La cardiomyopathie de stress en réanimation *(Takotsubo Syndrome)*

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- Patiente de 53 ans consulte aux urgences pour douleur thoraciques, vertiges, vomissements incoercibles, et diarrhées évoluant depuis 3 jours.
- Citoyenne Française arrivée à Monastir avec son mari depuis 5 jours.
- Mari positif SARS-COV2
- Examen: déshydratation, marbrures, Pouls: 132/min, TA.
- COVID-19 confirmé par rt-PCR sur prélèvement nasopharyngé
- the chest X-ray and chest CT scan were normal

- Perfusion de 6 litres/3H de serum salé isotonique.
- Aggravation rapide et transfert en Réanimation pour insuffisanc circulatoire aigue:
  - *TAS: 80 mmHg,*
  - *pH 6.95; hyperlactatemia (8.8mmol/l)*
  - *Creatinine sanguine: 365 µmol/l).*
  - *ECG: arrythmia, depression ST > 1mm et T inverse dans plus de 6 derivations.*
  - *Troponin (hs) à 35 ng/l et rapidement à 3400 ng/l .*
- Rx norepinephrine titrée 65 mmHg
- Hemodialyse (4 heures).
- Peu d'amelioration avec epinephrine perfusion jusqu'à15 mg/h.

ho transthoracique: hypokinésie globale, VCI collabée; FEVG:
%,

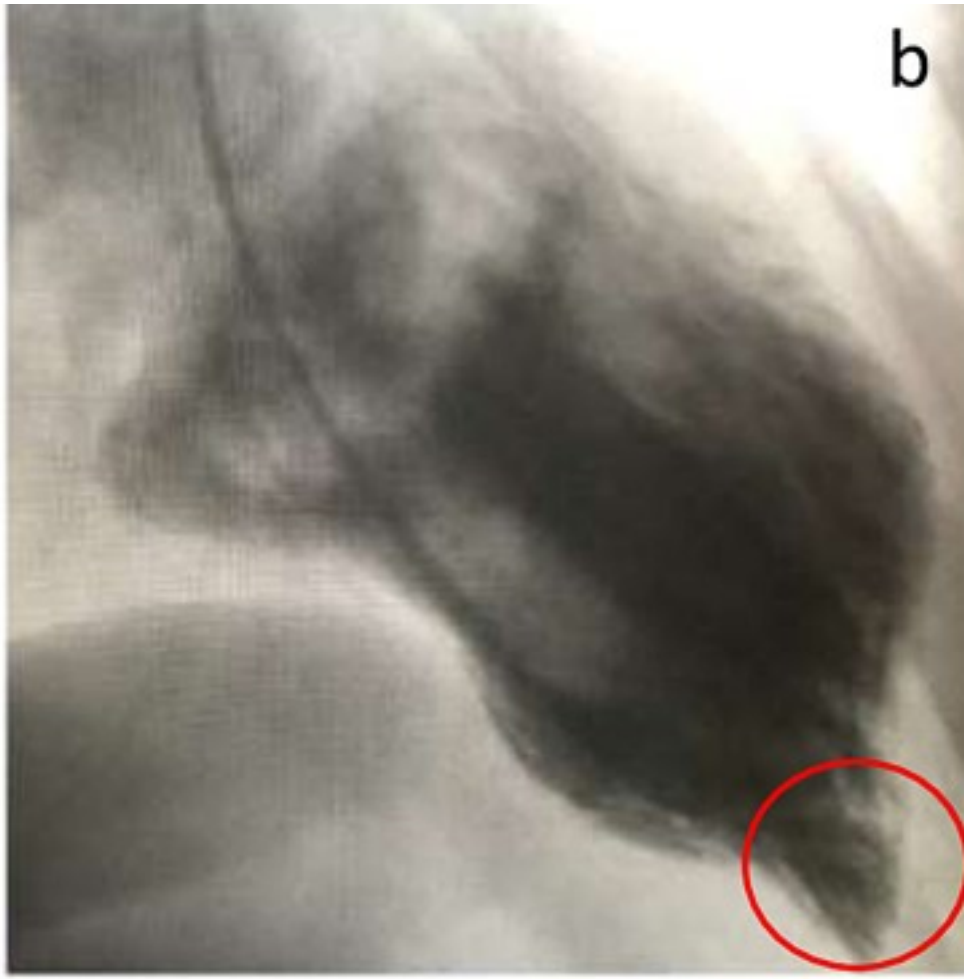
émarrage de Dobutamine (7.5 µg/kg/min), permettant la
duction de la norepinephrine.

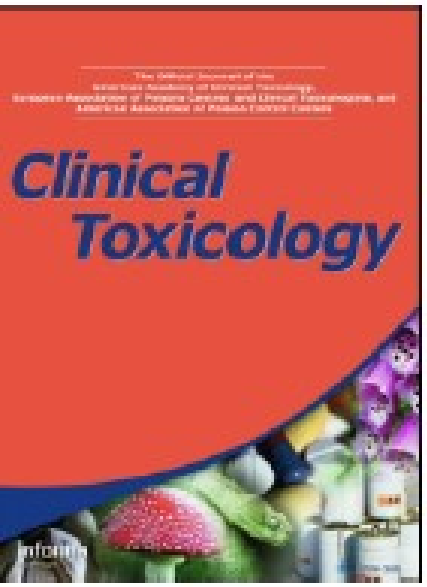
ronarographie (24 heures après l'admission en reanimation):
ronaires saines.

ngiographie VG: Takotsubo inverse (ballonement basal et
perkinésie apicale).

mélioration en 7 jours de la function cardiaque (et rénale) et
vrage des drogues inotropes/vasoactives à J5

ho de contrôle: recuperation complete de la function VG





Clinical Toxicology

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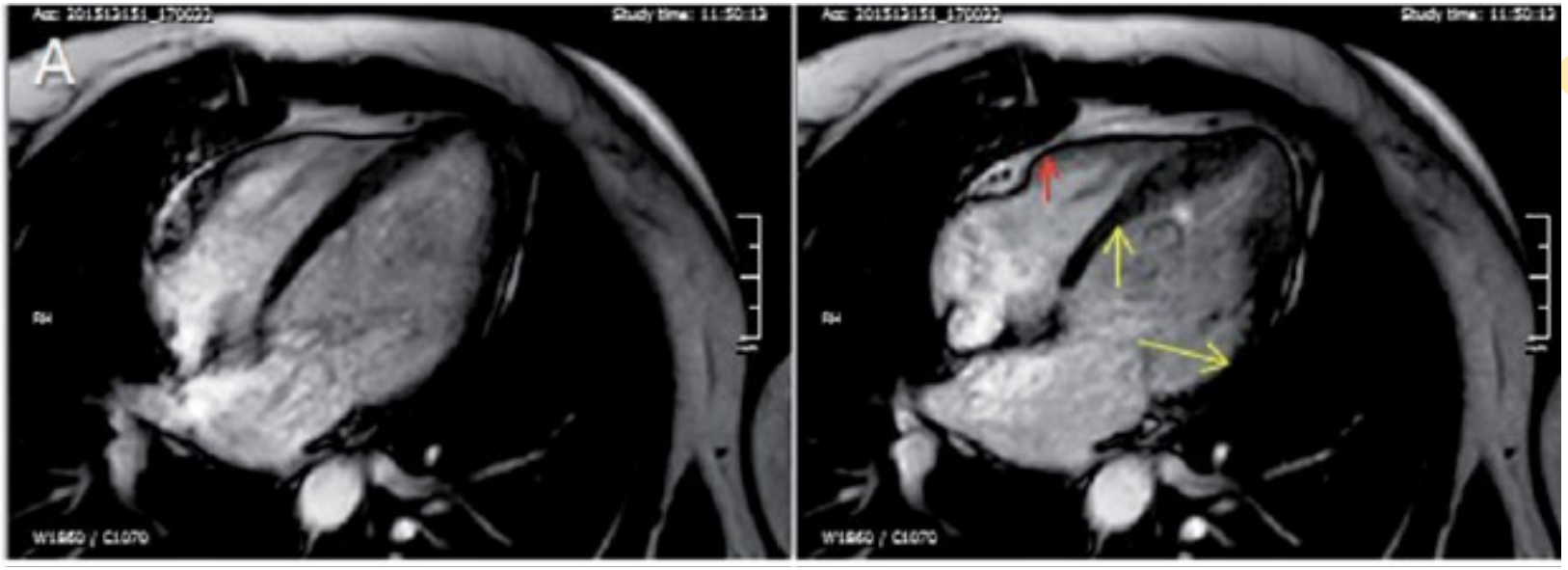
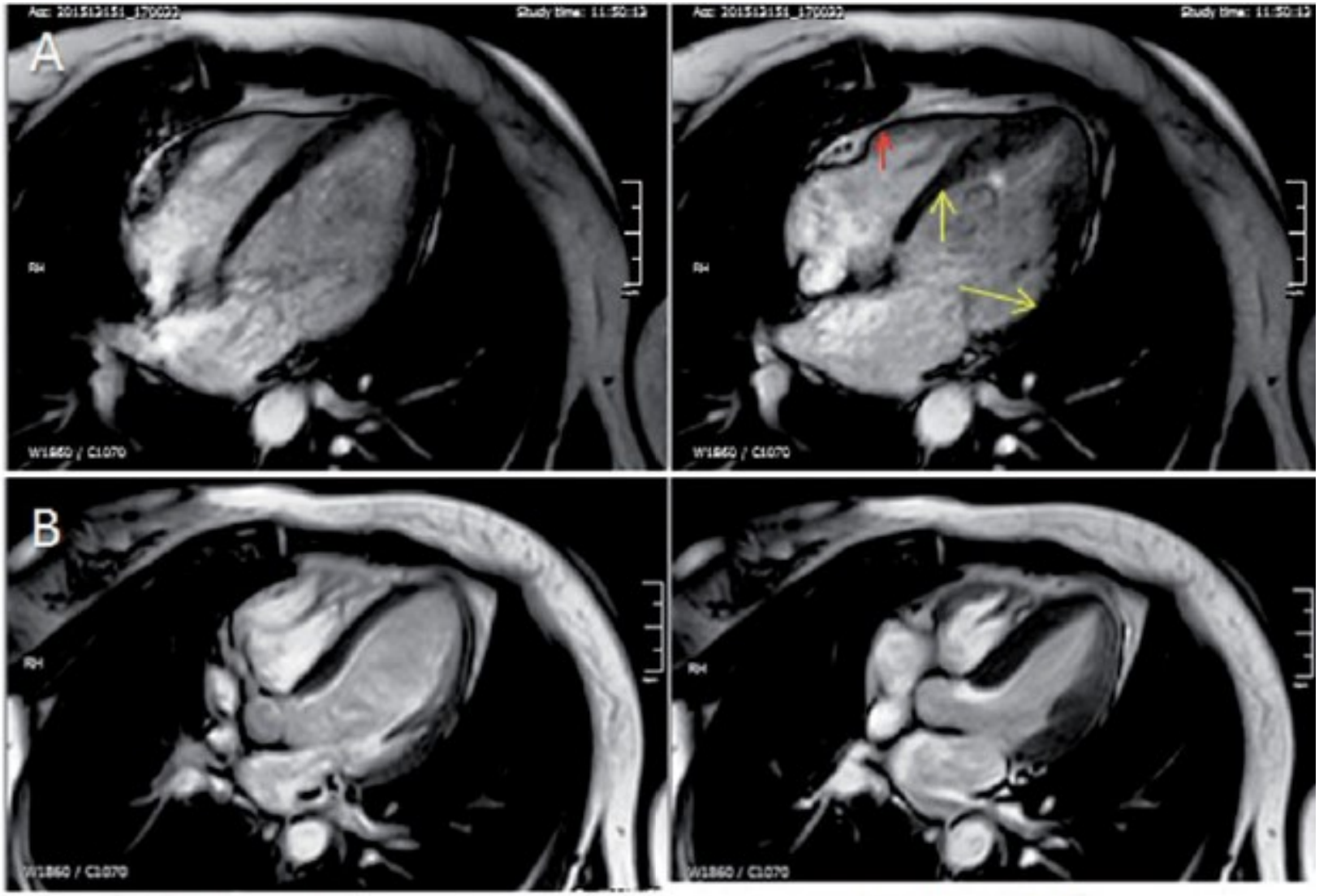
Inverted Takotsubo syndrome in Androctonus australis scorpion envenomation

Fekri Abroug, Islem Ouanes, Mezri Maatouk, Mondher Golli & Lamia Ouanes-Besbes



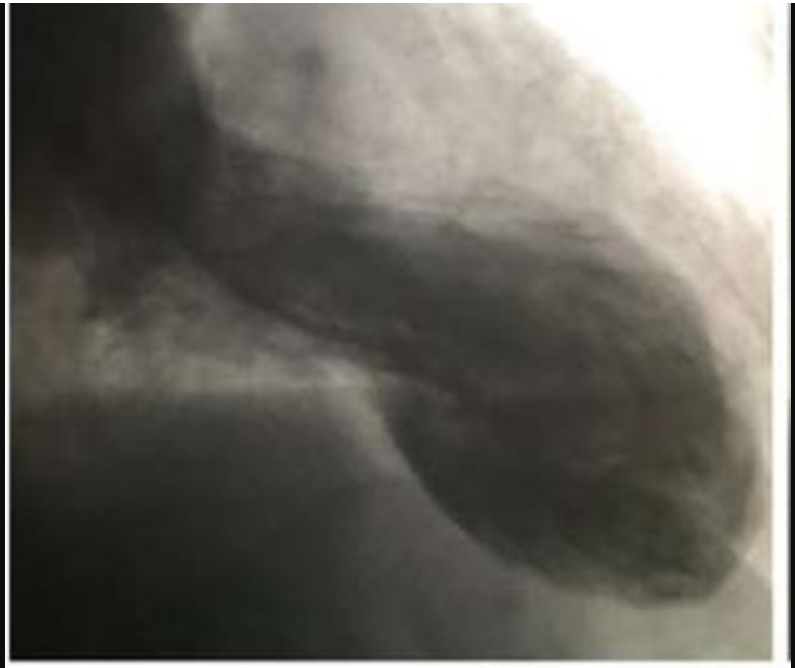
End-diastole

End-systole


A
B
End-diastole
End-systole

What is Stress cardiomyopathy (tts)?

- 1ere Description 1990: Sato et coll
- Série de 12 cas dont le 1er en 1983:
  - Femme de 64 ans avec douleurs thoraciques aigues, ECG typique, coronaires saines
  - Ventriculographie: aspect de cruche (Takotsubo)
  - Guérison en 2 semaines
  - Confinement au Japon?
  - Premiers cas Français et Américains: fin 1990



The NEW ENGLAND JOURNAL of MEDICINE

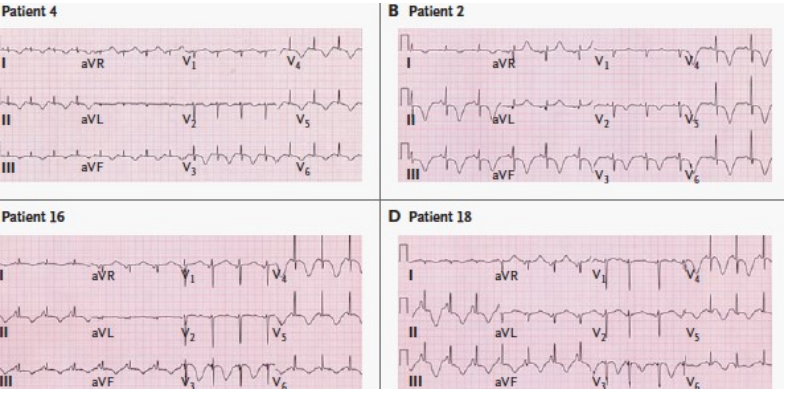
ESTABLISHED IN 1812 FEBRUARY 10, 2005 VOL. 352 NO. 6

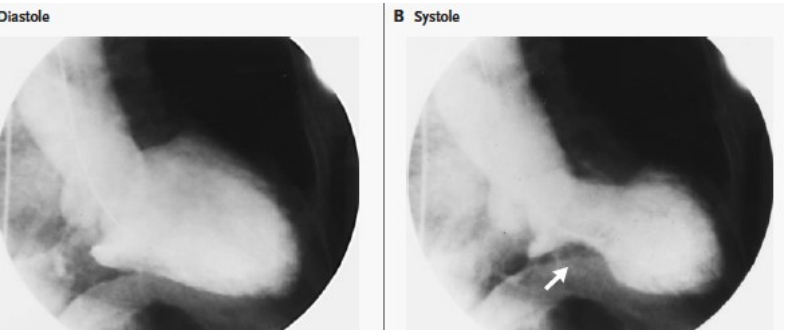
Neurohumoral Features of Myocardial Stunning Due to Sudden Emotional Stress

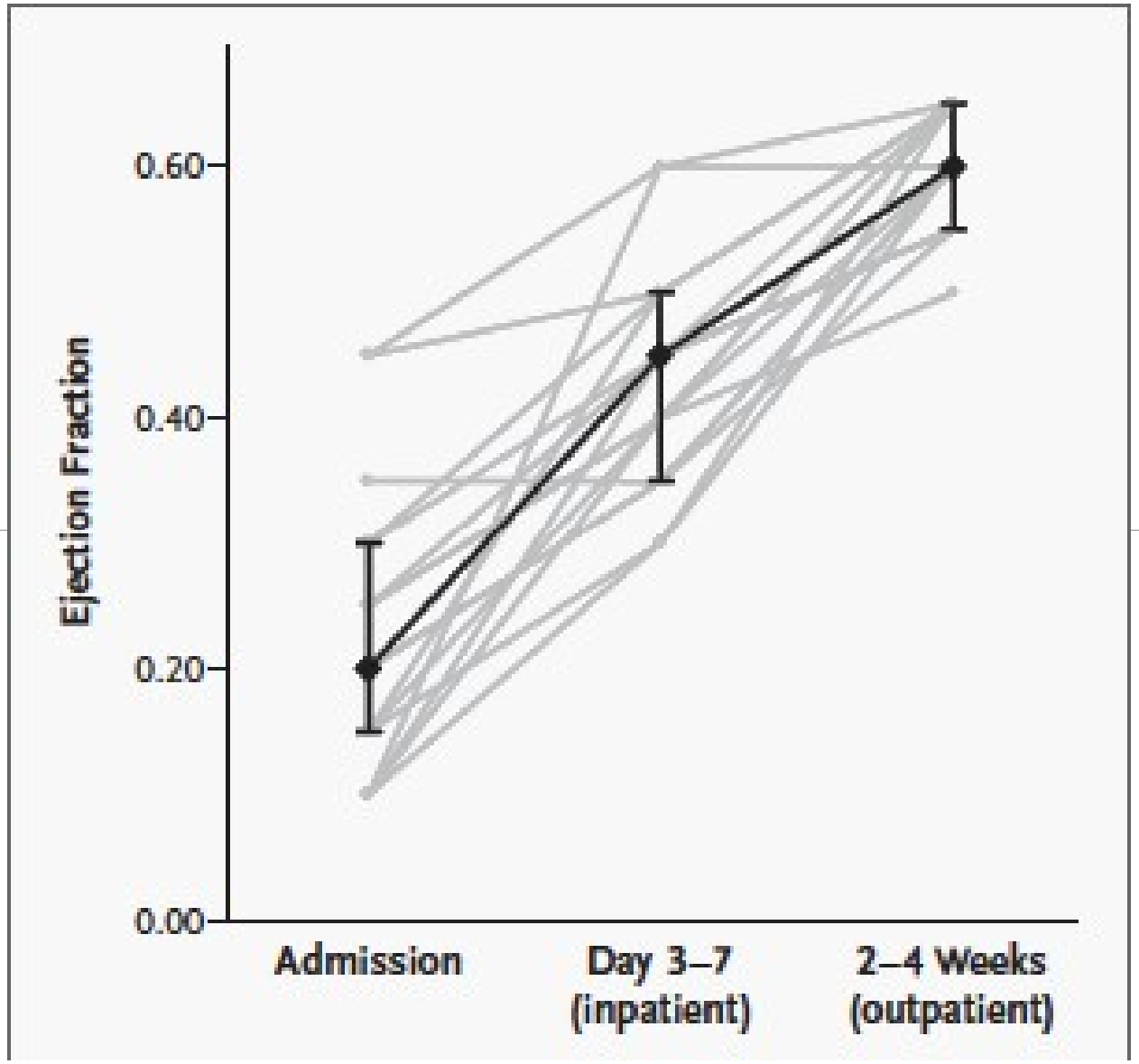
Ilan S. Wittstein, M.D., David R. Thiemann, M.D., Joao A.C. Lima, M.D., Kenneth L. Baughman, M.D.,

Table 1. Clinical Characteristics of 19 Patients with Stress Cardiomyopathy on Admission.*

Patient No.	Age	Sex	Race or Ethnic Origin	Coronary Risk Factors	Emotional Stressor	Clinical Presentation			
						Time after Symptom Onset†	Heart Rate	MAP	Symptoms
	yr					*hr*	*beats/min*	*mm Hg*	
1	62	F	B	HTN, smoking	Mother's death	12	71	96	Chest pain
2	63	F	AA	HTN, Chol	Car accident	1	86	52	Heart failure; hypotension
3	48	F	W	HTN, Chol, smoking	Surprise reunion	4	85	88	Chest pain
4	60	F	W	HTN	Surprise party	2	109	53	Chest pain; hypotension (IABP)
5	66	F	W	HTN, FH	Father's death	5	65	91	Chest pain
6	77	F	W	HTN, FH	Husband's death	6	106	9[illegible]	Chest pain
7	52	F	W	Smoking	Friend's death	2	92	5[illegible]	Chest pain; hypotension (IABP)
8	52	F	W	HTN	Father's death	5	88	9[illegible]	Chest pain
9	32	F	W	Chol, FH	Mother's death	1	74	9[illegible]	Chest pain
10	61	F	W	Chol	Fear of procedure	1	108	4[illegible]	Chest pain; shock (IABP)
11	66	F	W	Smoking	Fierce argument	2	66	10[illegible]	Chest pain
12	87	F	W	HTN, Chol, DM	Friend's death	1	99	7[illegible]	Chest pain
13	69	M	W	HTN, Chol	Court appearance	2	81	7[illegible]	Chest pain
14	50	F	W	None	Fear of choking	2	84	100	Chest pain; heart failure
15	71	F	W	None	Public speaking	1	67	108	Chest pain
16	76	F	W	HTN, DM, smoking	Husband's death	2	109	101	Chest pain
17	65	F	W	HTN, Chol, smoking	Armed robbery	2	95	91	Chest pain
18	71	F	W	HTN	Son's death	6	70	66	Chest pain; VF
19	27	F	A	None	Tragic news	3	64	52	Chest pain; hypotension

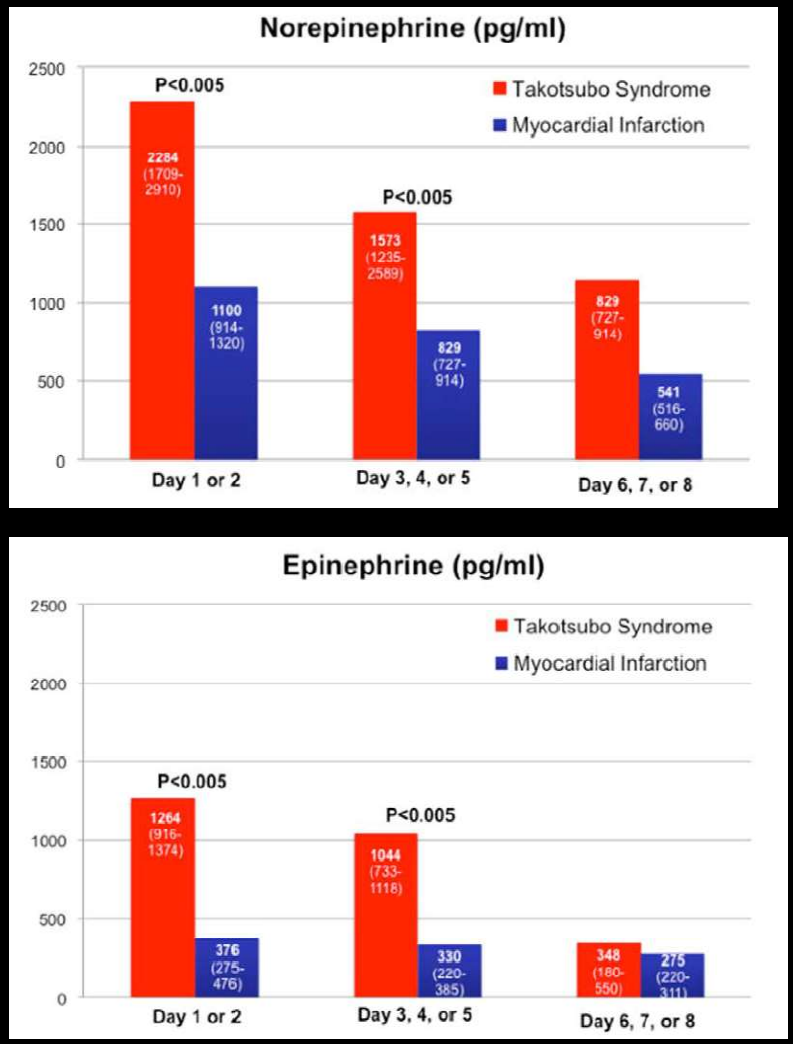

Patient 4
B Patient 2
Patient 16
D Patient 18


Diastole
B Systole

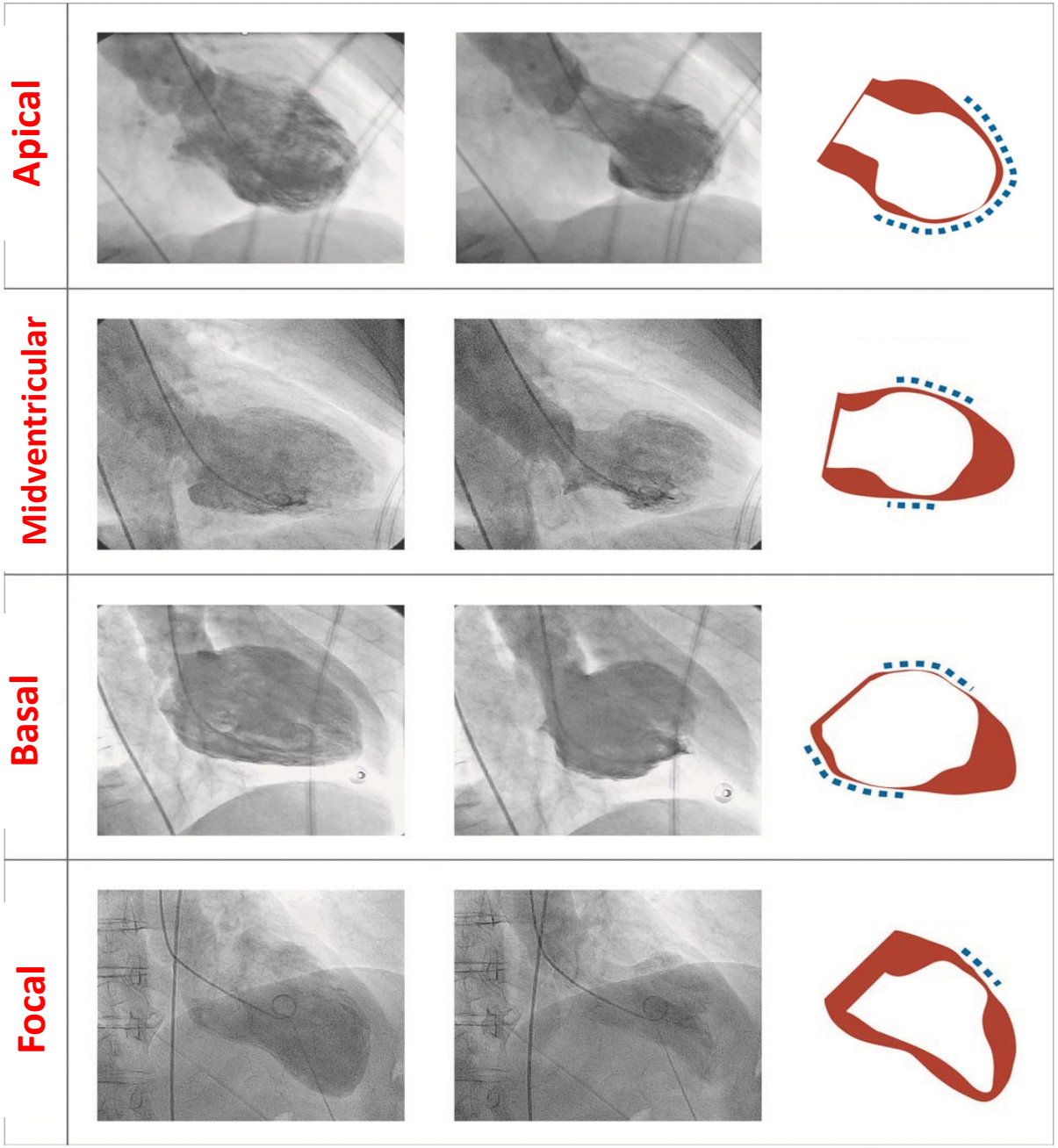

Ejection Fraction
0.60
0.40
0.20
0.00
Admission
Day 3–7
(inpatient)
2–4 Weeks
(outpatient)

Plasma catecholamine levels in patients with Takotsubo syndrome (TTS) and patients with myocardial infarction.

Pellicia et al Circulation. 2017

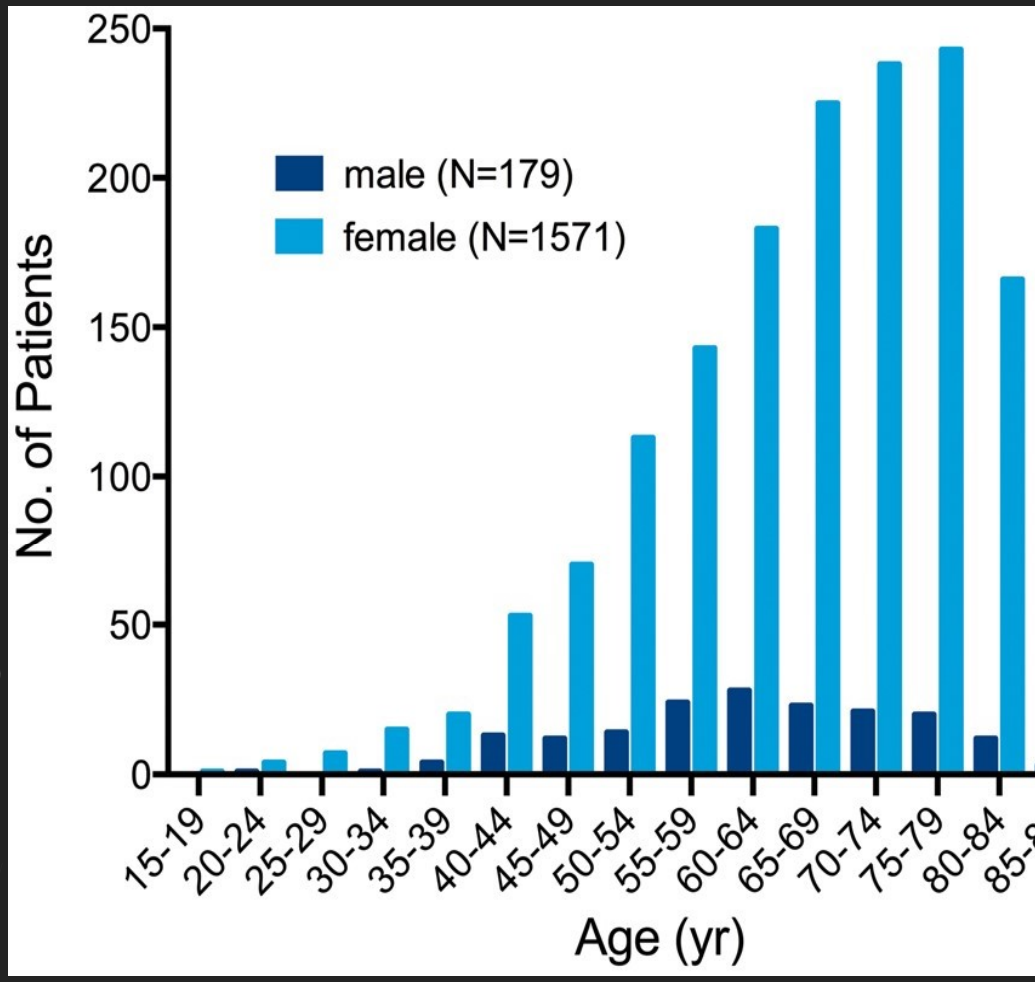


he four different types f takotsubo syndrome



Age and sex distribution of patients with takotsubo syndrome.

Eur Heart J, 2018



Pathophysiology: Predisposing factors

Hormonal factors

*The striking preponderance of **postmenopausal** females: women older than 55 years have an almost five-fold risk of developing TTS*

(Declining oestrogen levels)

Genetic factors

Report of cases of familial TTS

Psychiatric and neurologic disorders

*27% had history of **neurologic disorders** (acute, former, or chronic)*

*42% had a **psychiatric diagnosis** (half of them suffering from depression)*

*High prevalence of **type-D-personality** (negative emotions and social inhibition)*

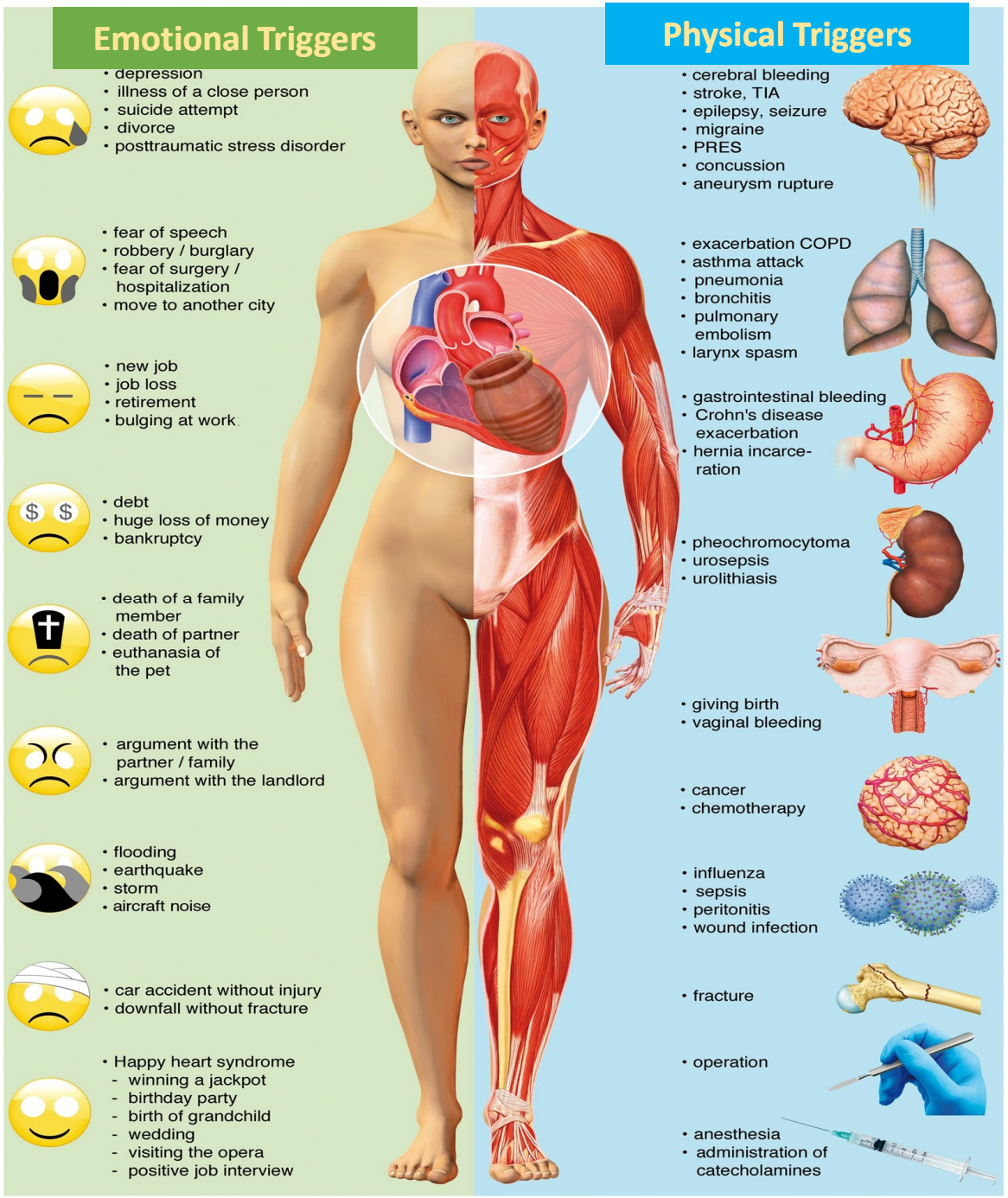
Broken Heart Syndrome

Triggers:

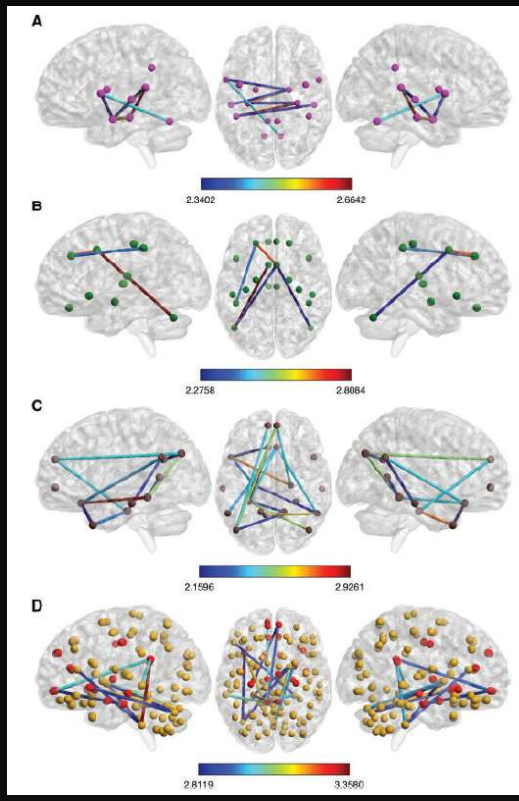
Emotional and physical stress factors.

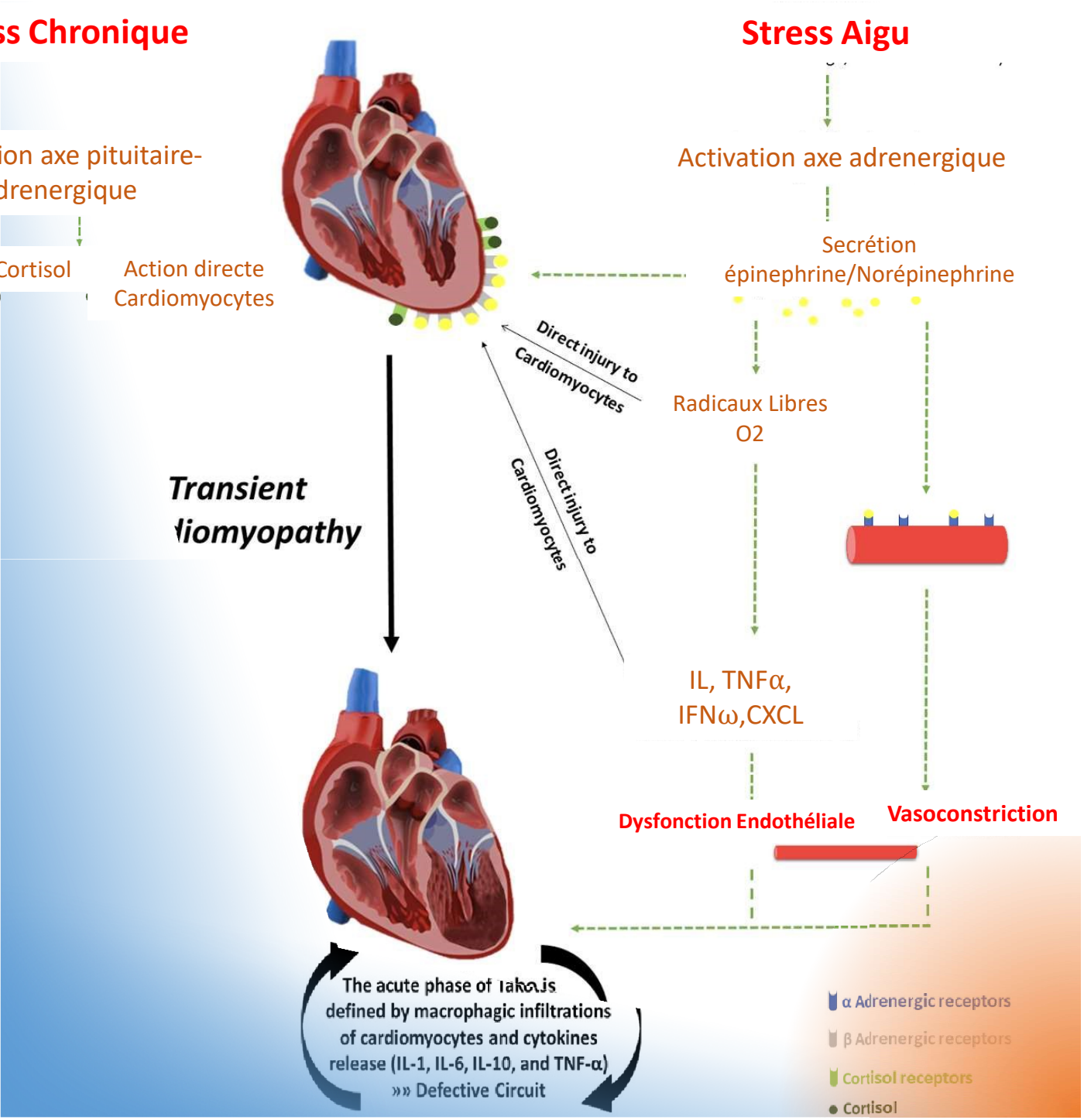
Happy Heart Syndrome

eart J, Volume 39, Issue 22, 07 June



Altered limbic and autonomic processing supports brain-heart axis in Takotsubo syndrome. *Templin et al European Heart Journal.2019*





Pathophysiology of Takotsubo cardiomyopathy and the role of cortisol, catecholamines, cytokines, and interleukins.

AlHouri. Annals Med.Surg. 2022

Critères diagnostiques

- *The Mayo Clinic Diagnostic Criteria (most widely known,*
- *The Japanese Guidelines*
- *The Gothenburg criteria*
- *The Johns Hopkins criteria*
- *The Tako-tsubo Italian Network proposal*
- *The criteria of the Heart Failure Association (HFA) TTS Taskforce of the European Society of Cardiology (ESC)*
- *The criteria recommended by Madias*
- ***Coronary angiography with left ventriculography is considered the gold standard diagnostic tool to exclude or confirm TTS***

ESC European Society of Cardiology
European Heart Journal (2018) **39**, 2032–2046
doi:10.1093/eurheartj/ehy076

CONSENSUS PAPER

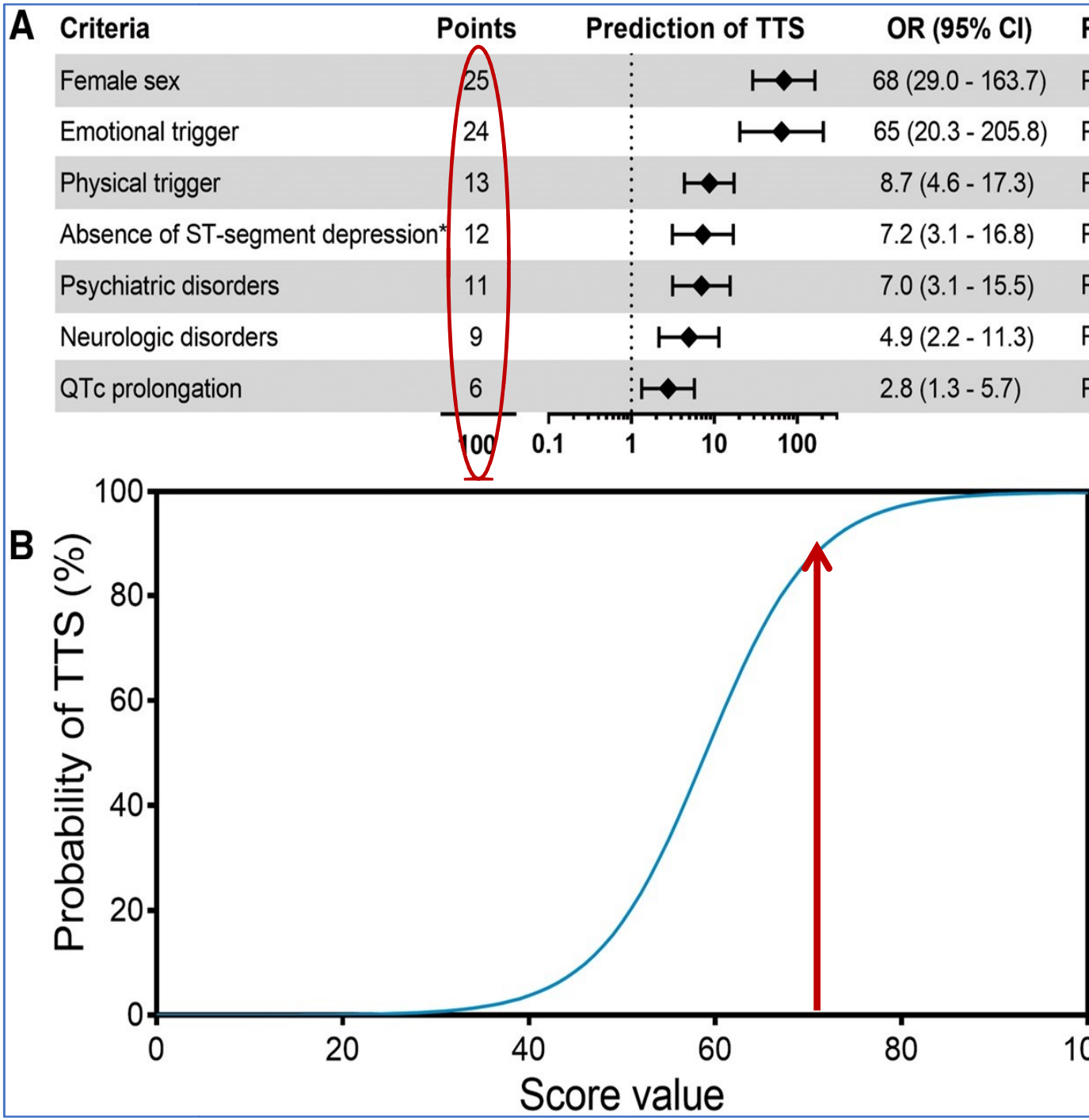
International Expert Consensus Document on Takotsubo Syndrome (Part I): Clinical Characteristics, Diagnostic Criteria, and Pathophysiology

1	**Trigger émotionnel ou physique**
2	Nouvelles anomalies ECG (ST,T, QT)
3	Biomarqueurs cardiaques peu élevés, BNP généralement élevé
4	Pas de lésion coronaire significative
5	Anomalies Transitoires de la cinétique pariétale: « ballooning » de la base ou de l'apex du VG (biventriculaire possible)

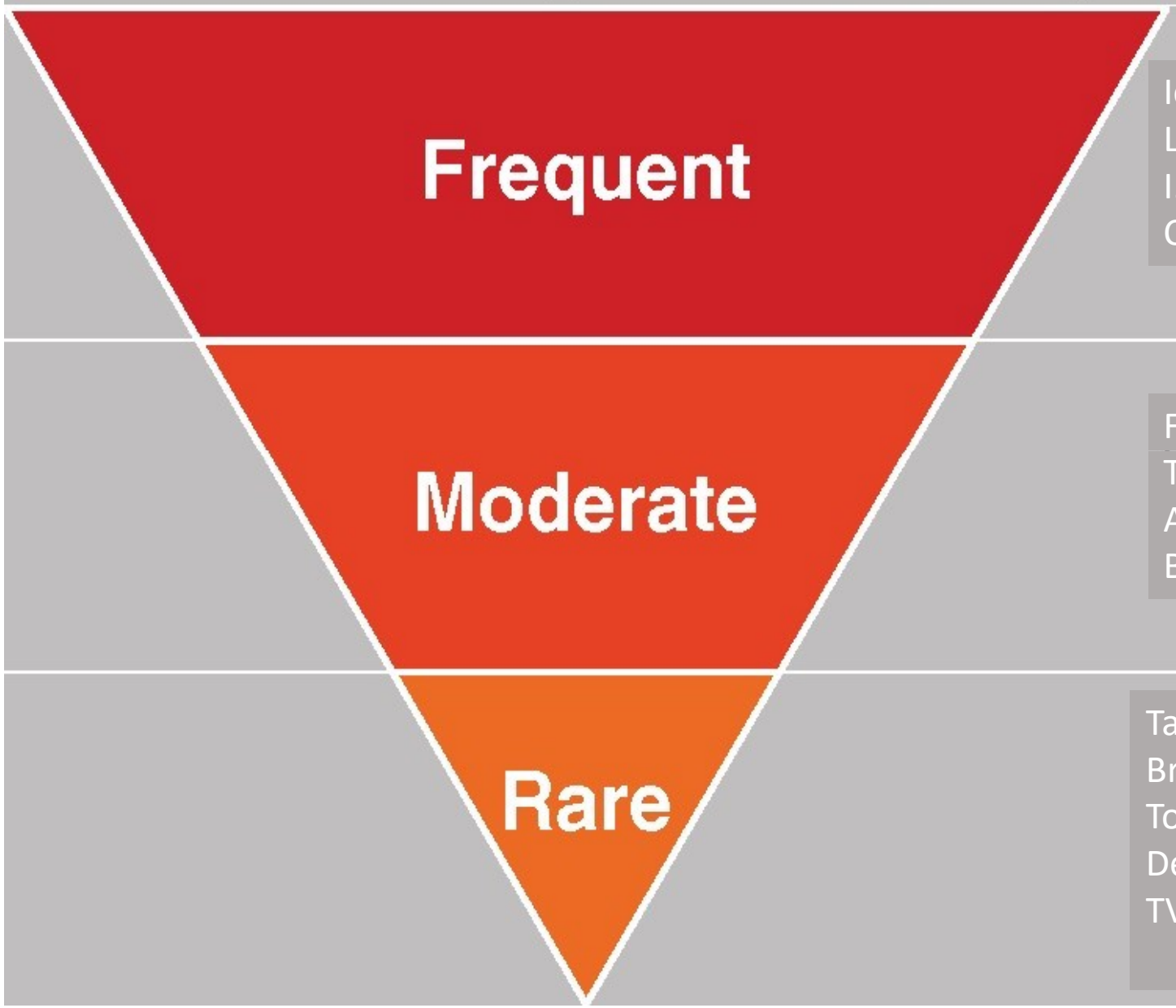
erTAK Diagnostic Score.

tors for diagnosing takotsubo syndrome

eart J, Volume 39, Issue 22, 07 June 2018



In-hospital Complications

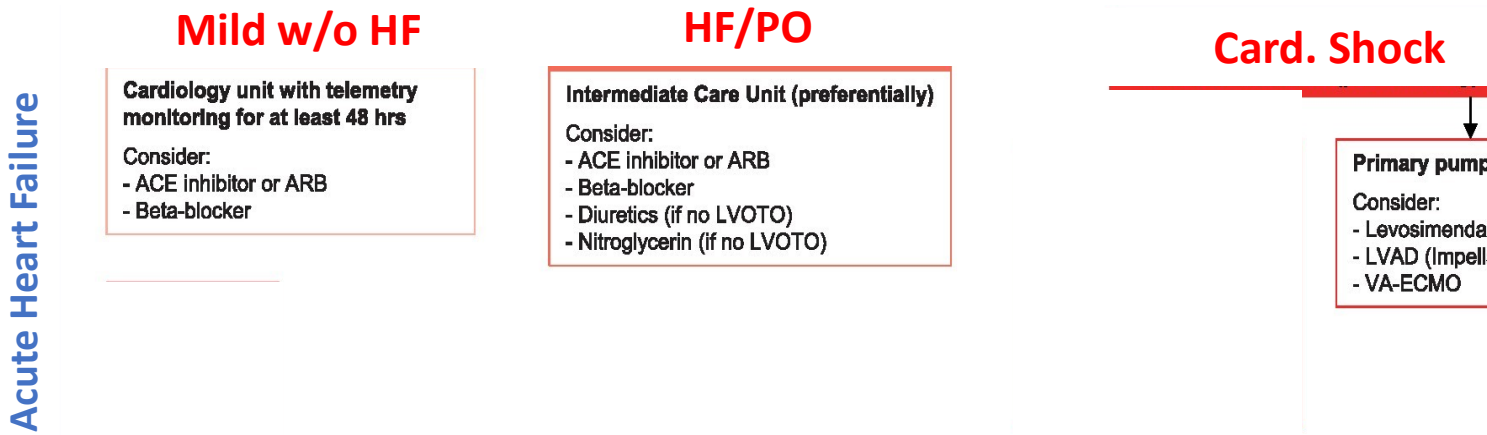


Ice Card Aigue (12-45%)
LVOTO (10-25%)
I.Mitrale (14-25%)
Choc Cardiogénique (6-20%)

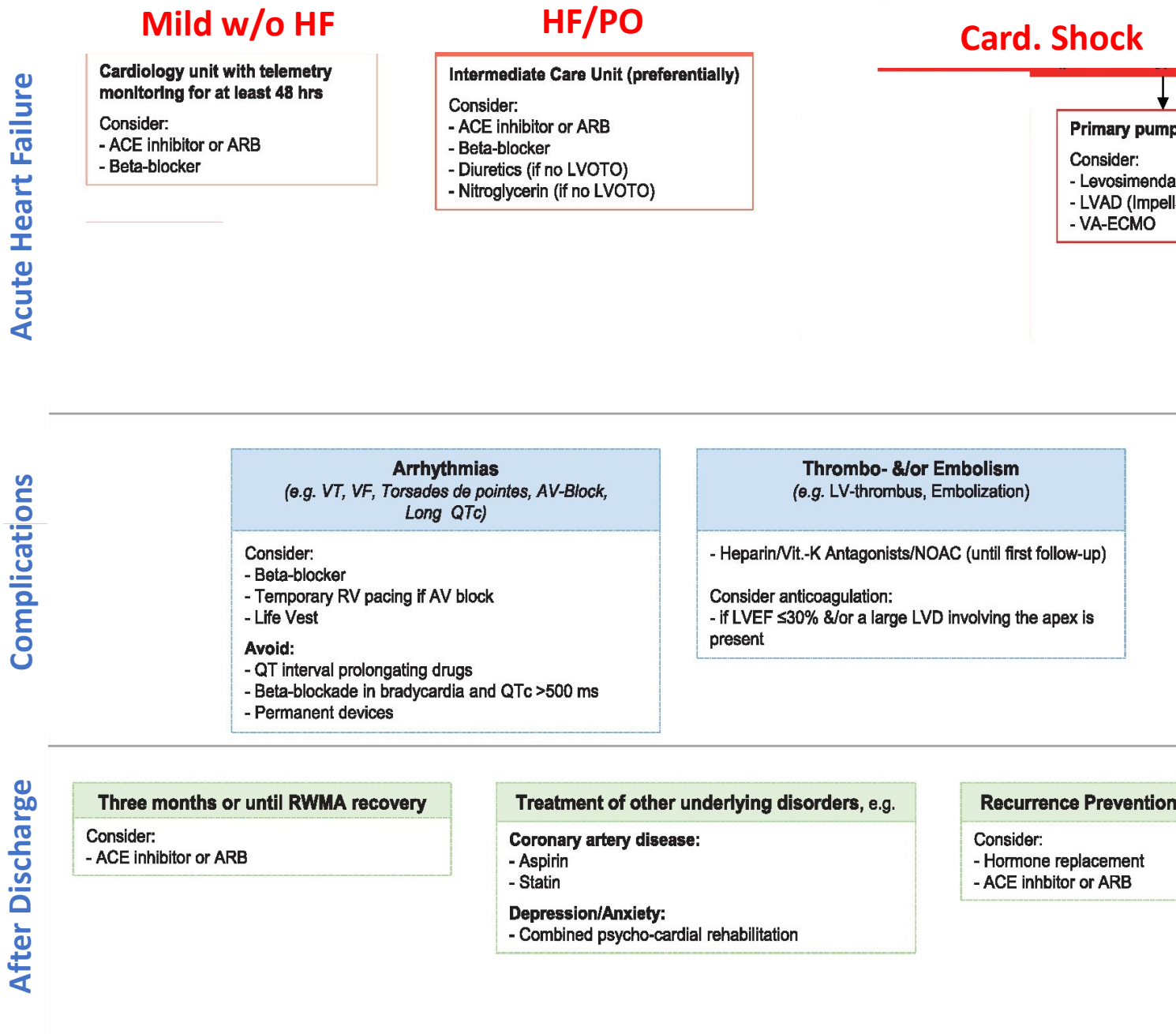
FA (5-15%)
Thrombus VG (2-4%)
Arrêt Cardiaque (465%)
BAV (5%)

Tachyarythmie (2-5%)
Bradyarythmie (2-5%)
Torsade de Pointes (2-5%)
Décès (1-5%)
TV (3%)

raitement


Acute Heart Failure
Mild w/o HF
Cardiology unit with telemetry monitoring for at least 48 hrs
Consider:
- ACE inhibitor or ARB
- Beta-blocker
HF/PO
Intermediate Care Unit (preferentially)
Consider:
- ACE inhibitor or ARB
- Beta-blocker
- Diuretics (if no LVOTO)
- Nitroglycerin (if no LVOTO)
Card. Shock
Primary pump
Consider:
- Levosimenda
- LVAD (Impell
- VA-ECMO

raitement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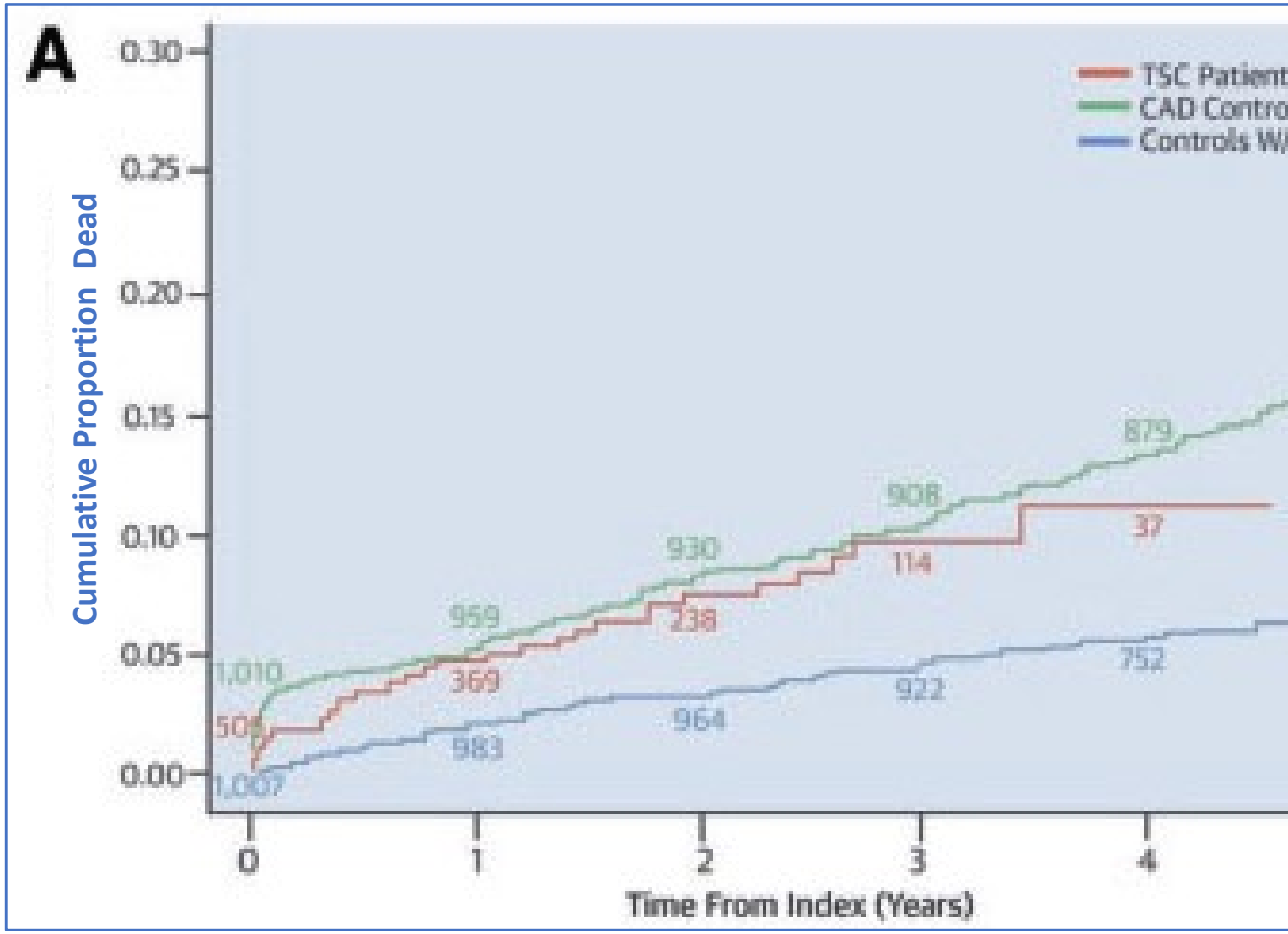
Card. Shock
Primary pump
Consider:
- Levosimenda
- LVAD (Impell
- VA-ECMO
Complications
Arrhythmias
(e.g. VT, VF, Torsades de pointes, AV-Block, Long QTc)
Consider:
- Beta-blocker
- Temporary RV pacing if AV block
- Life Vest
Avoid:
- QT interval prolongating drugs
- Beta-blockade in bradycardia and QTc >500 ms
- Permanent devices
Thrombo- &/or Embolism
(e.g. LV-thrombus, Embolization)
- Heparin/Vit.-K Antagonists/NOAC (until first follow-up)
Consider anticoagulation:
- if LVEF ≤30% &/or a large LVD involving the apex is present
After Discharge
Three months or until RWMA recovery
Consider:
- ACE inhibitor or ARB
Treatment of other underlying disorders, e.g.
Coronary artery disease:
- Aspirin
- Statin
Depression/Anxiety:
- Combined psycho-cardial rehabilitation
Recurrence Prevention
Consider:
- Hormone replacement
- ACE inhbitor or ARB

Pronostic

Takotsubo

Long-term outcome (5-years) of patients with TTS compared to patients with and without CAD (A).



Long-term outcome (10-years) of patients with TTS