PHYSIODAY

JOURNÉES DE PHYSIOLOGIE
EN CARDIOLOGIE INTERVENTIONNELLE

Angor Vasospastique

Dr Matthieu Bizot

Hôpital Saint-Joseph Marseille

HOPITAL SAINT JOSEPH MARSEILLE

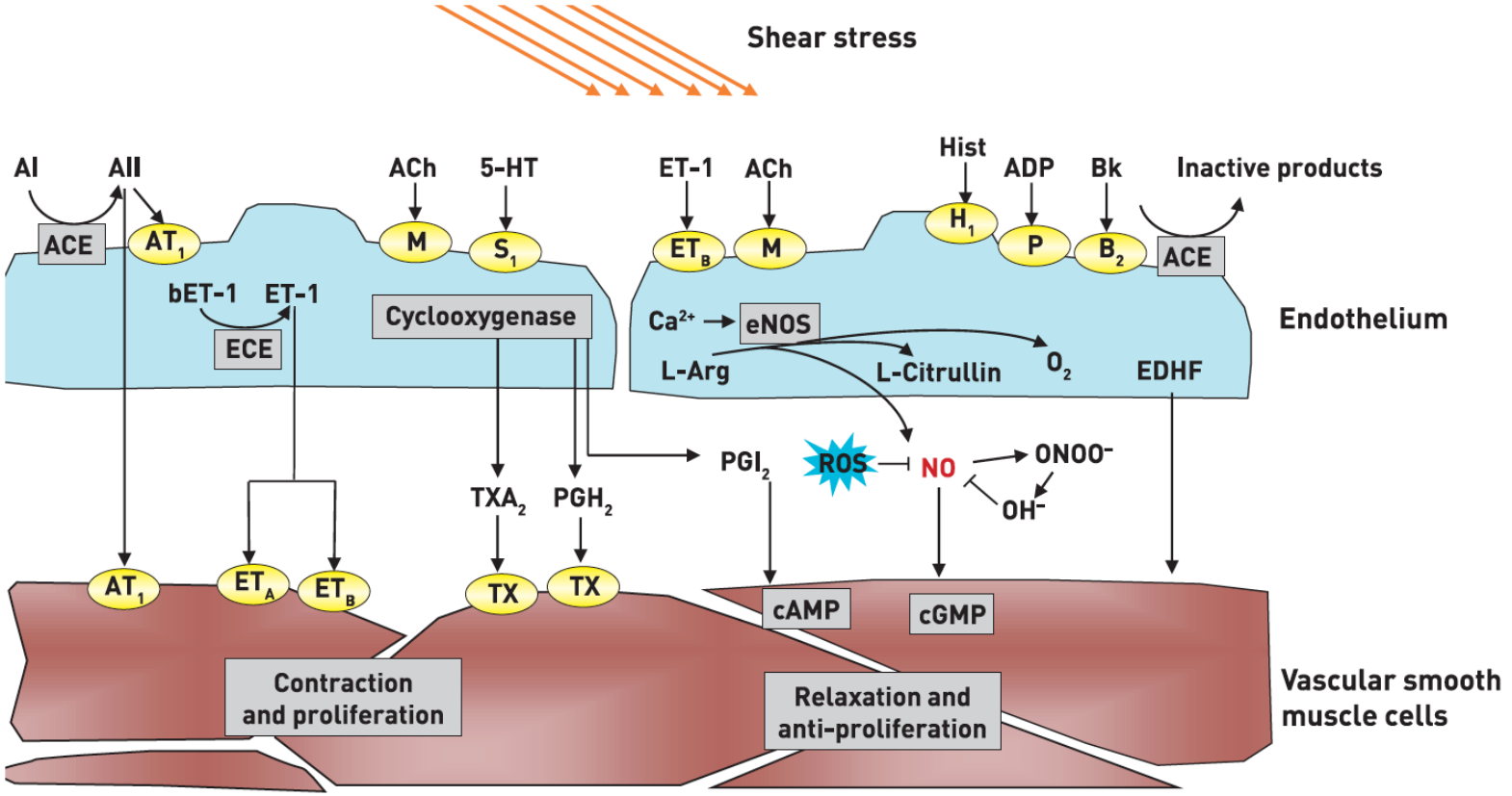
CARDIOVISTA
AIX-EN-PROVENCE / AUBAGNE / MARSEILLE

COLLÈGE DES CARDIOLOGUES EN FORMATION DE LA SFC · CCF ·

5&6 AVRIL 2024

HÔTEL SHERATON · NICE

Aucun conflit d’intérêt.



Rôle clé des substances vasoactives dérivées de l'endothélium
NO est le principal vasodilatateur

Endothéline la principale substance vasoconstrictrice

Déséquilibre vasomoteur = Dysfonction endothéliale

2019 ESC Guidelines for the diagnosis and management of chronic coronary syndromes: The Task Force for the diagnosis and management of chronic coronary syndromes of the European Society of Cardiology (ESC) FREE

An intracoronary provocation test should be considered to identify coronary spasm in patients with normal findings or non-obstructive lesions on coronary arteriography and a clinical picture of coronary spasm, to diagnose the site and mode of spasm.[412,414,438–440]	IIa	B

Table 4. Indications for Provocative Spasm Testing
Class I (Strong Indications)
• History suspicious of VSA without documented spontaneous episode, especially if:
· Nitrate-responsive rest angina, and/or
· Marked diurnal variation in symptom onset/exercise tolerance, and/or
· Rest angina without obstructive coronary artery disease
• Acute coronary syndrome presentation in the absence of a culprit lesion
• Unexplained resuscitated cardiac arrest
• Unexplained syncope with antecedent chest pain
• Recurrent rest angina following angiographically successful PCI
Class IIa (Good Indications)
• Invasive testing for non-invasive diagnosed patients unresponsive to drug therapy
Class IIb (Controversial Indications)
• Documented spontaneous episode of variant angina
• Invasive testing for non-invasive diagnosed patients responsive to drug therapy
Class III (Contra-indications)
• Emergent acute coronary syndrome
• Severe fixed multivessel CAD including left main coronary artery stenosis
• Severe myocardial dysfunction (Class IIb if symptoms suggestive of vasospasm)
• Patients without any symptoms suggestive of VSA

*Adapted with permission from Beltrame JF, et al.[19] CAD, coronary artery disease; PCI, percutaneous coronary intervention; VSA, vasospastic angina.

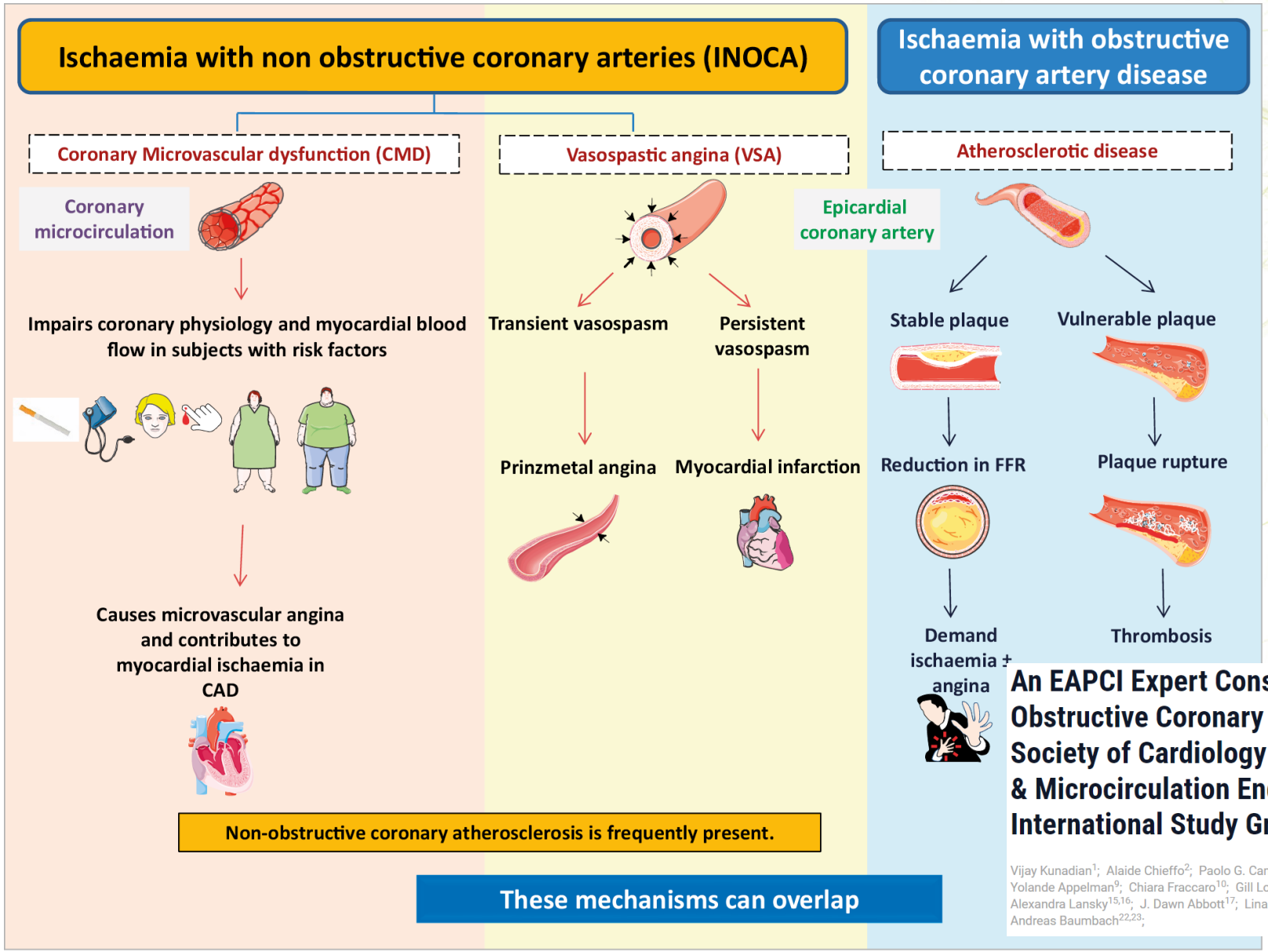
The Who, What, Why, When, How and Where of Vasospastic Angina

John F. Beltrame, BSc, MD, PhD; Filippo Crea, MD; Juan Carlos Kaski, MD; Hisao Ogawa, MD; Peter Ong, MD; Udo Sechtem, MD; Hiroaki Shimokawa, MD; C. Noel Bairey Merz, MD
on behalf of the Coronary Vasomotion Disorders International Study Group (COVADIS)

COVADIS
Coronary Vasomotor Disorders International Study Group

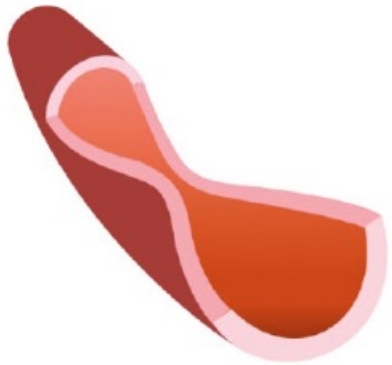
Table 2. COVADIS Diagnostic Criteria for Vasospastic Angina*

Vasospastic Angina Diagnostic Criteria Elements
1. **Spontaneous Episode** – document following:
a. ***Nitrate-responsive angina***, with at least one of the following:
i. Rest angina – especially between night and early morning
ii. Marked diurnal variation in exercise tolerance – reduced in morning
iii. Hyperventilation can precipitate an episode
iv. Calcium-channel blockers (but not β-blockers) suppress episodes
and
b. ***Transient ischemic ECG changes***, including any of the following in at least 2 contiguous leads:
i. ST segment elevation ≥0.1 mV
ii. ST segment depression ≥0.1 mV
iii. New negative U waves
OR
2. **Inducible *coronary artery spasm*** – in response to provocative stimulus:
a. ***Transient total or subtotal coronary artery occlusion*** (>90% constriction), **and**
b. ***Chest pain provoked, and***
c. ***Transient ischemic ECG changes provoked*** (as above)



An EAPCI Expert Consensus Document on Ischaemia with Non-Obstructive Coronary Arteries in Collaboration with European Society of Cardiology Working Group on Coronary Pathophysiology & Microcirculation Endorsed by Coronary Vasomotor Disorders International Study Group

Vijay Kunadian[1]; Alaide Chieffo[2]; Paolo G. Camici[3]; Colin Berry[4]; Javier Escaned[5]; Angela H.E.M. Maas[6]; Eva Prescott[7]; Nicole Karam[8]; Yolande Appelman[9]; Chiara Fraccaro[10]; Gill Louise Buchanan[11]; Stéphane Manzo-Silberman[12]; Rasha Al-Lamee[13]; Evelyn Regar[14]; Alexandra Lansky[15,16]; J. Dawn Abbott[17]; Lina Badimon[18]; Dirk J. Duncker[19]; Roxana Mehran[20]; Davide Capodanno[21]; Andreas Baumbach[22,23];



Incidence
15-71% MINOCA
4-33% INOCA

Risk factors
Smoking, Asian origin, raised CRP

Prognosis
95% 5-year survival if pain-free on CCBs and no history of SCD

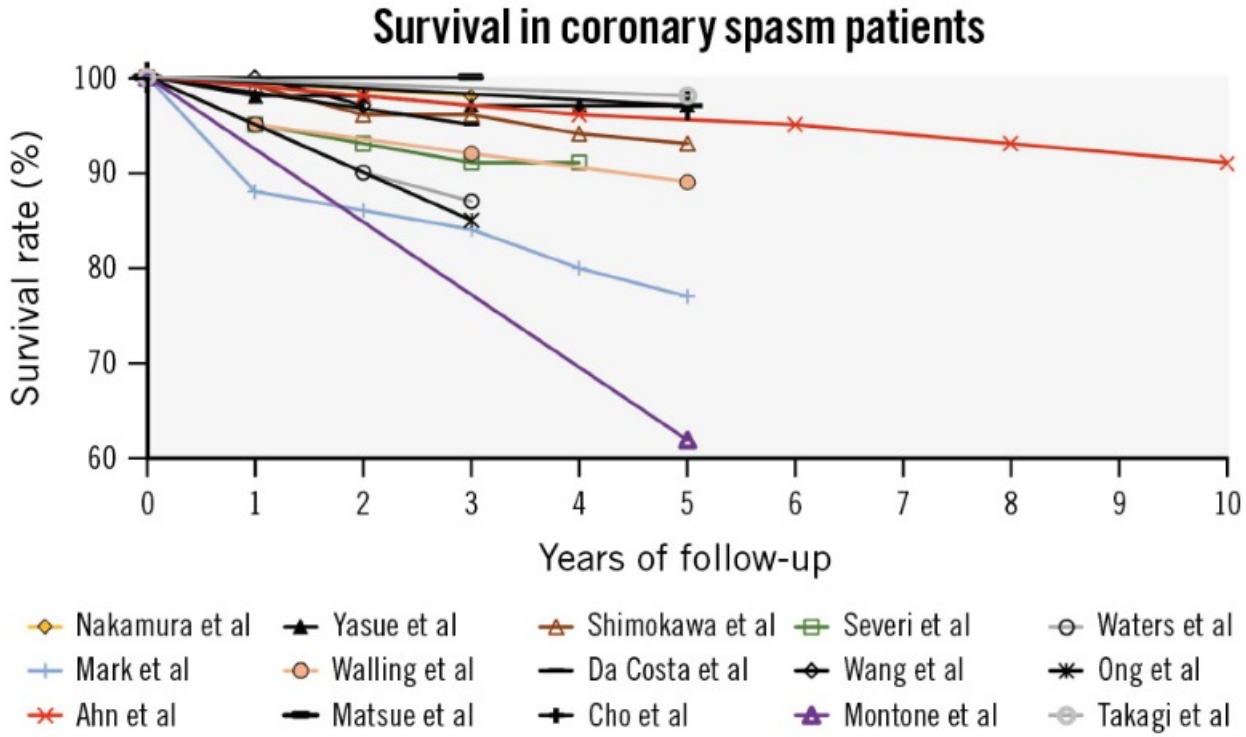
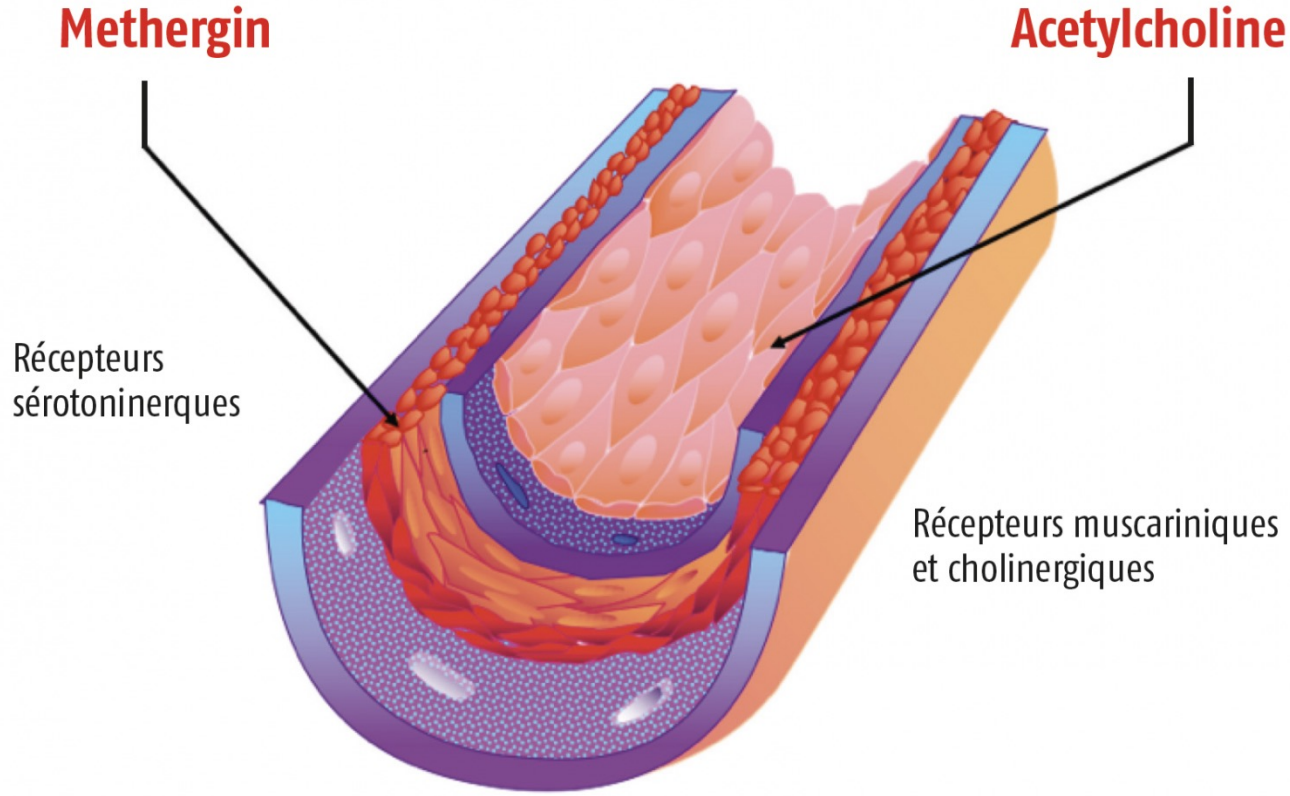


Figure 7. Prognosis of CS patients. Most studies of patients with obstructive CAD (non-black lines) demonstrated significantly worse prognoses than studies of patients without obstructive CAD (black lines). CAD: coronary artery disease; CS: coronary spasm

Zachary S. Yaker *et al.* • *EuroIntervention* 2024;20:e123-e134 • DOI: 10.4244/EIJ-D-23-00448

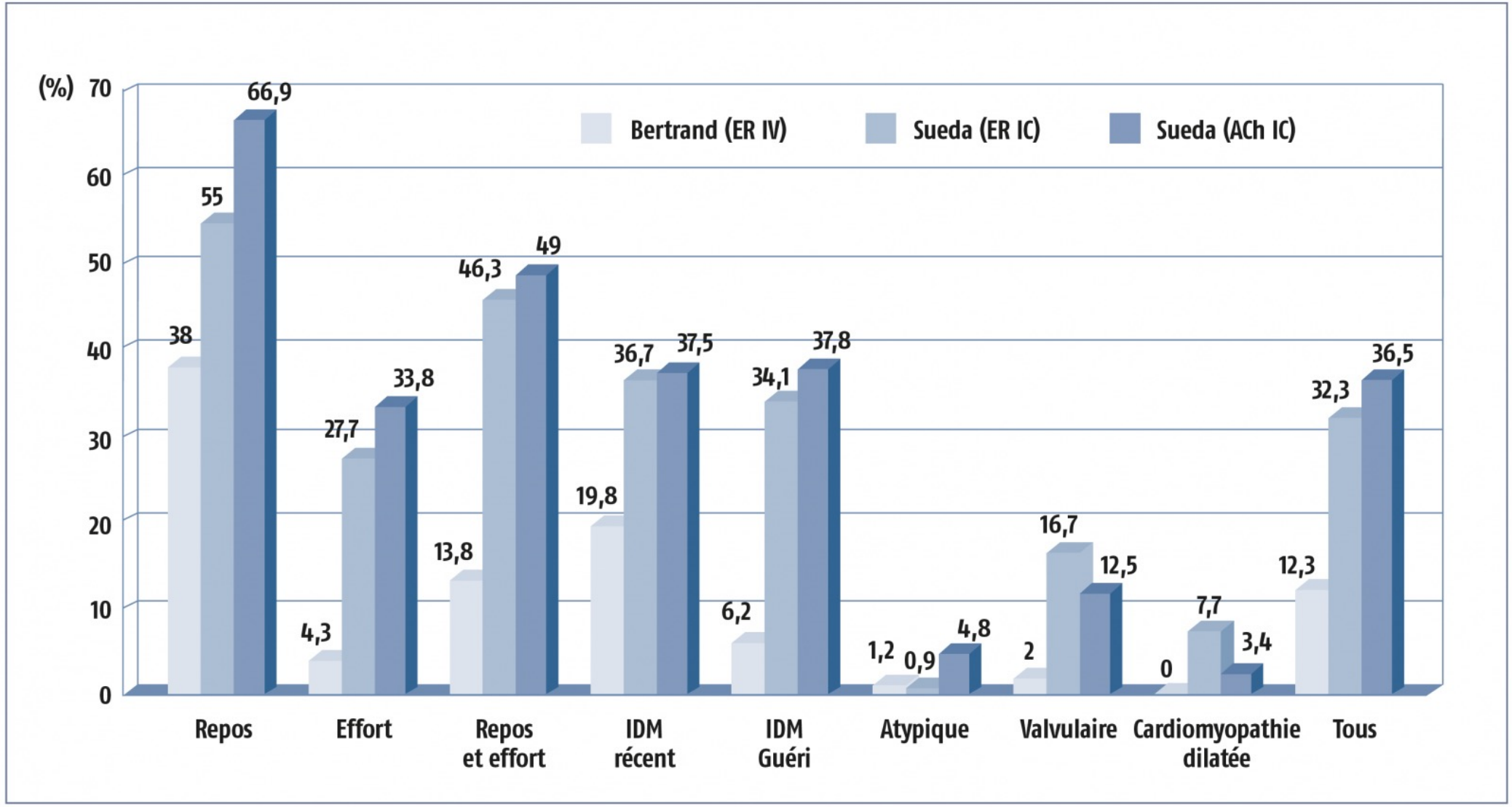
ACh: acetylcholine; Ca^{2+}: calcium; CCB: calcium channel blocker; CRP: C-reactive protein; CS: coronary spasm; ECG: electrocardiogram; ER: ergonovine; ICD: implantable cardioverter defibrillator; INOCA: ischaemia with non-obstructive coronary arteries; MINOCA: myocardial infarction with non-obstructive coronary arteries; SCD: sudden cardiac death

Tests de vasoréactivité coronaire



Taux de complication similaire

Possible en ambulatoire



Comparaison de l'incidence des tests de vasoréactivité coronaire selon les différentes présentations cliniques

2019 ESC Guidelines for the diagnosis and management of chronic coronary syndromes: The Task Force for the diagnosis and management of chronic coronary syndromes of the European Society of Cardiology (ESC) FREE

that reported during spontaneous spasm attacks (7%).[446] Intravenous administration of ergonovine for non-invasive tests should be discouraged due to the risk of triggering prolonged spasm in multiple vessels, which may be very difficult to manage and can be fatal.[447]

Test de vasoréactivité en salle de KT

- En intracoronaire +++
- Abord radial possible
- Même après Isoptine intra artériel
- Dérivés nitrés en main

  - Acetylcholine 1er choix
    - Plus utilisé dans le monde
    - Uniquement en collyre (Miochole) en France, hors AMM

PROTOCOLE D'UTILISATION de l'ACETYLCHOLINE

Prendre le flacon d'acétylcholine (MIOCHOLE) 20 mg et le diluer dans 20 ml d'EPPI, ce qui revient à :

20 000 GAMMA dans 20 ML soit 1000 gamma dans 1 ML

Prélever 0.6 ML à l'aide d'une seringue à insuline ou calciparine soit :

0.6ML = 600 gamma

DONNER UNE SERINGUE DE 20 ML A L'OPERATEUR et une grande CUPULE

Donner les 0.6 ml dans la grande cupule et l'opérateur rajoute 60 ml soit :

600 gamma dans 60 ML

ou

200 gamma dans 20 ML

Pour la coronaire gauche, injecter :

100 gamma et attendre 3 min

200 gamma et attendre 3 min

Pour la coronaire droite, injecter : → diviser les doses /2

50 gamma et attendre 3 min → (masser le patient si besoin ☺)

100 gamma et attendre 3 min

Puis, injection de risordan si la TA le permet:

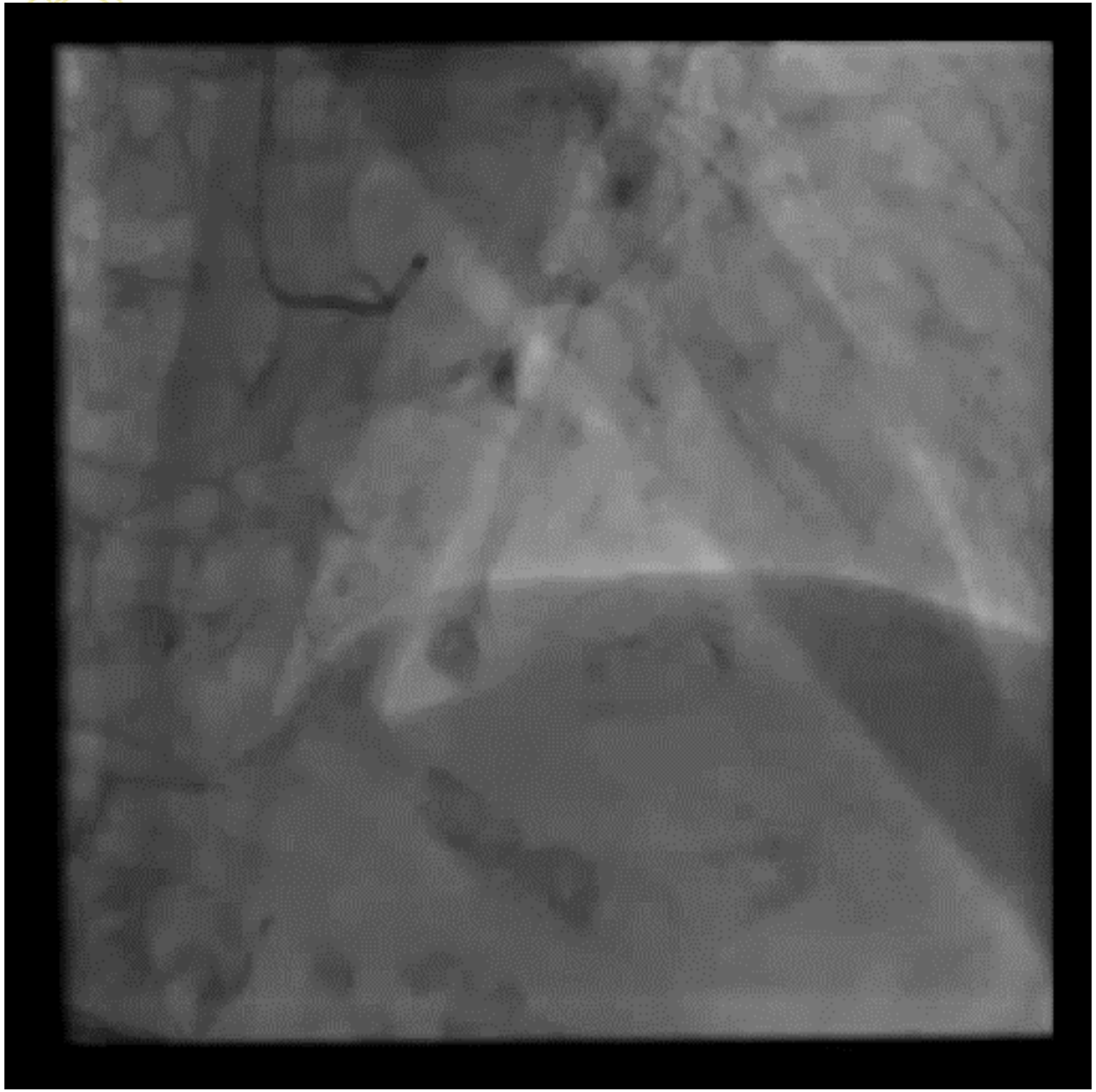
1 mg à gauche

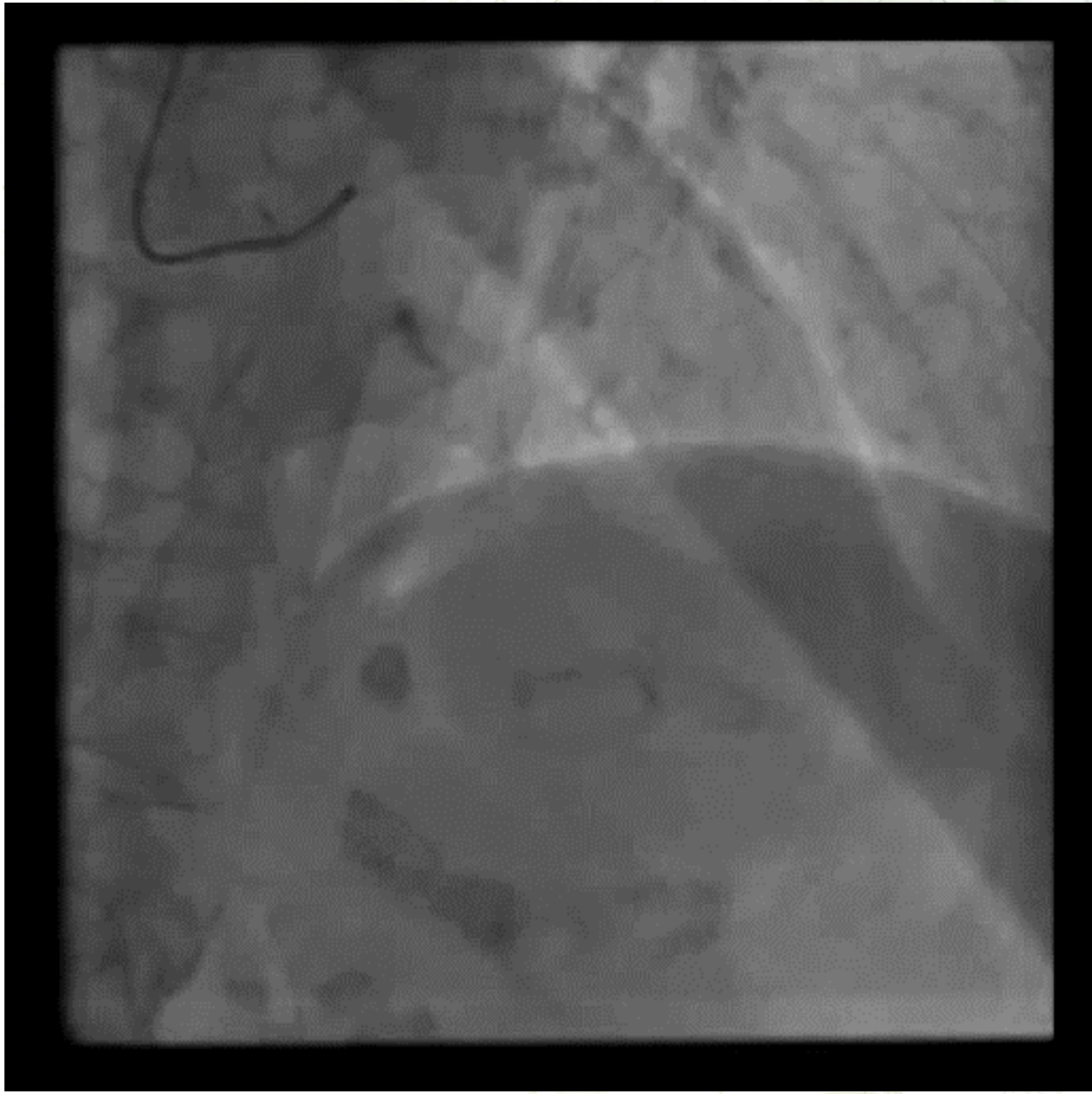
1 mg à droite

Enfin, prescription d'un patch Trinipatch 5 mg

PAS DE BOLUS
Injection LENTE ++++++ (surtout dans CD)
Recommandé sur 20 secondes mais plutôt 1-3 minutes en pratique
BAV réversible au ralentissement / arrêt injection.

Risordan à portée de main
Contrôle à 3 minutes

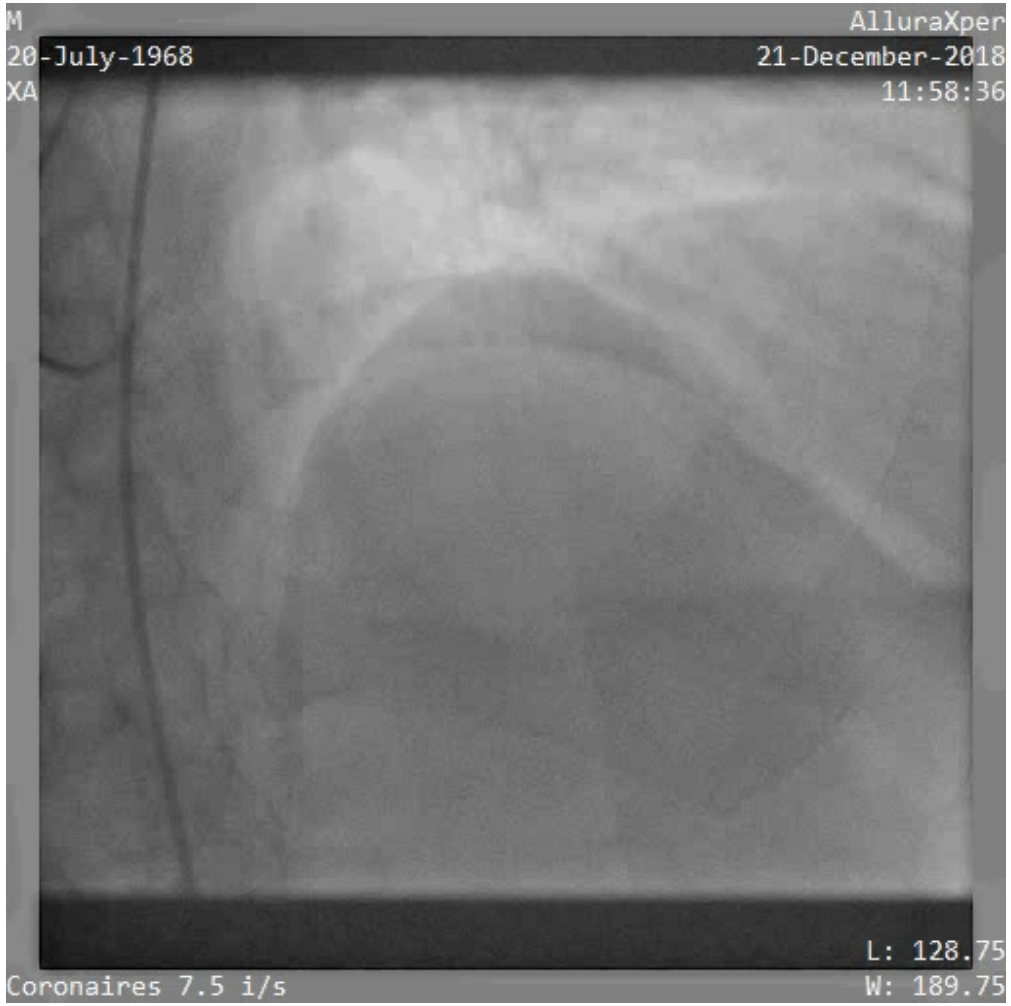


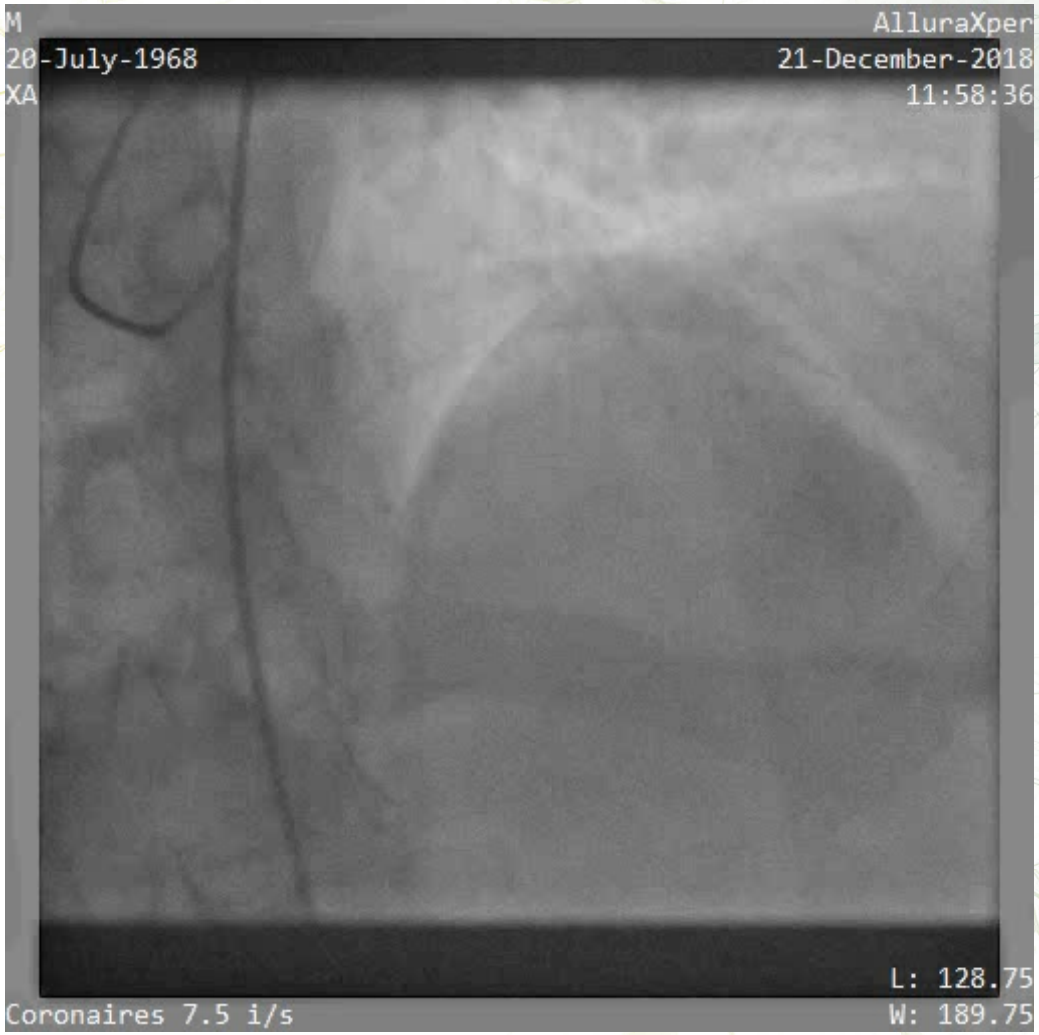


Test de vasoréactivité en salle de KT

- En intracoronaire +++ ou intraveineux
- Abord radial possible
- Même après Isoptine intra artériel
- Dérivés nitrés en main

  - Methergin (0,2 mg/ml)
    - 2 ampoules en IVL
    - Pas de protocole uniforme en intra coronaire :
      - 1 ampoule dans 20 ml de sérum physiologique
      - 6 ml dans coronaire gauche (60 gamma)
      - 4 ml dans coronaire droite (40 gamma)


M
AlluraXper
20-July-1968
21-December-2018
XA
11:58:36
L: 128.75
Coronaires 7.5 i/s
W: 189.75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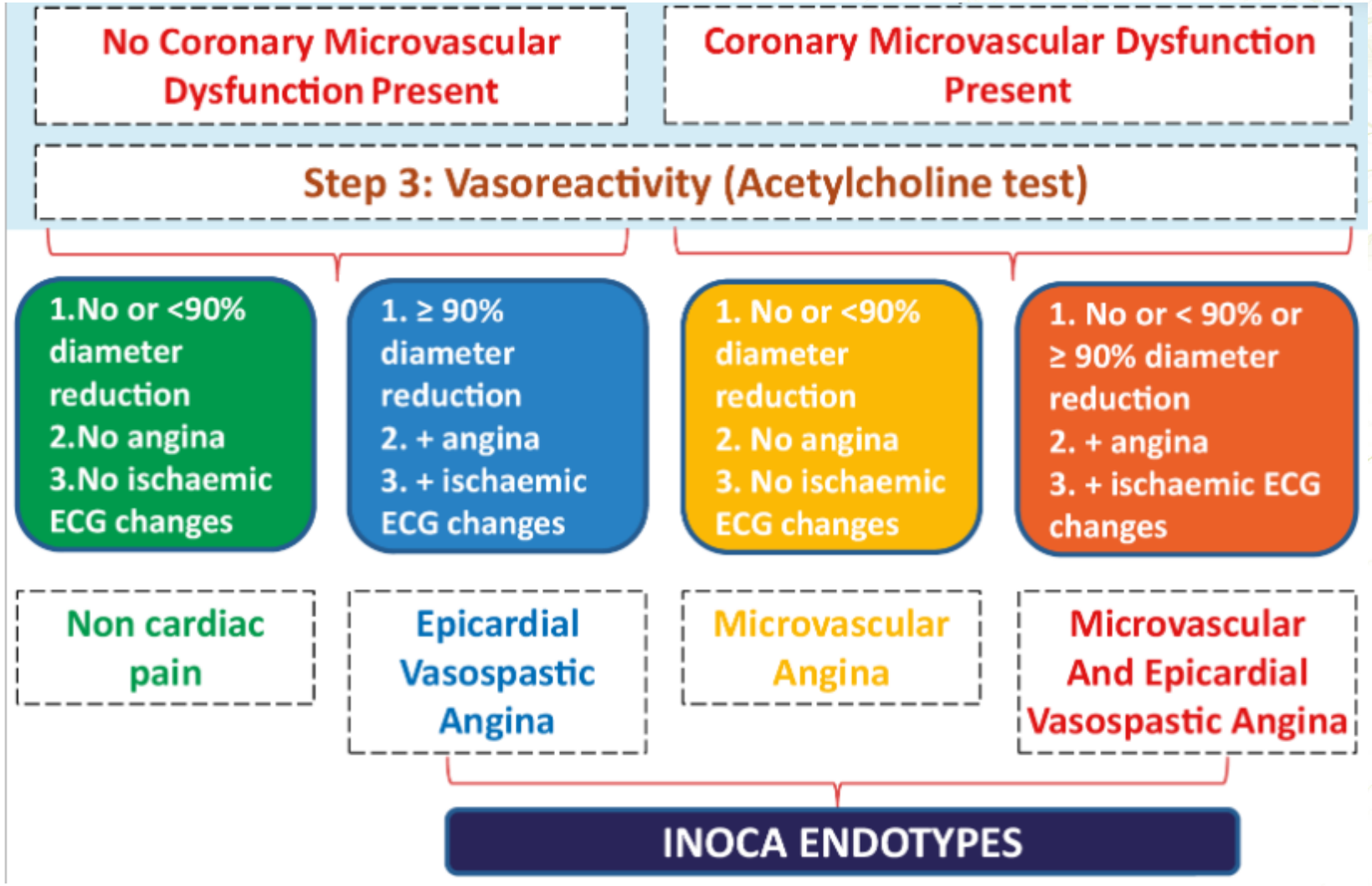
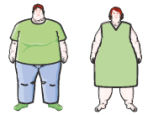

No Coronary Microvascular Dysfunction Present
Coronary Microvascular Dysfunction Present
Step 3: Vasoreactivity (Acetylcholine test)
1.No or <90% diameter reduction
2.No angina
3.No ischaemic ECG changes
1. ≥ 90% diameter reduction
2. + angina
3. + ischaemic ECG changes
1. No or <90% diameter reduction
2. No angina
3. No ischaemic ECG changes
1. No or < 90% or ≥ 90% diameter reduction
2. + angina
3. + ischaemic ECG changes
Non cardiac pain
Epicardial Vasospastic Angina
Microvascular Angina
Microvascular And Epicardial Vasospastic Angina
INOCA ENDOTYPES

1. Lifestyle factors

Nutrition

Exercise



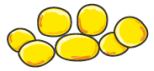
Weight management

Smoking cessation

Coping with stress

2. Risk factor management

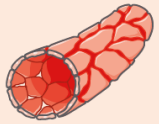
Hypertension



Dyslipidaemia

Diabetes mellitus

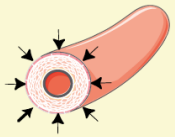
3. Antianginal medication



Microvascular angina

1. Betablocker
2. Calcium channel blocker
3. Nicorandil
4. Ranolazine
5. Ivabradine
6. Trimetazidine

Consider statins and ACEI/ARB



Vasospastic angina

1. Calcium channel blocker
2. Long-acting nitrate
3. Nicorandil