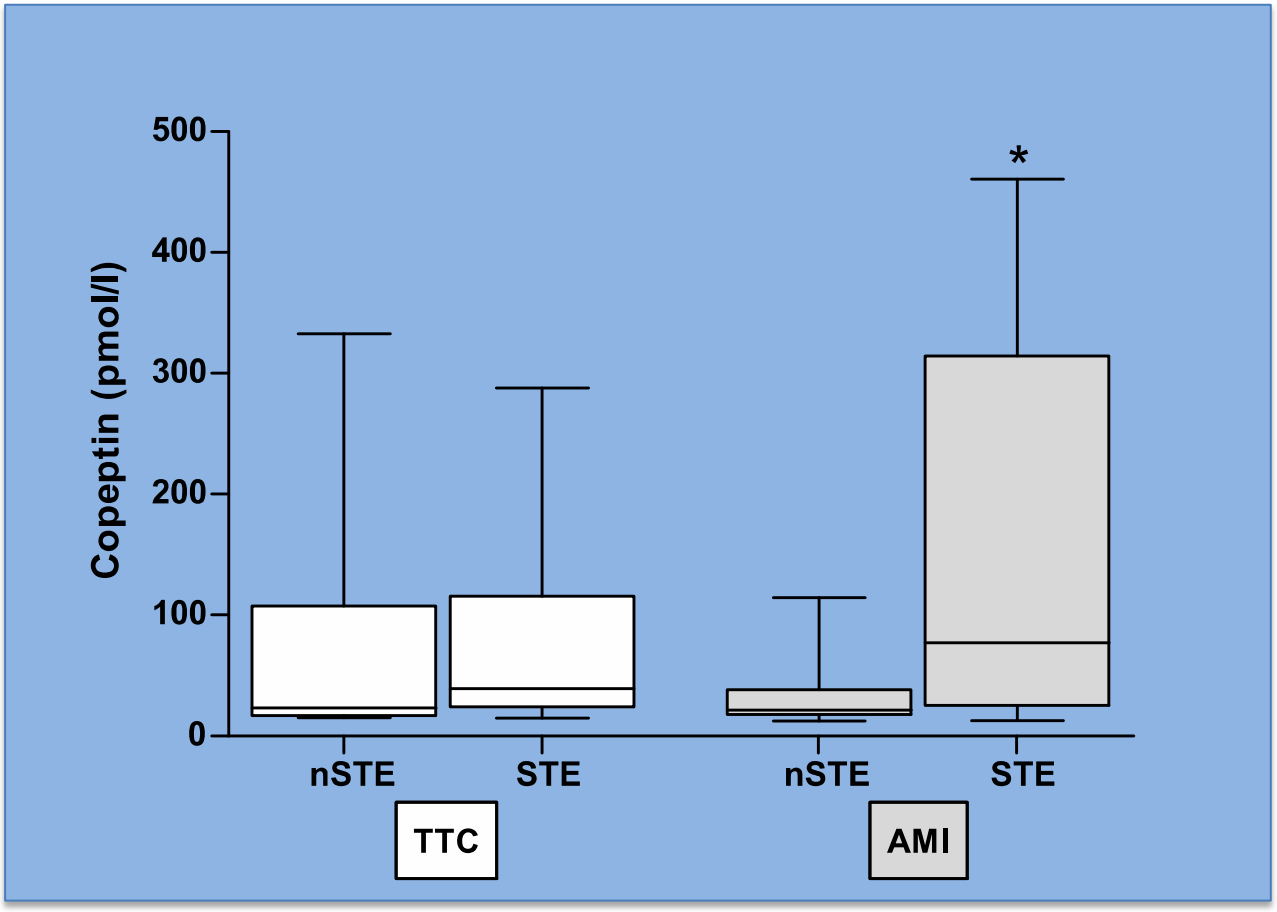
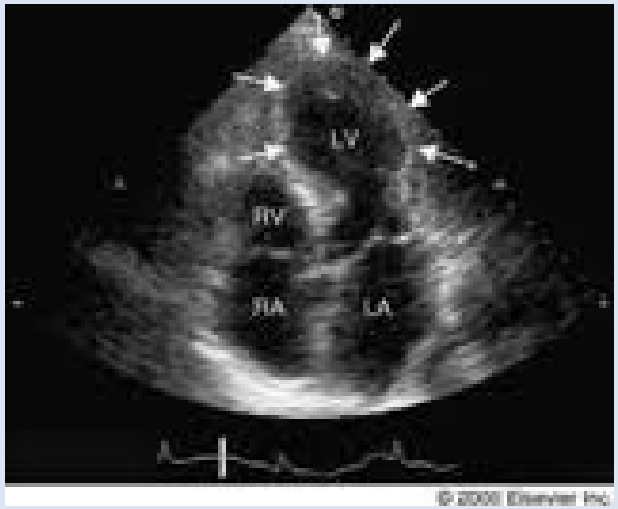


Fig. 2. Serum copeptin levels in 23 patients with Tako-Tsubo cardiomyopathy (TTC) and 25 patients with acute myocardial infarction (AMI) presenting with either ST-segment elevation (STE) or non ST-segment elevation (nSTE). Boxes represent interquartile ranges and whiskers display ranges ($n = 14$ TTC nSTE, $n = 9$ TTC STE, $n = 12$ AMI nSTE, $n = 13$ AMI STE). $^{*}p < 0.05$ vs. AMI nSTE.

Cas clinique suite

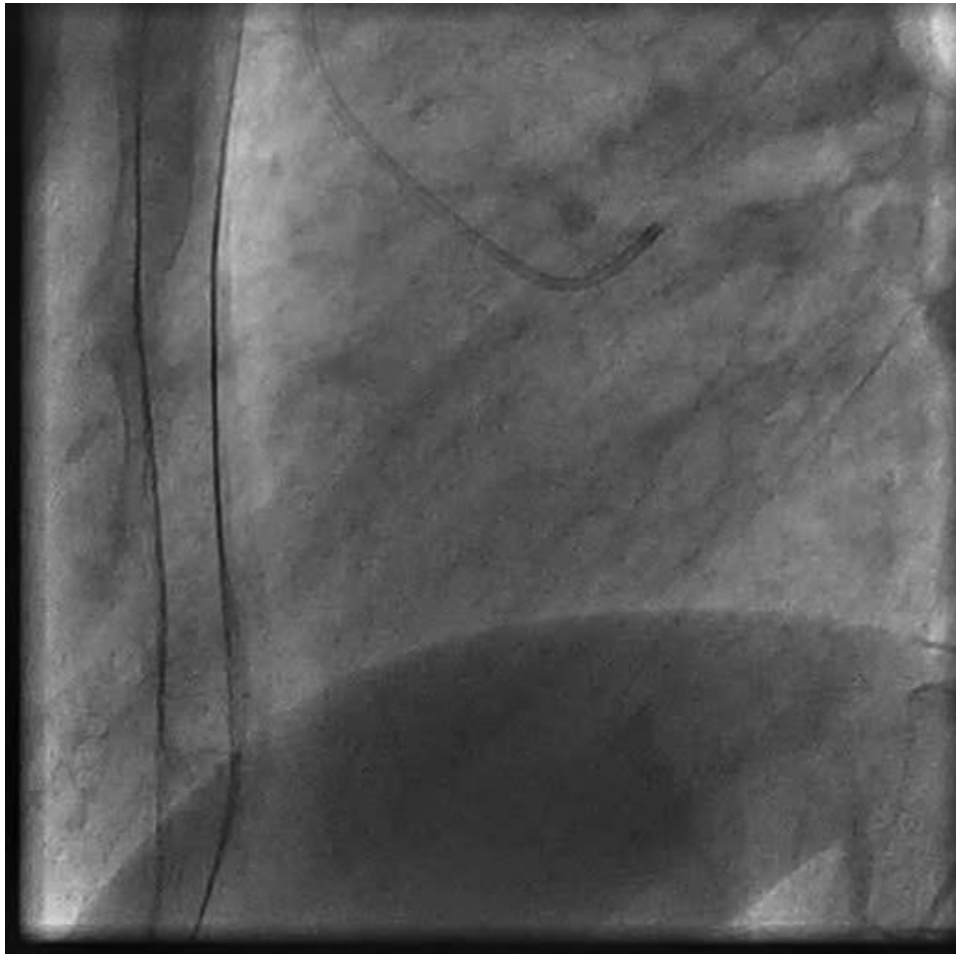
L’echo montre une akinésie antérieure avec un aspect hypercontractile de la base.



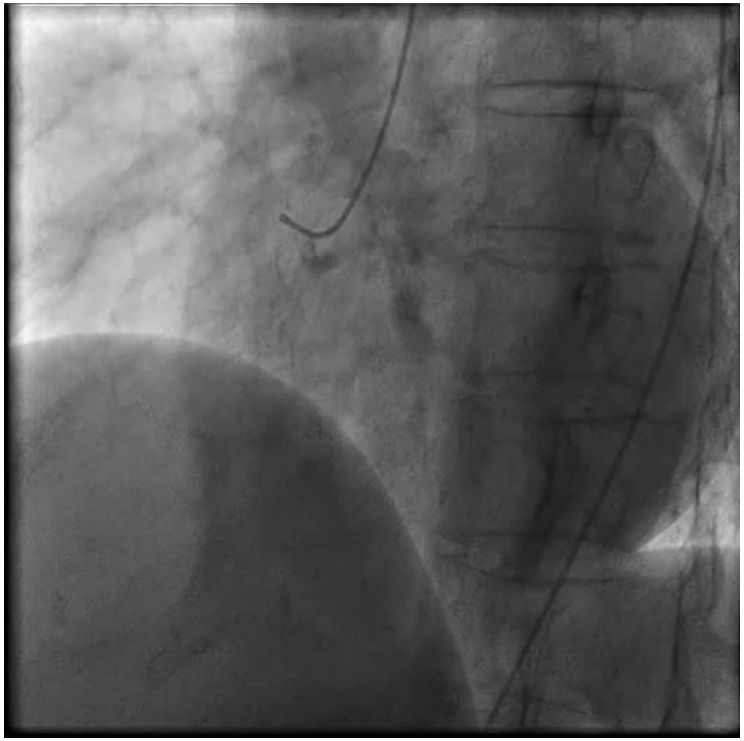
Coronarographie: coronaires saines.

La ventriculo est la suivante.

Coronarographie



Coronarographie



Réseau coronaire droit normal

8 ème Question

Un collègue n'en démord pas et pense qu'il peut toujours s'agir d'une lésion coronaire (rupture de plaque non visible ou spasme prolongé) de l'IVA qui a pu être responsable de la sidération du myocarde:

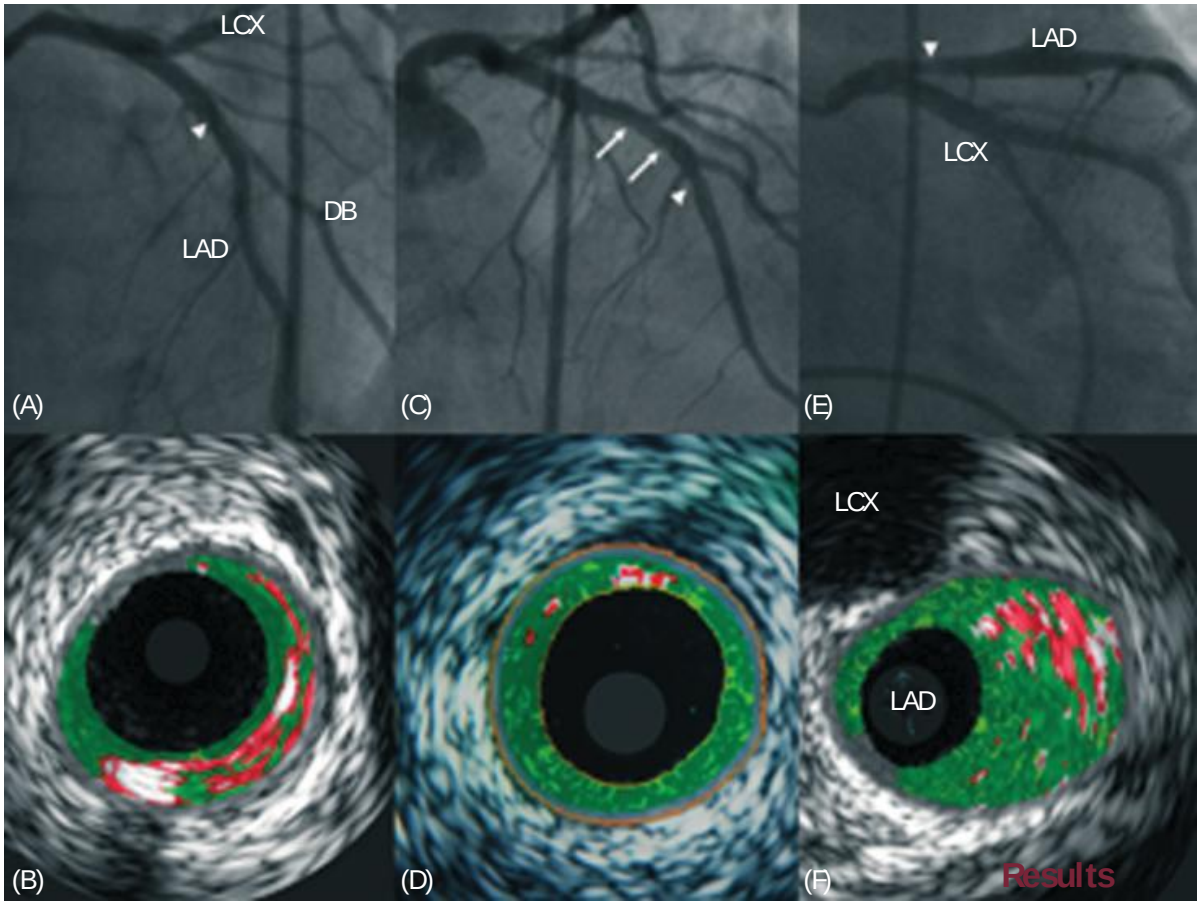
A) Il a probablement raison

B) il a sûrement tort

C) la sidération du myocarde est compatible avec cette hypothèse.

D) la sidération du myocarde est incompatible avec une lésion IVA

Takotsubo Cardiomyopathy Is Not Due to Plaque Rupture: An Intravascular Ultrasound Study



Results

We identified 10 patients (16%) who had an IVUS study during their initial left heart catheterization. Classical TC with apical ballooning was present in 9 patients. Only 1 patient had a mid-ventricular variant without apical involvement. All left heart catheterizations were performed within 24 hours of admission. The clinical features of patients are shown in Table 1.

Takotsubo: critères diagnostic Mayo-Clinic

4 critères qui doivent être tous présents

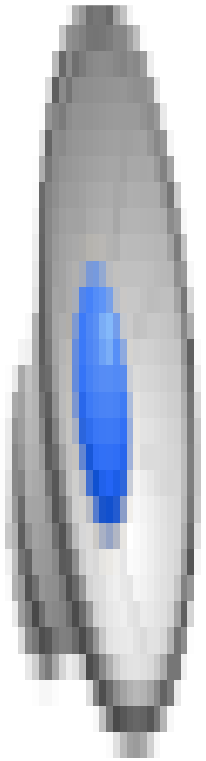
Akinésie/dyskinésie des segments apicaux et moyens avec des **anomalies de cinétiques s'étendant au delà de la distribution vasculaire d'une seule coronaire**

Absence de lésions coronaires

Modifications ECG nouvelles

Absence de trauma cérébral récent, de saignement intracranien, de phéochomocytome de myocardite de de CMH

Takotsubo: Angiographie



9 ème Question

Vous demandez une IRM.

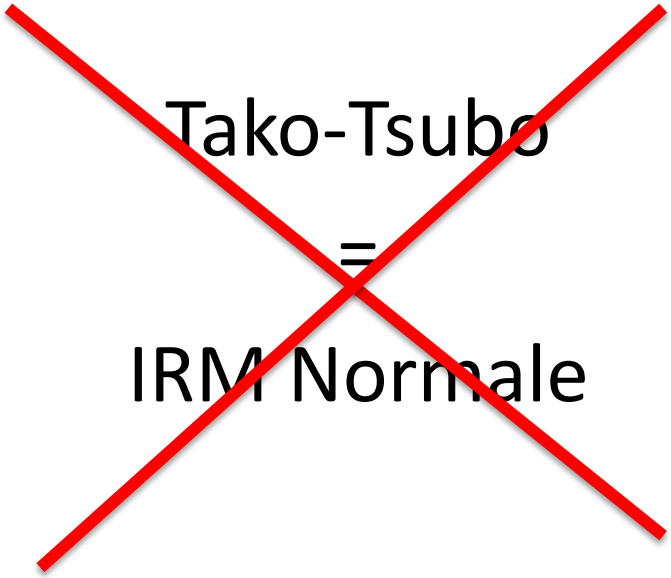
A) Elle vous permettra de trancher définitivement.

B) Elle pourra vous montrer un réhaussement tardif.

C) Elle peut montrer un oedème

D) Sa normalité est obligatoire dans un TakoTsubo.

Takotsubo: IRM



Clinical Characteristics and Cardiovascular Magnetic Resonance Findings in Stress (Takotsubo) Cardiomyopathy

Ingo Eitel, MD
Florian von Knobelsdorff-Brenkenhoff, MD
Peter Bernhardt, MD
Iacopo Carbone, MD
Kai Muellerleile, MD
Annachiara Aldrovandi, MD
Marco Francone, PhD
Steffen Desch, MD
Matthias Gutberlet, MD
Oliver Strohm, MD
Gerhard Schuler, MD
Jeanette Schulz-Menger, MD
Holger Thiele, MD
Matthias G. Friedrich, MD

JAMA. 2011;306(3):277-286

Results Eighty-one percent of patients (n=207) were postmenopausal women, 8% (n=20) were younger women (aged ≤50 years), and 11% (n=29) were men. A stressful trigger could be identified in 182 patients (71%). Cardiovascular magnetic resonance imaging data (available for 239 patients [93%]) revealed 4 distinct patterns of regional ventricular ballooning: apical (n=197 [82%]), biventricular (n=81 [34%]), midventricular (n=40 [17%]), and basal (n=2 [1%]). Left ventricular ejection fraction was reduced (48% [SD, 11%]; 95% confidence interval [CI], 47%-50%) in all patients. Stress cardiomyopathy was accurately identified by CMR using specific criteria: a typical pattern of LV dysfunction, myocardial edema, absence of significant necrosis/fibrosis, and markers for myocardial inflammation. Follow-up CMR imaging showed complete normalization of LV ejection fraction (66% [SD, 7%]; 95% CI, 64%-68%) and inflammatory markers in the absence of significant fibrosis in all patients.

Conclusions The clinical profile of SC is considerably broader than reported previously. Cardiovascular magnetic resonance imaging at the time of initial clinical presentation may provide relevant functional and tissue information that might aid in the establishment of the diagnosis of SC.

Takotsubo: IRM

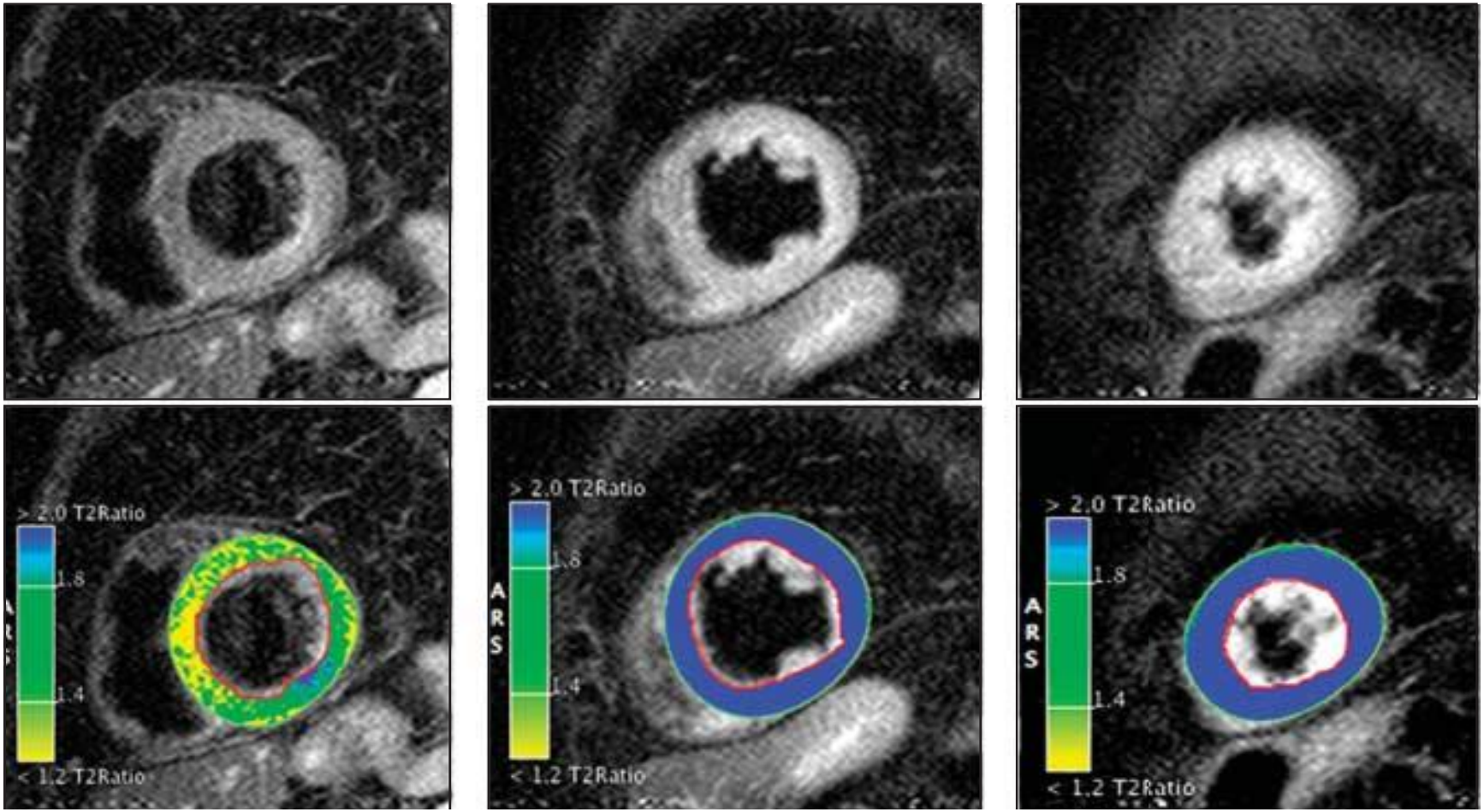
JAMA. 2011;306(3):277-286

n=207

Anomalies IRM (en moyenne à J3)	
Oedème myocardique	**81 %**
Réhaussement tardif (focal ou irrégulier) au gadolinium	**9%**

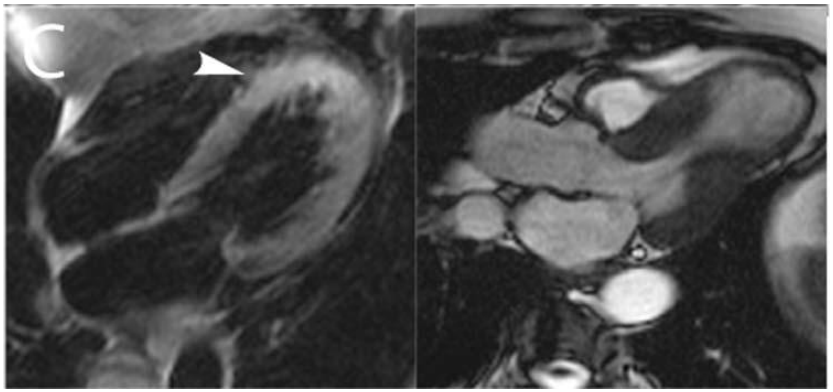
Figure 3. Cardiovascular Magnetic Resonance Identification of Myocardial Edema in a Representative Patient With Stress Cardiomyopathy

Oedème présent dans 80% des cas ++ segments antérieurs



T2-weighted images (short-axis view) demonstrating normal signal intensity (SI) of the basal myocardium but global edema of the mid and apical myocardium. Computer-aided SI analysis (bottom row) of the T2-weighted images with color-coded display of relative SI normalized to skeletal muscle (blue indicates an SI ratio of myocardium to skeletal muscle of ≥1.9 or higher, indicating edema; green/yellow indicates a normal SI ratio of <1.9) confirm the presence of global mid and apical edema. Outlines of regions of interest are manually drawn around the myocardium (red contour=subendocardial border; green contour=subepicardial border) and within the skeletal muscle (contour not shown).

Oedème



Rehaussement Tardif **spontané**

Rehaussement Tardif **spontané**

Oedème

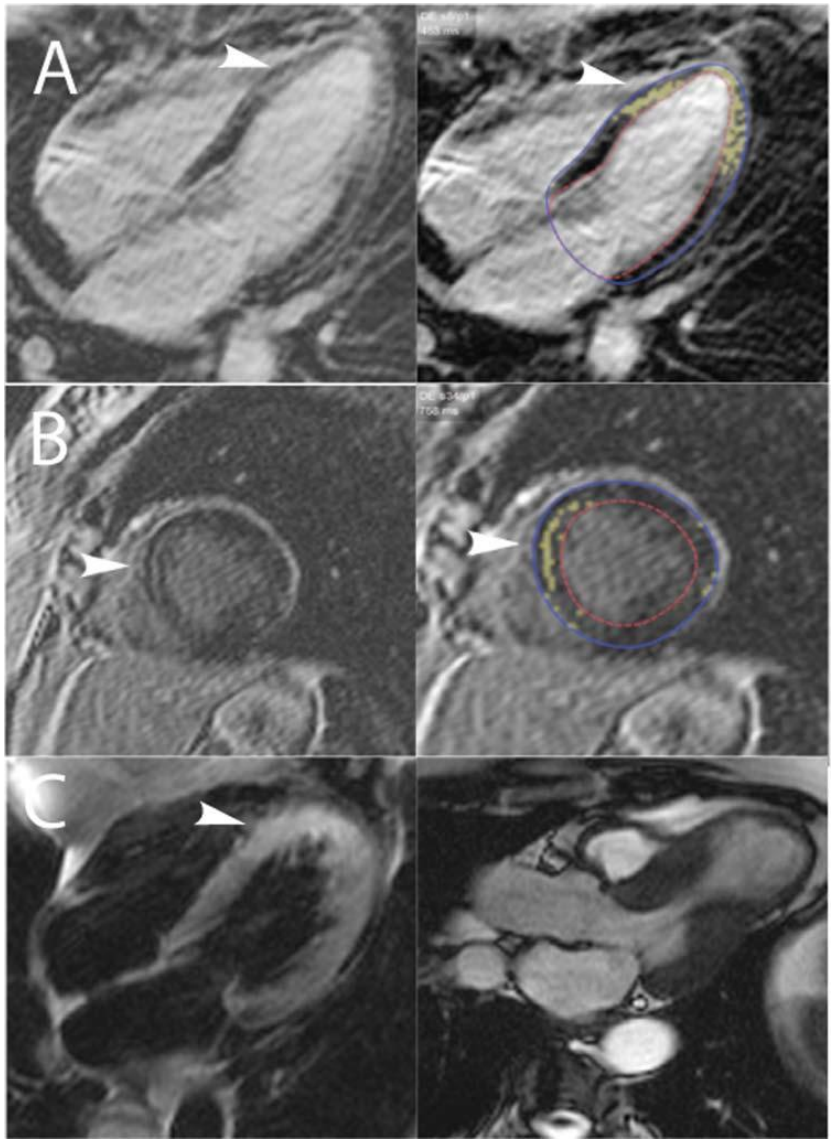


Figure 2 (*A*) Diffuse, patchy late enhancement distributed over the septal and lateral wall as indicated by arrows [left: original picture; right: semi-automatic enhancement detection (CAAS)]. (*B*) Septal enhancement from another patient as indicated by arrows [left: original picture; right: semi-automatic enhancement detection (CAAS)]. (*C*) Right oedema within apical region (arrow) [left: apical akinesia and ballooning (end-systolic frame)].

Takotsubo: IRM

réhaussement tardif à l'IRM

=

troponines plus élevées

=

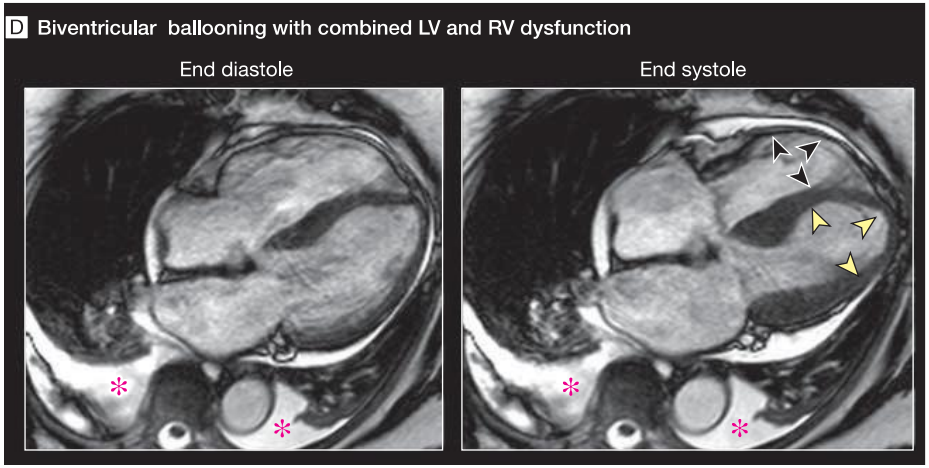
pronostic plus délicat.

10 ème Question

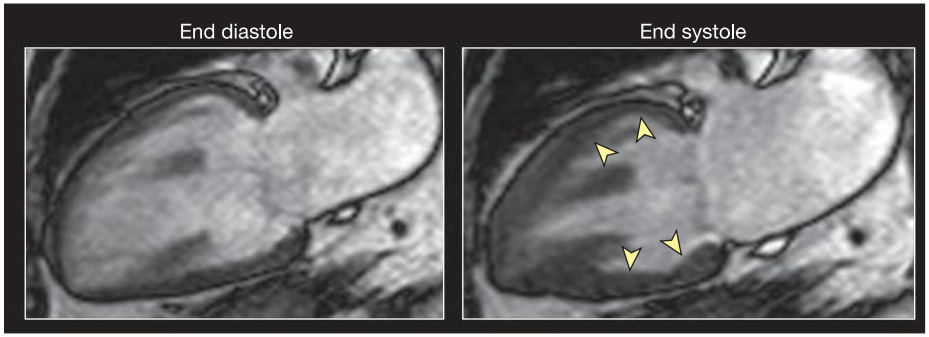
L’aspect de ballonisation antérieure du VG est indispensable pour le diagnostic et représente **LE** marqueur de la pathologie.

A) OUI

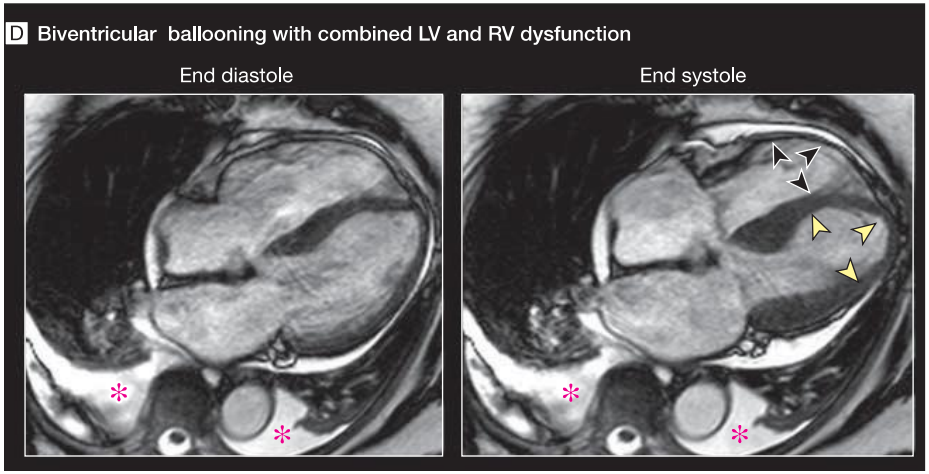
B) NON



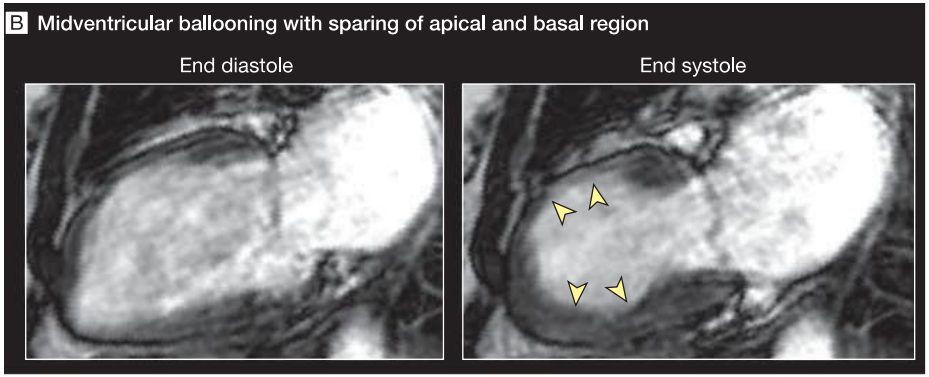
Takotsubo typique



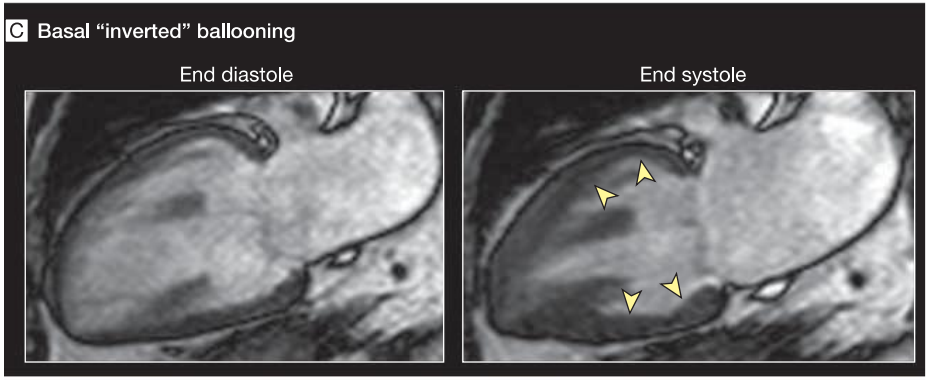
Takotsubo basal “inversé”



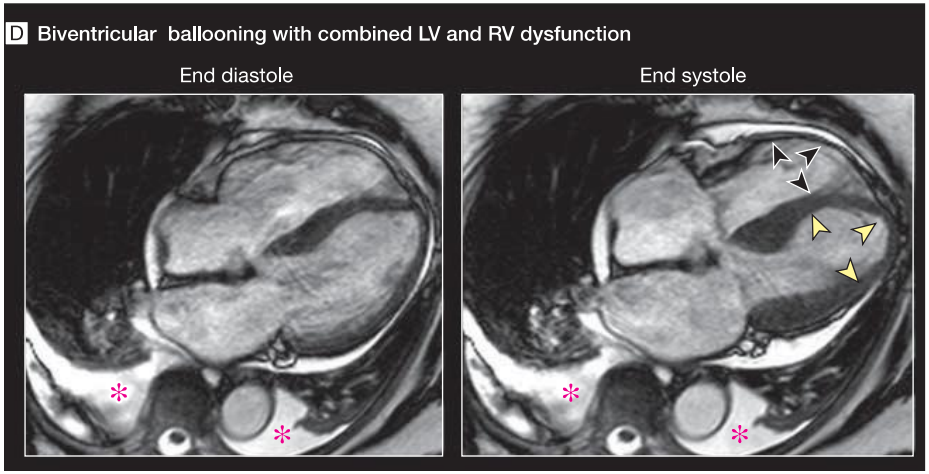
Takotsubo typique



Takotsubo médian

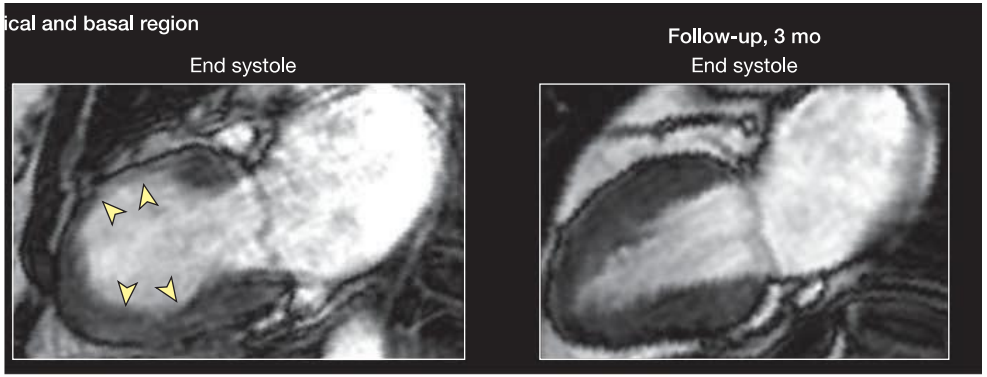


Takotsubo basal “inversé”

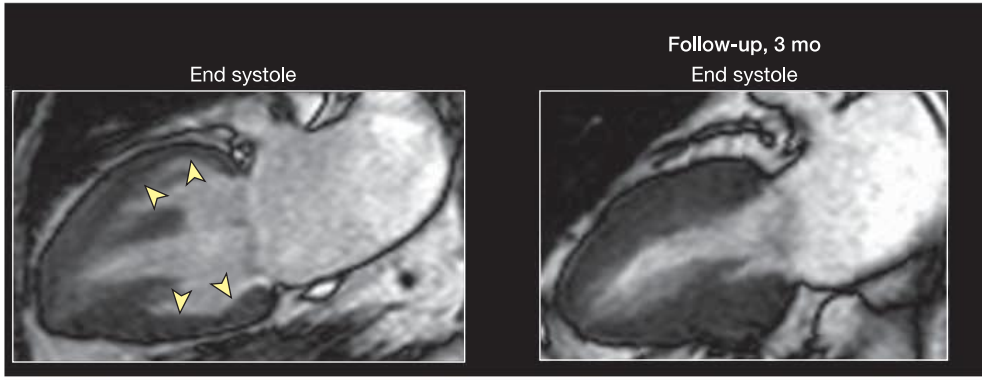


Takotsubo typique

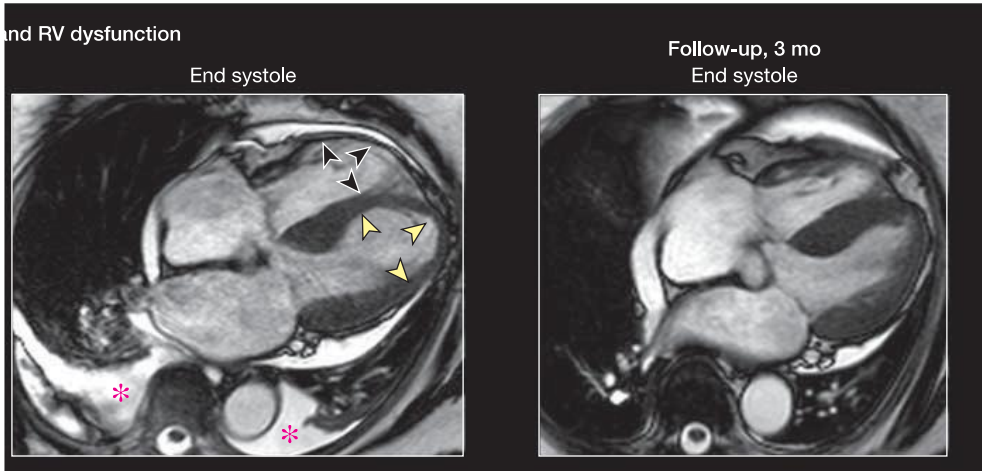
Takotsubo médian



Takotsubo basal “inversé”



Takotsubo typique

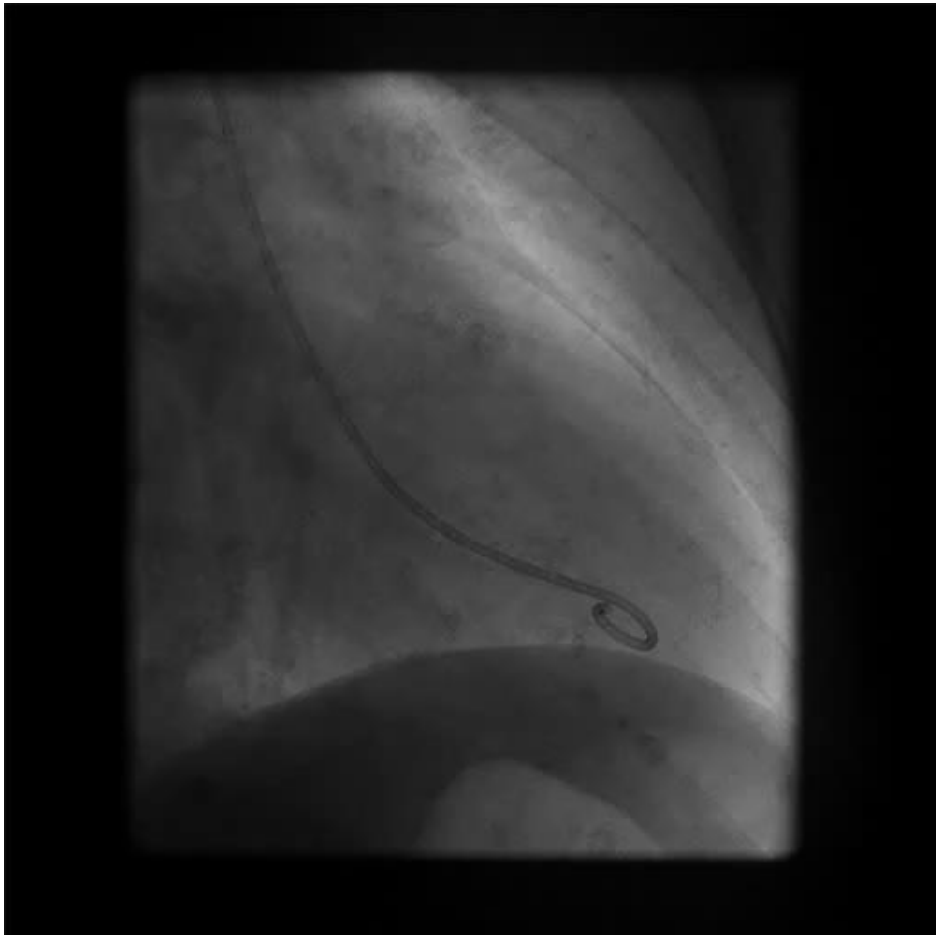


Takotsubo médioventriculaire:

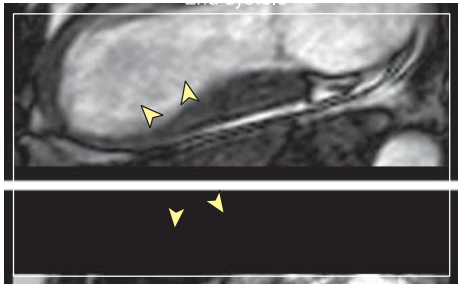
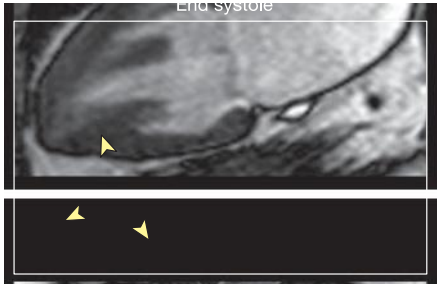
Diastole

Systole

Takotsubo médioventriculaire:



Takotsubo classique vs Takotsubo inversé

	Takotsubo inversé	Takotsubo classique Ballonisation apicale
		
âge de survenue	35-54 ans	65 ans ou plus
Sexe masculin	50%	10%
Facteur déclenchant	100%	75-85%
Pic tropo	13 ng/mL	1.6 ng/mL
Pic NT-proBNP	613 pg/mL	4987 pg/mL

The Clinical Characteristics, Laboratory Parameters, Electrocardiographic, and Echocardiographic Findings of Reverse or Inverted Takotsubo Cardiomyopathy: Comparison With Mid or Apical Variant

Clin. Cardiol. 34, 11, 693–699 (2011)

11 ème Question

Que pouvez vous dire à la patiente ?

A) Le coeur va récupérer, ça récupére toujours.

B) Il n'y a aucun risque de décès

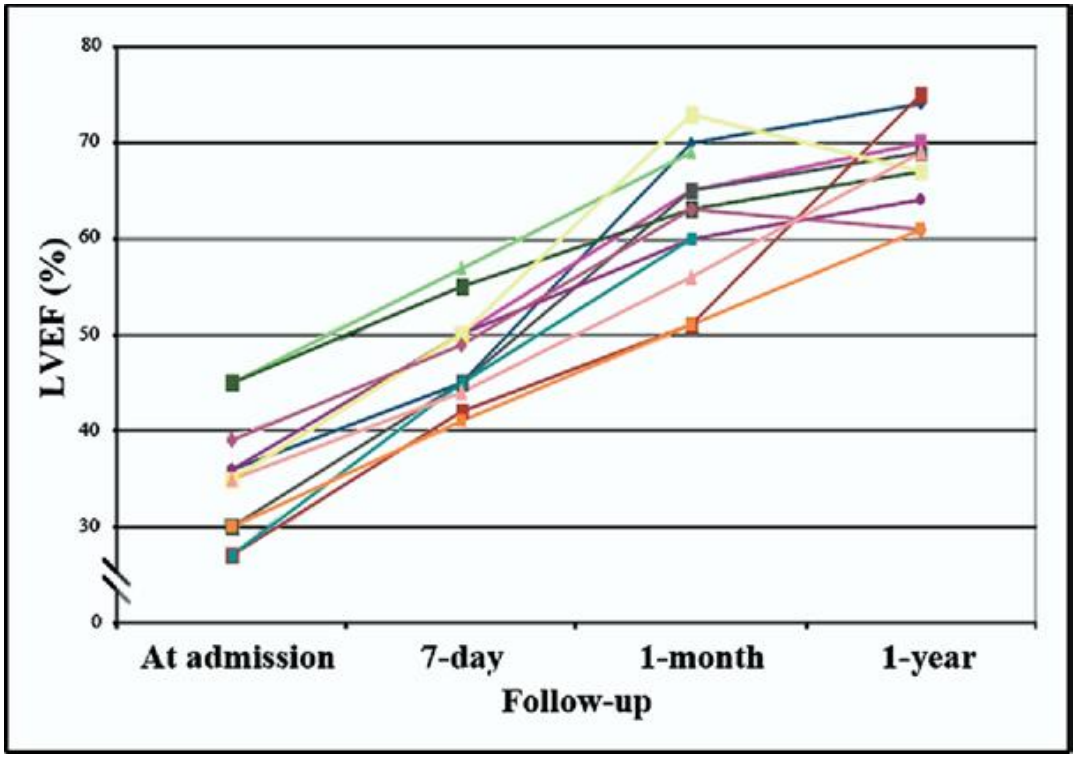
C) Ça ne récidive jamais

D) Il y a un traitement très efficace pour guérir.

Takotsubo: pronostic

Récupération de la fonction VG

FE



D'où les faux négatifs

In-hospital mortality among patients with takotsubo cardiomyopathy: A study of the National Inpatient Sample 2008 to 2009

Waleed Brinjikji, MD,[a] Abdulrahman M. El-Sayed, DPhil,[b,c] and Samer Salka, MD, FACC[d] *Dearborn, MI; and New York, NY*

(Am Heart J 2012;164:215-21.)

Mortalité moyenne

(recueil des données de 24 701 pts)

4.2%

In-hospital mortality among patients with takotsubo cardiomyopathy: A study of the National Inpatient Sample 2008 to 2009

Waleed Brinjikji, MD,[a] Abdulrahman M. El-Sayed, DPhil,[b,c] and Samer Salka, MD, FACC[d] *Dearborn, MI; and New York, NY*

(Am Heart J 2012;164:215-21.)

Table IV. Multivariate analysis results

	OR (95% CI)	P
Age group		
<50 y	Ref	Ref
50-64 y	1.01 (0.77-1.32)	.95
>64 y	1.04 (0.82-1.35)	.73
Gender		
Female	Ref	Ref
Male	2.07 (1.71-2.49)	<.0001
Race		
White	Ref	Ref
Black	0.87 (0.63-1.17)	.35
Hispanic	0.92 (0.67-1.24)	.59
Asian	0.65 (0.36-1.09)	.10
CCI*	1.19 (1.13-1.26)	<.0001
Underlying critical illness		
No	Ref	Ref
Yes	10.87 (9.08-13.08)	<.0001

*Odds ratio for each unit increase in CCI.

8.4% DC

Takotsubo: complications possibles

Complications	Incidence
Insuf Cardiaque → OAP	0-46%
Choc cardiogénique	0-46%
Obstacle à l'éjection.	13-18%
Arythmies ventriculaires graves	0-27%
Thrombus intra VG	2.5%

Obstacle à l'éjection sur un Takotsubo de localisation très apicale

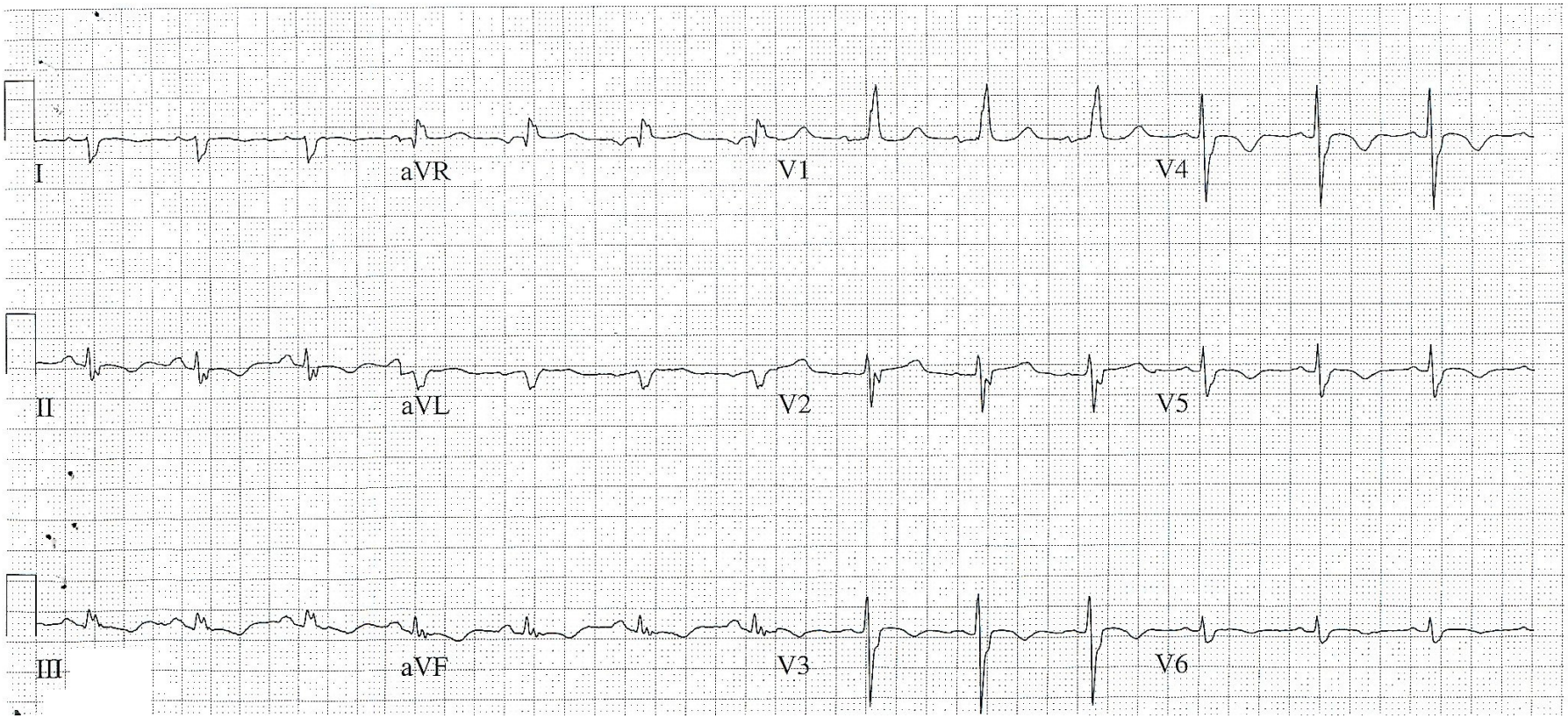
Thrombus apical sur un Tako-Tsubo

Very Late Recurrence of Takotsubo Syndrome

Marco Cerrito, M.D., Alberto Caragliano, M.D., Domenica Zema, M.D., Concetta Zito, M.D., and Giuseppe Oreto, M.D.

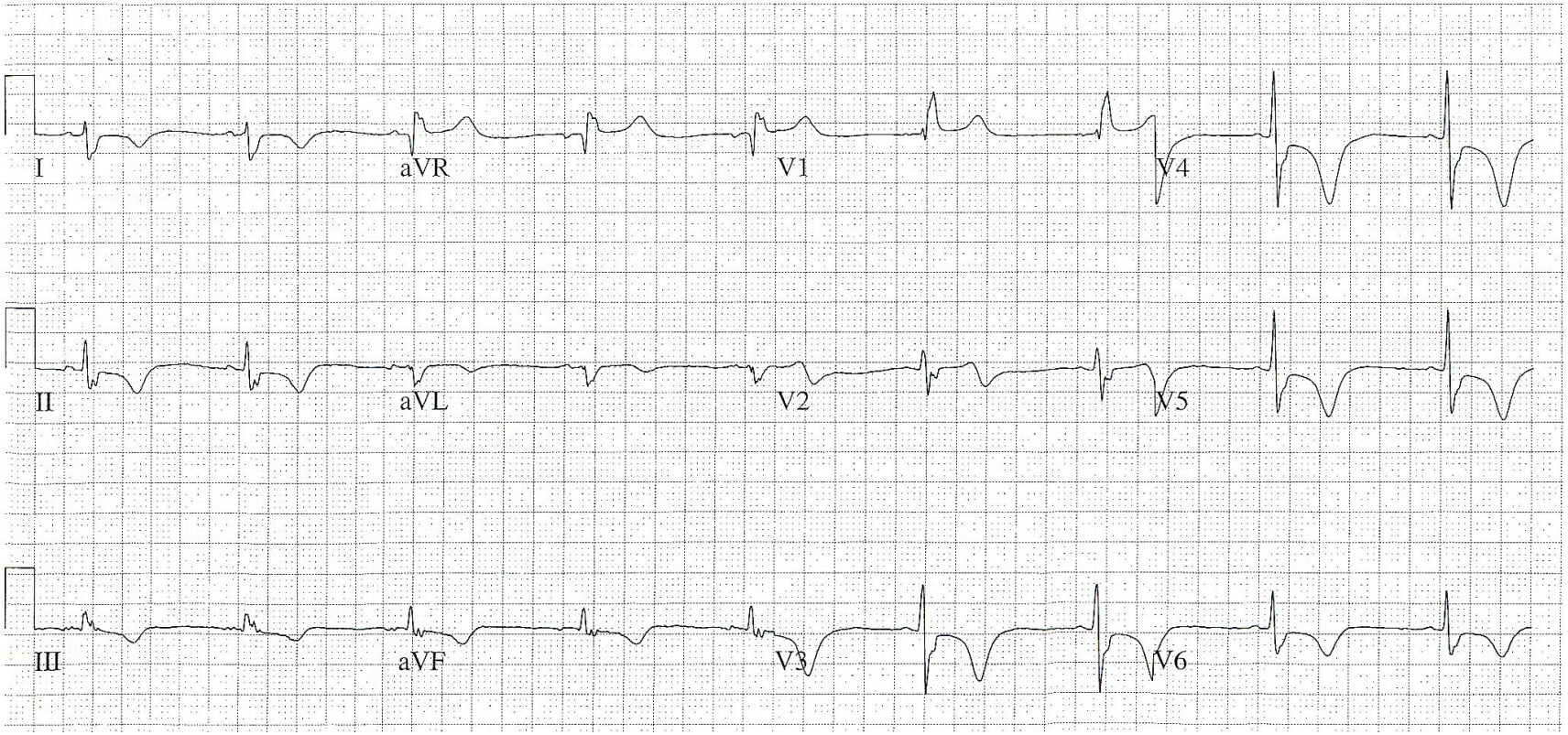
From the Dipartimento di Medicina e Farmacologia, Università di Messina, Italy

Mme H **14 Nov 2008** 00h49:



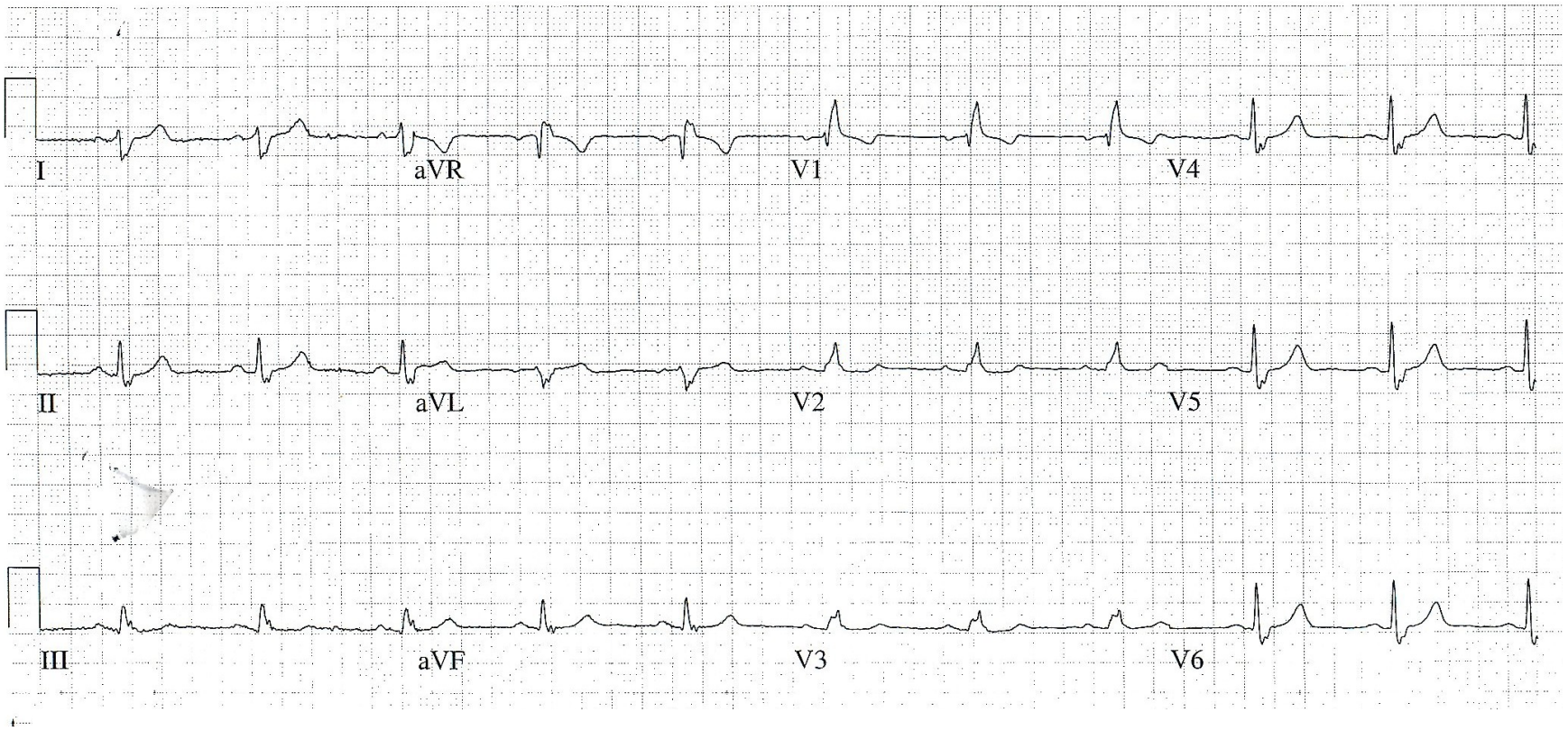
1ere épisode de Tako-tsubo

Mme H: J3: **17 Nov 2008**



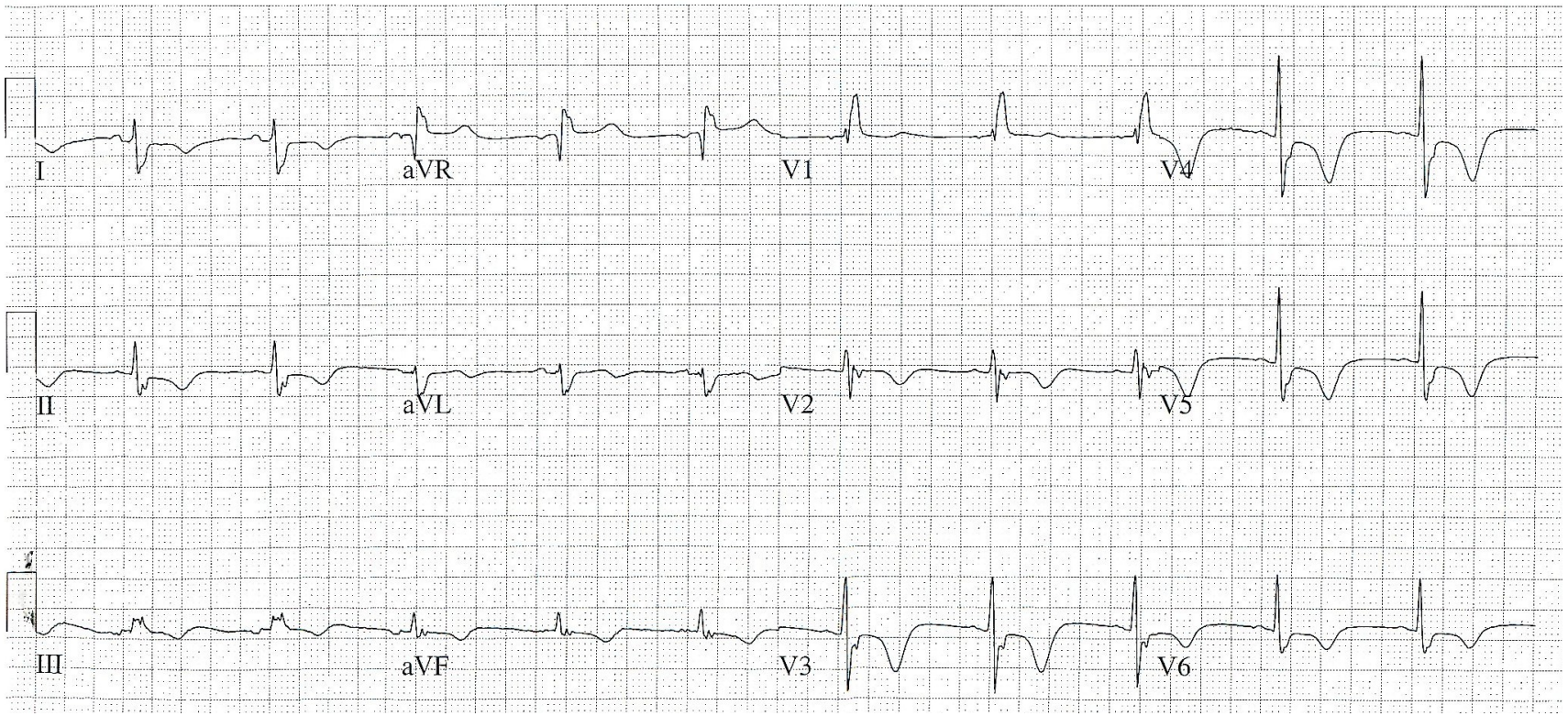
1ere épisode de Tako-tsubo

Mme H: 20 mois: **9 Juillet 2010**



Revue pour echo de stress (Dr Doyen)

Mme H: 24 mois **8 Nov 2010**



Récidive de Takotsubo

Long-term Outcome of Tako-tsubo Cardiomyopathy

Costin N. Ionescu, MD, PhD [a,*], Cesar A. Aguilar-Lopez, MD [b],
Antoine E. Sakr, MD [a], Andre E. Ghantous, MD [a] and
Thomas J. Donohue, MD [a]

[a] *Section of Cardiology, Hospital of Saint Raphael, New Haven, Connecticut, United States*
[b] *Department of Medicine, Hospital of Saint Raphael, New Haven, Connecticut, United States*

(Heart, Lung and Circulation 2010;19:601–605)

27 TakoTsubo sur 1374 KT en semi-urgence (2%)

Suivi 27 ± 16 mois

52% d'évènements: Décès, choc cardiogénique, Réhospitalisation pour cause cardiaque

Le Piège à C.. que peut masquer le Piège à poulpes

Takotsubo et phéochromocytome

Takotsubo: critères diagnostic Mayo-Clinic

4 critères qui doivent être tous présents

Akinésie/dyskinésie des segments apicaux et moyens avec des anomalies de cinétiques s'étendant au delà de la distribution vasculaire d'une seule coronaire

Absence de lésions coronaires

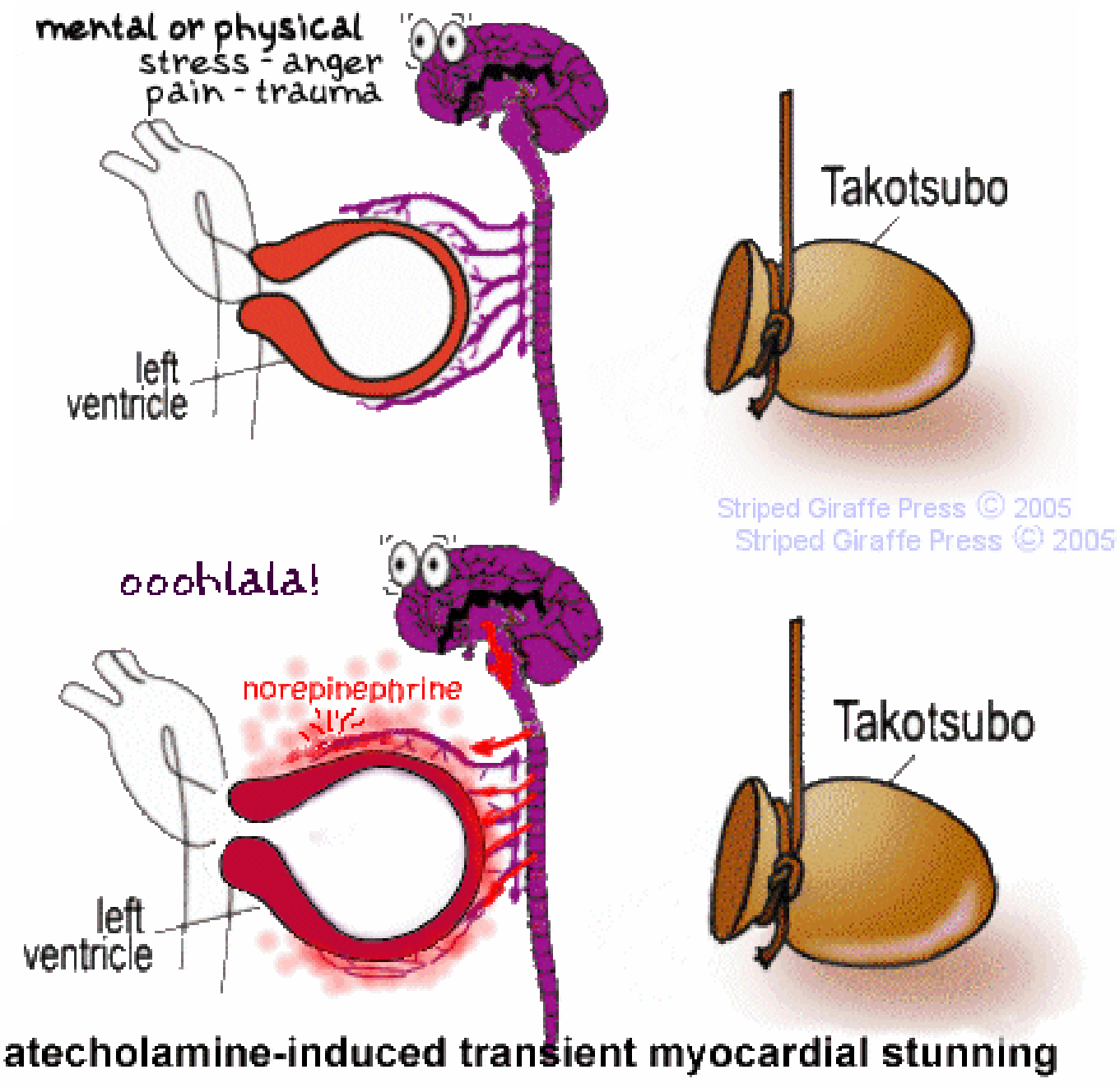
Modifications ECG nouvelles

Absence de trauma cérébral récent, de saignement intracranien, **de phéochomocytome** de myocardite de CMH

Takotsubo: prise en charge thérapeutique

- On compte sur l'évolution naturelle habituellement favorable.

……A priori mieux vaut éviter les catécholamines à la phase aiguë


mental or physical
stress - anger
pain - trauma
left
ventricle
Takotsubo
Striped Giraffe Press © 2005
Striped Giraffe Press © 2005
ooohlala!
norepinephrine
left
ventricle
Takotsubo
catecholamine-induced transient myocardial stunning

Ne sommes nous pas passés pendant longtemps à côté d’un tas de Tako-Tsubo ?

Ne sommes nous pas passés pendant longtemps à côté d'un tas de Tako-Tsubo ?

Fatal Tako-Tsubo cardiomyopathy recurrence after β_2-agonist administration

Francesco Venditti, Benedetta Bellandi, Guido Parodi *

Department of Cardiology, Careggi Hospital, Florence, Italy

Transient left ventricular ballooning (tako-tsubo cardiomyopathy) soon after intravenous ergonovine injection following caesarean delivery

Rodolfo Citro [a,], Marco Pascotto [a], Gennaro Provenza [a], Giovanni Gregorio [a], Eduardo Bossone [b]

Tako-tsubo syndrome soon after caesarean delivery: two case reports

Rodolfo Citro [a,*], Roberta Giudice [a], Marco Mirra [a], Giuseppe Bottiglieri [b], Eduardo Bossone [a], Giuseppe Di Benedetto [a], Federico Piscione [a]

Occurrence of Tako-Tsubo Cardiomyopathy in Association with Ingestion of Serotonin/Noradrenaline Reuptake Inhibitors

Christopher J.A. Neil, MBBS [a], Cher-Rin Chong, BPharm [b], Thanh H. Nguyen, MD [a] and John D. Horowitz, MBBS, PhD [a,*]

Distribution mensuelle saisonnière et circadienne du TakoTsubo

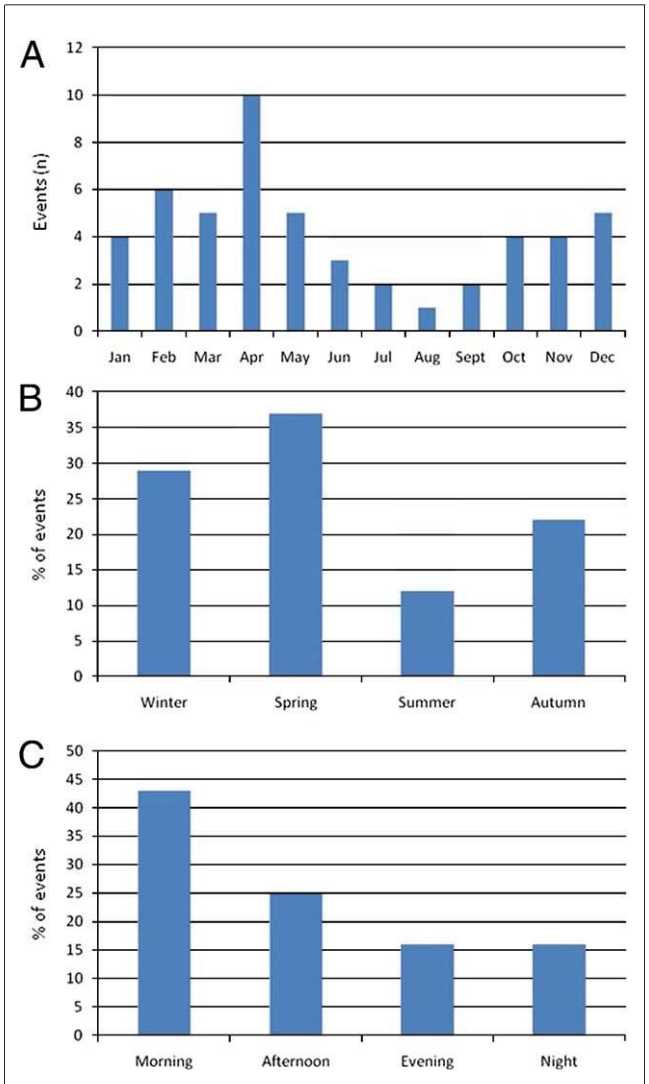


Figure 1 **Temporal Distribution of Tako-Tsubo Cardiomyopathy Events**

Monthly **(A)**, seasonal **(B)**, and circadian **(C)** distributions of Tako-Tsubo cardiomyopathy.

Mansencal et al JACC 2009

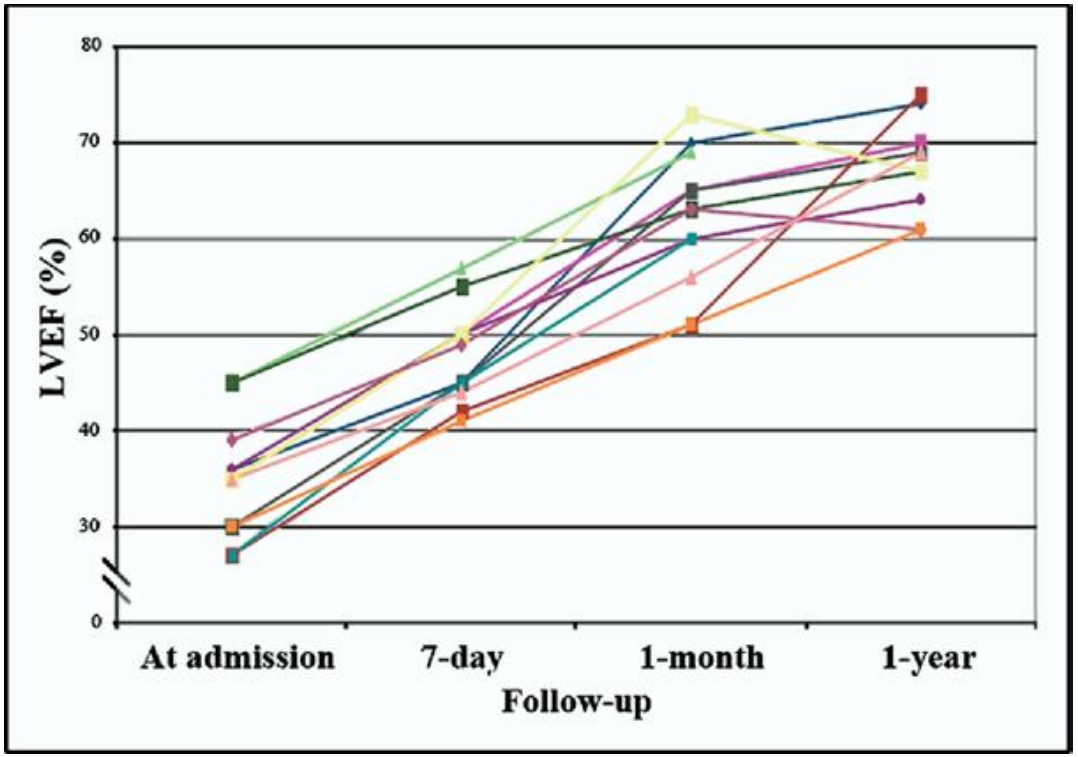


Figure 3. Echocardiographic left ventricular ejection fraction (LVEF) follow-up of patients with Tako-Tsubo syndrome.

Terrain de troubles de l'humeur

Anxiodepressive Disorders and Chronic Psychological Stress Are Associated With Tako-Tsubo Cardiomyopathy

– New Physiopathological Hypothesis –

Clément Delmas, MD; Olivier Lairez, MD, PhD; Emmanuel Mulin, MD;
Thomas Delmas, PhD; Nicolas Boudou, MD; Nicolas Dumonteil, MD;
Caroline Biendel-Picquet, MD; Jérôme Roncalli, MD, PhD;
Meyer Elbaz, MD, PhD; Michel Galinier, MD, PhD; Didier Carrié, MD, PhD

Table 3. Psychiatric Diagnosis vs. Presence of TTC

Psychiatric status	TTC (n=45), n (%)	ACS (n=50), n (%)	P-value
Psychiatric diagnosis (MINI)			
Current and/or past MDD	33 (73)	13 (26)	<0.001
Current major depressive disorder	24 (53)	9 (18)	<0.001
Past major depressive disorder	24 (53)	11 (22)	0.002
Generalized anxiety disorders	12 (26)	3 (6)	0.01

MDD, major depressive disorder; MINI, Mini International Neuropsychiatric Interview. Other abbreviations as in Table 1.

In-hospital mortality among patients with takotsubo cardiomyopathy: A study of the National Inpatient Sample 2008 to 2009

Waleed Brinjikji, MD,[a] Abdulrahman M. El-Sayed, DPhil,[b,c] and Samer Salka, MD, FACC[d] *Dearborn, MI; and New York, NY*

(Am Heart J 2012;164:215-21.)

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Male	2.07 (1.71-2.49)	<.0001
Race		
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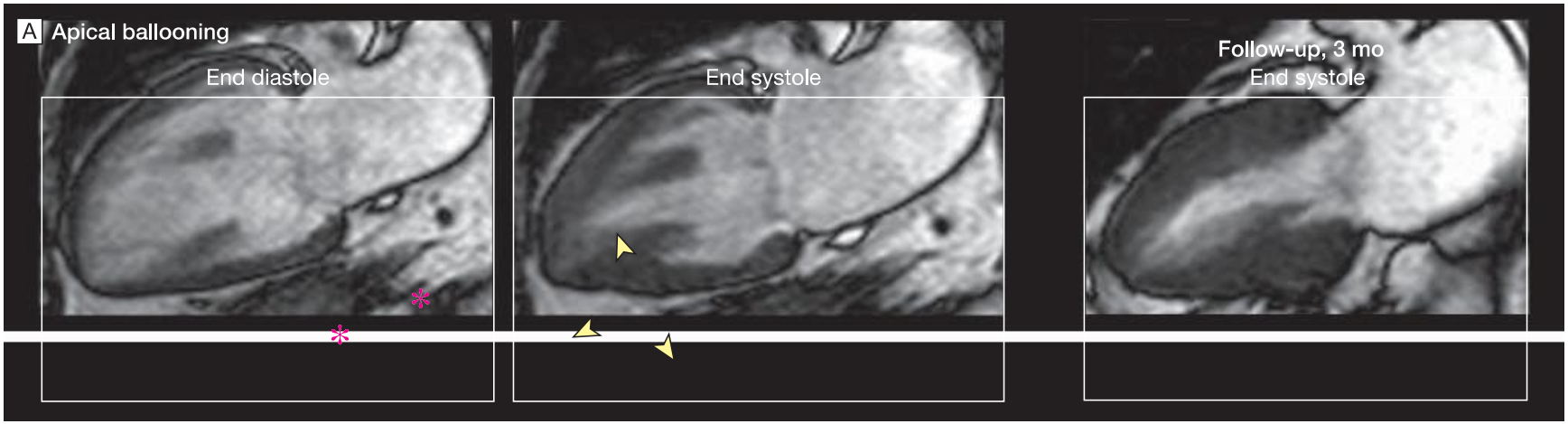
Hispanic	0.92 (0.67-1.24)	.59
Asian	0.65 (0.36-1.09)	.10
CCI*	1.19 (1.13-1.26)	<.0001
Underlying critical illness		
No	Ref	Ref
Yes	10.87 (9.08-13.08)	<.0001

*Odds ratio for each unit increase in CCI.

Table I. Demographic characteristics and mortality among all patients with takotsubo cardiomyopathy from the NIS, 2008 to 2009

	Takotsubo patients	n (%), mortality	Unadjusted mortality OR (95% CI)
n	24701	1027 (4.2)	–
Age, mean ± SD	66.9 ± 30.7	–	–
Age group			
<50 y	2689 (10.9)	105 (3.9)	Ref
50-64 y	7290 (29.5)	245 (3.4)	0.86 (0.68-1.08)
>64 y	14722 (59.6)	677 (4.6)	1.19 (0.96-1.46)
Gender			
Female, n (%)	21994 (89.0)	799 (3.6)	Ref
Male, n (%)	2707 (11.0)	228 (8.4)	2.44 (2.09-2.84)*
Race, n (%)			
White	16680 (84.0)	668 (4.0)	Ref
Black	1178 (5.9)	49 (4.2)	1.04 (0.77-1.40)
Hispanic	1032 (5.2)	50 (4.9)	1.22 (0.91-1.64)
Asian	353 (1.8)	15 (4.2)	1.06 (0.63-1.79)
Mean ± SD CCI	1.4 ± 2.7	–	–
Chronic comorbidities			
Obesity	1494 (6.1)	29 (2.0)	0.44 (0.31-0.64)*
HTN	14434 (58.4)	428 (3.0)	0.49 (0.44-0.56)*
Hyperlipidemia	9261 (37.5)	119 (1.3)	0.21 (0.17-0.25)*
Diabetes mellitus	4661 (18.9)	157 (3.4)	0.77 (0.64-0.91)*
Smoking	3250 (13.2)	81 (2.5)	0.56 (0.44-0.70)*
Malignancy	3547 (14.4)	288 (8.1)	2.45 (2.13-2.82)*
Anxiety disorder	2204 (8.9)	22 (1.0)	0.22 (0.14-0.34)*
Mood disorder	3696 (15.0)	67 (1.8)	0.39 (0.30-0.50)*

HTN, Hypertension; *Ref*, reference.
* $P < .001$.



Epancht péricardique

Table 1. Clinical Characteristics (n = 256)

Characteristics	No. (%) of Participants[a]
Age, mean (SD), y	
All	69 (12)
Women	69 (12)
Men	70 (10)
Female	227 (89)
Coronary risk factors	
Hypertension	187 (73)
Hyperlipidemia	66 (26)
Diabetes	49 (19)
Smoking	50 (20)
Overweight (BMI 25-30)	130 (51)
Obese (BMI >30)	48 (19)
BMI, mean (SD)	26 (5)
Clinical presentation	
Chest pain and/or dyspnea	225 (88)
Syncope	9 (4)
Asystole	3 (1)
Pre-/peri-/postmedical/surgical procedure (with electrocardiographic abnormality, chest pain)	19 (7)
Elevated troponin T (cutoff, 0.1 ng/mL)	231 (90)
Maximal troponin T, median (IQR), ng/mL	0.4 (0.1-1.0)
Elevated CK (cutoff, 192 U/L)	134 (52)
Maximal CK at admission, median (IQR), U/L	174 (96-276)
Elevated CK myocardial band (cutoff, 24 U/L)	162 (63)
Maximal CK myocardial band, median (IQR), U/L	24 (18-42)
Electrocardiographic changes at presentation	222 (87)
ST elevation	108 (42)
T-wave inversion	96 (38)
ST depression	4 (2)
New left bundle-branch block	2 (1)
High-degree atrioventricular block	3 (1)
Asystole	3 (1)
Pacemaker electrocardiogram	6 (2)

Abbreviations: BMI, body mass index (calculated as weight in kilograms divided by height in meters squared); CK, creatine kinase; IQR, interquartile range.
[a] Data are presented as No. (%) of participants unless otherwise indicated.

256 pts

89% Femmes

88% douleur ou dyspnée
4% syncope
1% asystolie
7% anomalies prè-post- op

Biologie

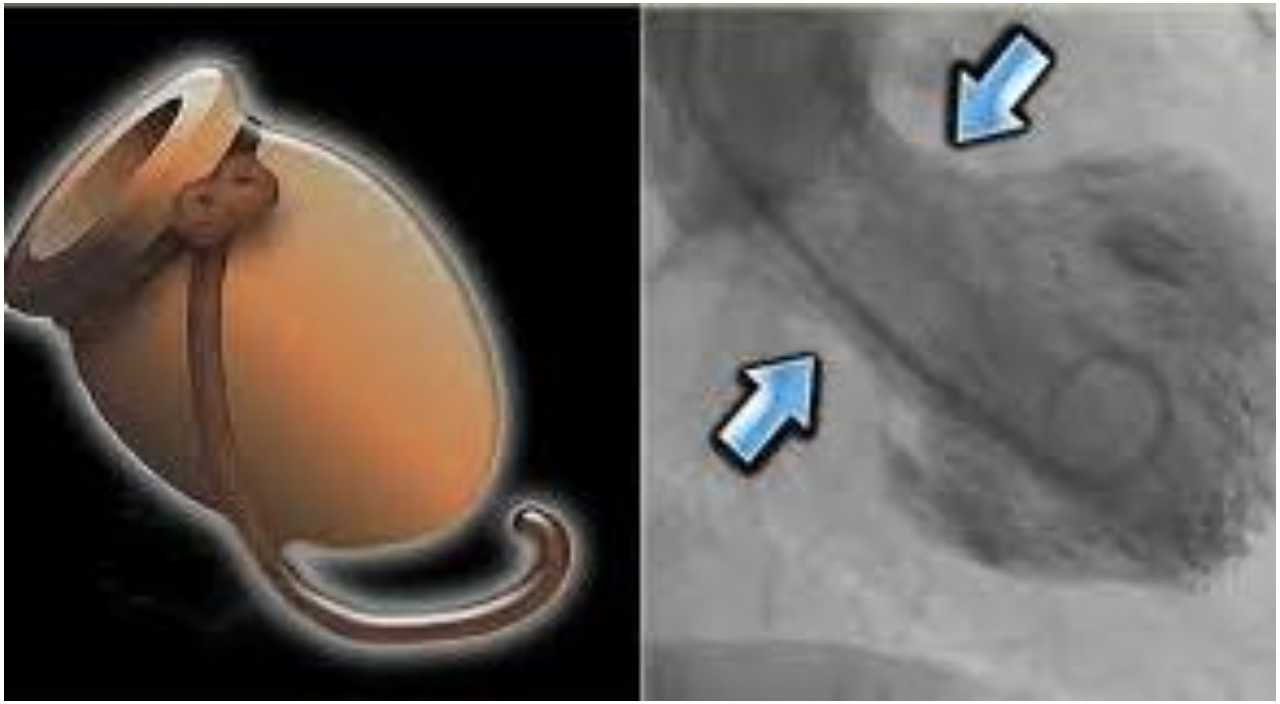
Tp élevée > 0.1 ng/ml 90%

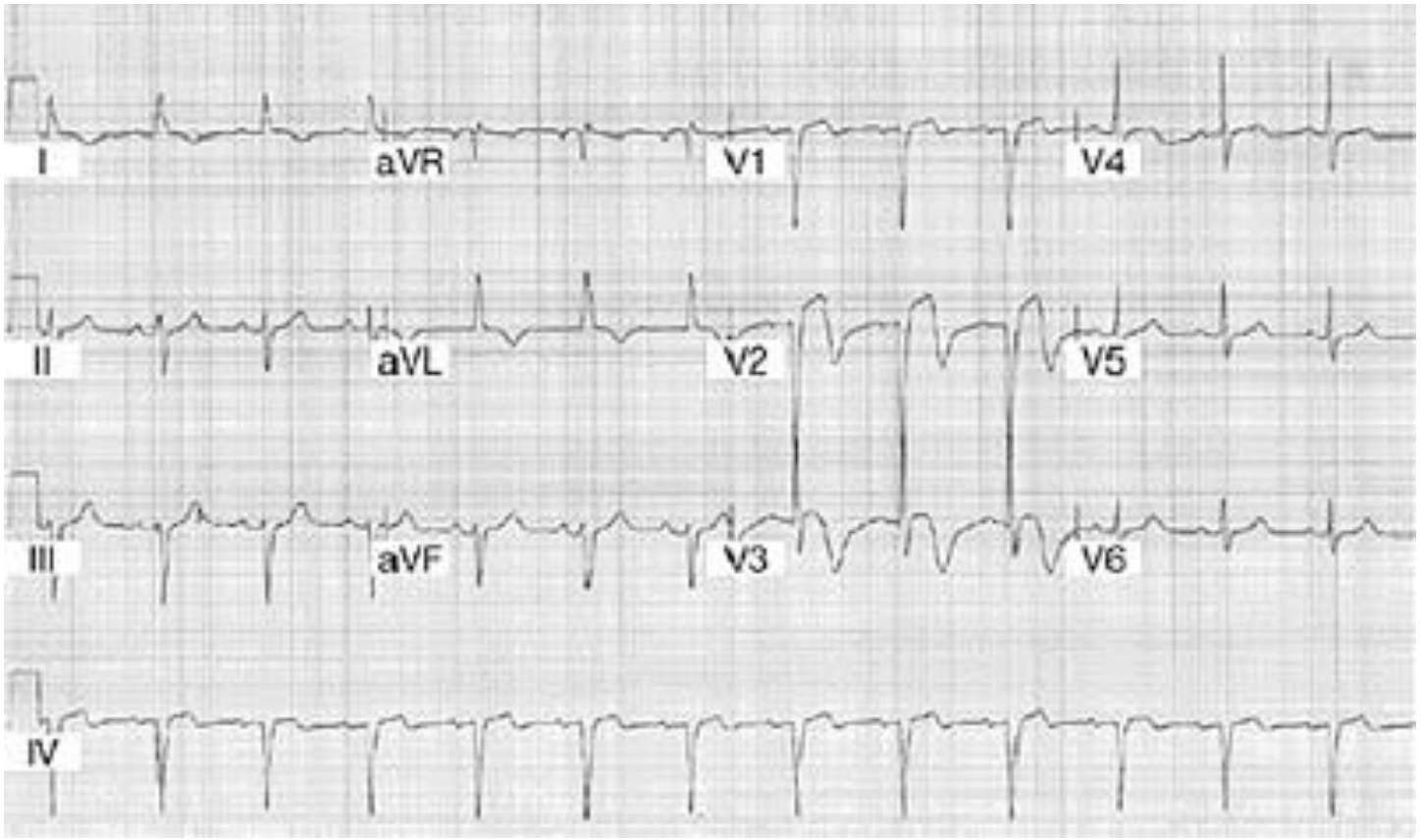
Tp max 0.4 [0.1-1]

Élévation CK 52%

CK Max 174

Une lésion IVA passée inaperçue ne peut pas expliquer cette cinétique




I
aVR
V1
V4
II
aVL
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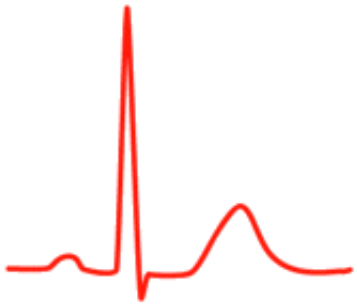
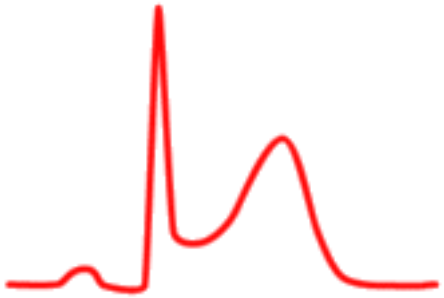
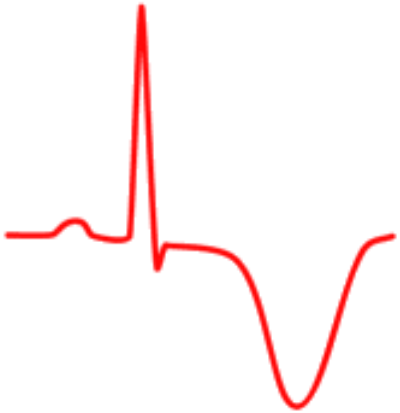
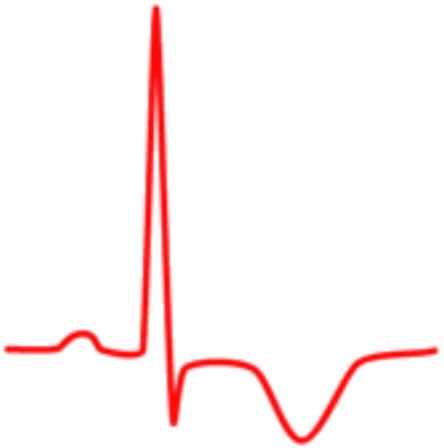
III
aVF
V3
V6
IV

1 

2 

3 

4 

Clinical Characteristics and Cardiovascular Magnetic Resonance Findings in Stress (Takotsubo) Cardiomyopathy

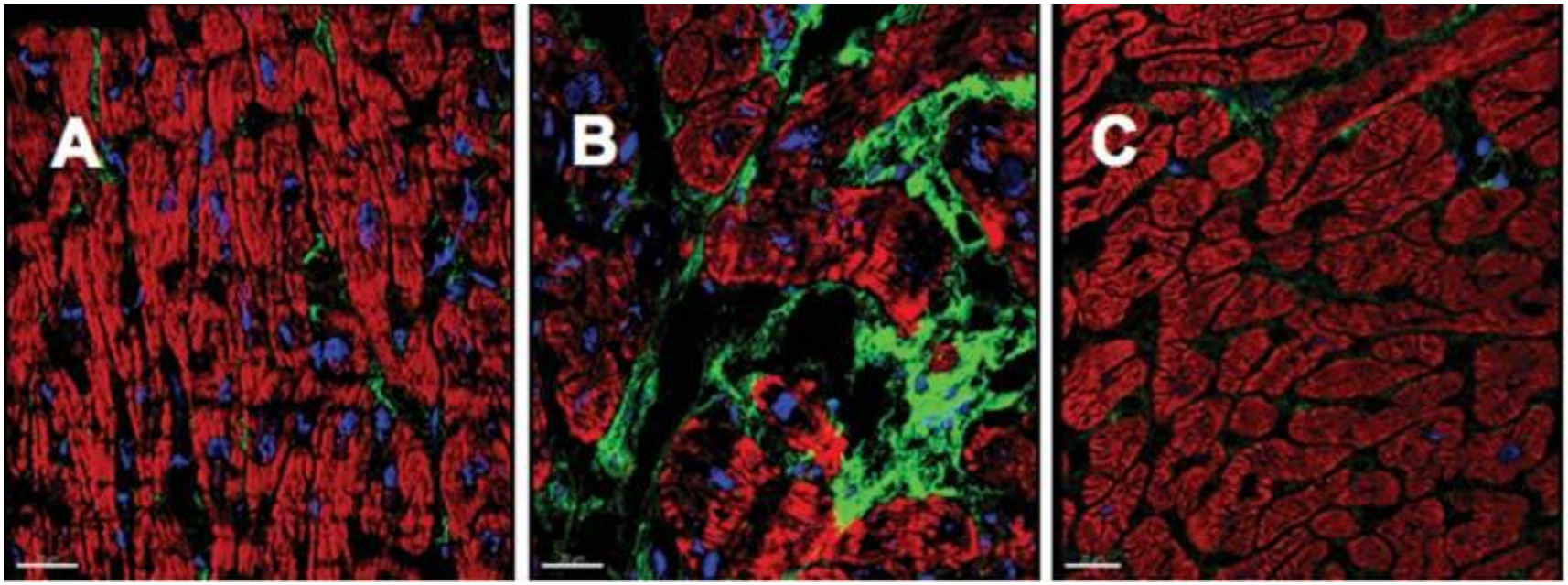
JAMA. 2011;306(3):277-286

Anomalies IRM (en moyenne à J3)	
Diminution FE	**100 %**
Biventricular balloning	**34%**

Table 2 Results

	LGE positive (n = 5) [IQR]	LGE negative (n = 10) [IQR]	P-value
EF (%)	50.1 [45.3–59.2]	41.2 [35.9–48.4]	0.13
EDV (mL) (normalized to BSA)	70.8 [62.2–74.2]	78 [70.3–96.2]	0.91
ESV (mL) (normalized to BSA)	30 [24.2–32.9]	41.3 [35.6–55.7]	0.05
Wall motion score	1.6 [1.5–2.2]	1.65 [1.6–2.1]	0.91
Creatinine kinase (U/L)	206 [143.5–273.5]	203 [143–259.8]	0.81
Troponin (ng/mL)	0.16 [0.09–0.22]	0.15 [0.02–0.5]	0.57
Oedema (% area)	23.1 [20.9–25.6]	19.9 [18.6–21.2]	0.27
AU (% collagen-1)	18.84 [13.82–19.75]	7.57 [5.41–9.19]	0.0001

EF, ejection fraction; EDV, end-diastolic volume; ESV, end-systolic volume; BSA, body surface area.



Immunohistological basis of the late gadolinium enhancement phenomenon in tako-tsubo cardiomyopathy

Andreas Rolf[1*†], Holger M. Nef[1†], Helge Möllmann[1], Christian Troidl[2], Sandra Voss[2], Guido Conradi[1], Johannes Rixe[1], Holger Steiger[1], Katharina Beiring[1], Christian W. Hamm[1], and Thorsten Dill[1]

European Heart Journal (2009) 30, 1635–1642
doi:10.1093/eurheartj/ehp140

Table 1 Baseline characteristics

	LGE positive (n = 5)	LGE negative (n = 10)	P-value
Age (year) [IQR]	57 [52–59]	65.5 [57.5–72]	0.99
Sex (male) [n, (%)]	1 (20%)	1 (10%)	0.56
ST-elevation/T inversion [n, (%)]	5 (100%)	10 (100%)	0.4
Preceding stressful event [n, (%)]	5 (100%)	10 (100%)	0.4
Time onset of symptoms to MRI (h) [IQR]	19.7 [17.2–20.5]	23.1 [18.9–27.9]	0.31
Time onset of symptoms to biopsy (h) [IQR]	5.5 [5.2–16.5]	20.5 [11.3–43.3]	0.13
Time MRI to biopsy (h) (positive values indicate time after biopsy) [IQR]	12.1 [4.0–15.3]	1.0 [−4.1 to 7.6]	0.37

LGE, late gadolinium enhancement; IQR, inter-quartile range, MRI, magnetic resonance imaging.

Takotsubo: les marqueurs biologiques

Copeptine Tako-Tsubo Vs SCA

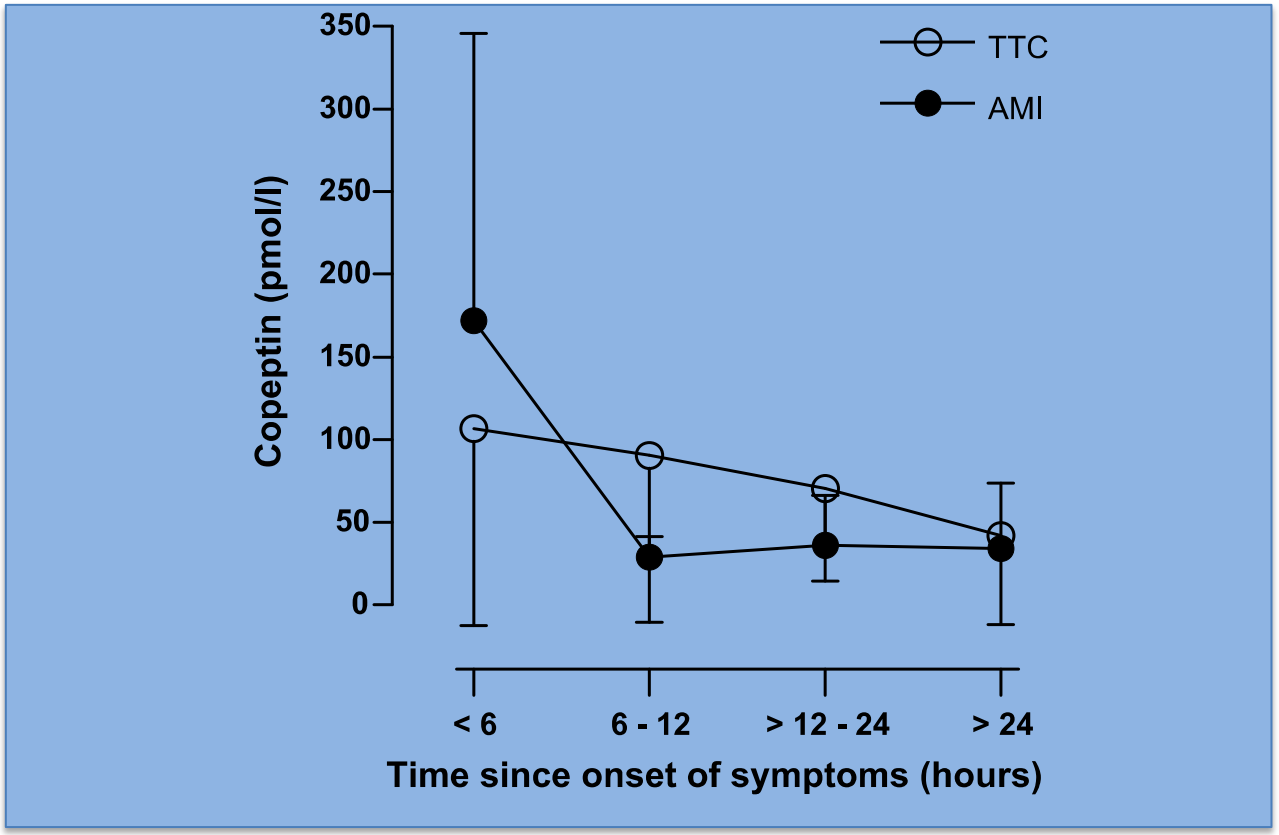
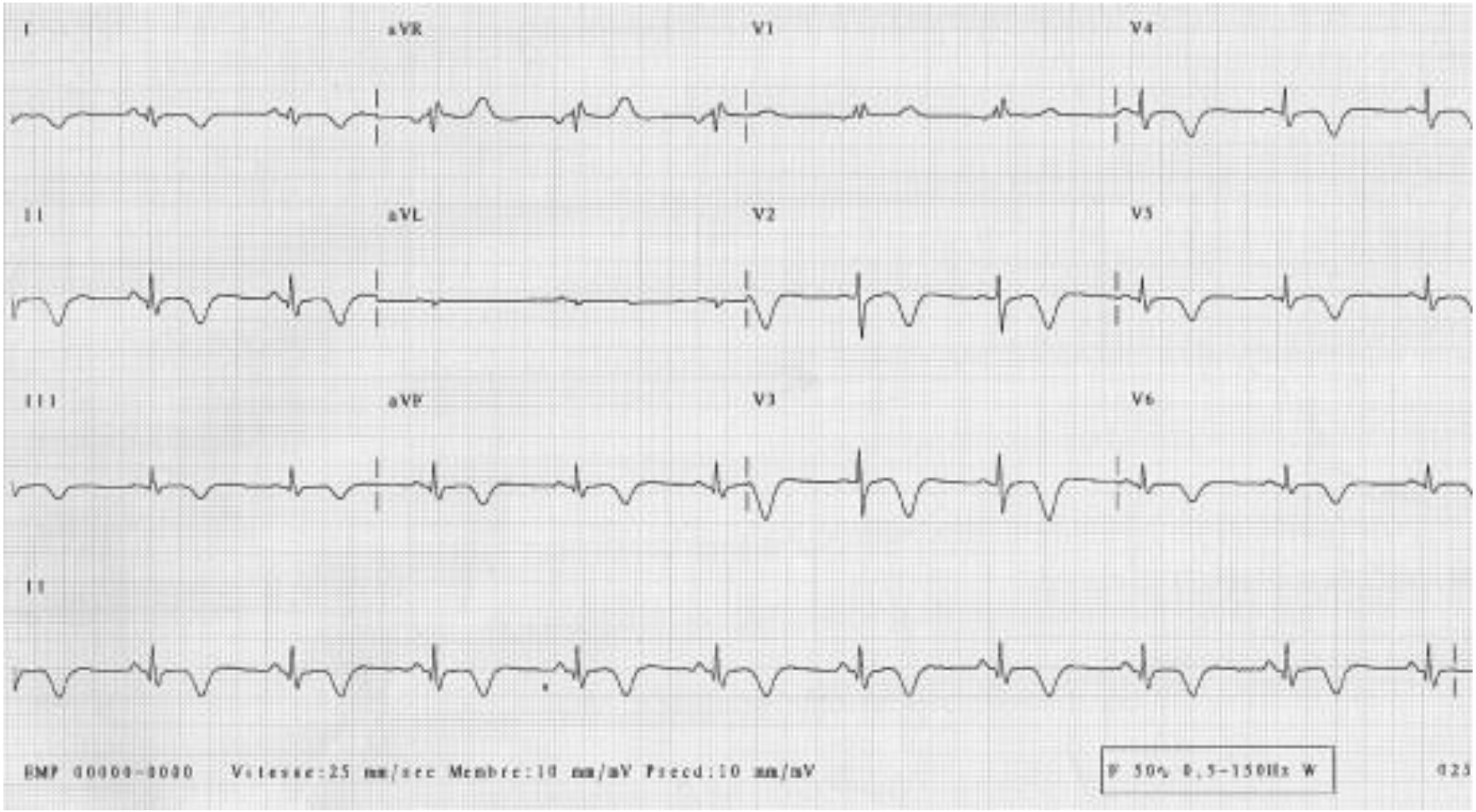
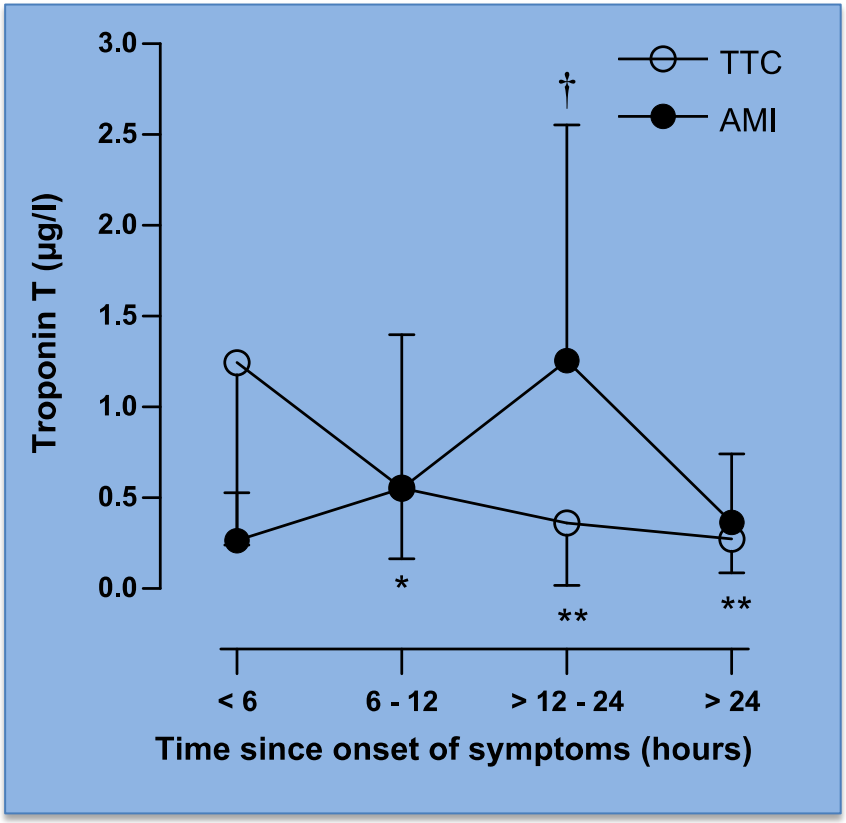


Fig. 1. Time course of serum copeptin concentrations according to the onset of symptoms in 23 patients with Tako-Tsubo cardiomyopathy (TTC) and 25 patients with acute myocardial infarction (AMI). Levels of copeptin were measured in blood samples drawn immediately before cardiac catheterization. Data represent mean concentrations ± standard deviation (time since onset of symptoms <6 h $n = 6$ TTC and $n = 12$ AMI, 6–12 h $n = 6$ TTC and $n = 4$ AMI, >12–24 h $n = 3$ both TTC and AMI, >24 h $n = 8$ TTC and $n = 6$ AMI).


I
aVR
V1
V4
II
aVL
V2
V5
III
aVF
V3
V6
II
EMF 00000-0000 Vitesse:25 mm/sec Membre:10 mm/mV Precd:10 mm/mV
F 50% 0.5-150Hz W
025

Takotsubo: les marqueurs biologiques



Par rapport à l'entrée des patients avec durée des symptômes identiques

Release patterns of copeptin and troponin in Tako-Tsubo cardiomyopathy

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Peptides 34 (2012) 389–394

Tako-tsubo cardiomyopathy