



IX Congresso
Novas Fronteiras
em Medicina
Cardiovascular

22 a 24 de Fevereiro 2019

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FACULDADE DE
MEDICINA
LISBOA

Dealing with controversies

Clinical Case 4

Tatiana Guimarães*

Fátima Veiga*

Doroteia Silva**

Cardiologia, Departamento Coração e Vasos* e Unidade de Cuidados Intensivos**

Centro Hospitalar Universitário Lisboa Norte

CCUL, CAML, Universidade de Lisboa, Portugal

Case 4

- Male
- 74 years-old



Cardiovascular Risk Factors

- **Hypertension**, medicated
- **Dyslipidemia**, medicated (LDL 61 mg/dL)
- **Type 2 Diabetes**, medicated (HbA1c 6.1%)
- **Previous smoking habits**
- **Chronic renal failure stage KDOQI 3** (GFR 40 ml/min/1.73m²)

Case 4

Past Coronary History

- **2013** (another hospital)

NSTEMI KK II → coronary angiography: 3 vessels disease

CABG x 3: LMA → LAD; SVG → OM1; SVG → RCA

3 months later:

EF. 30%, QRS 100ms, NYHA class II → **ICD (primary prevention)**

Case 4

Follow up. HF Clinic

■ 12/2015

- Chest pain + SPECT: inferolateral and inferior necrosis, ischemia (>10%) peri-inferolateral necrosis
- 2nd coronary angiography:
Bypass SVG → OM1 occluded
Proximal OM1 95% stenosis → PTCA OM1 with 1 stent (TIMI III)

Case 4

Follow up. HF Clinic

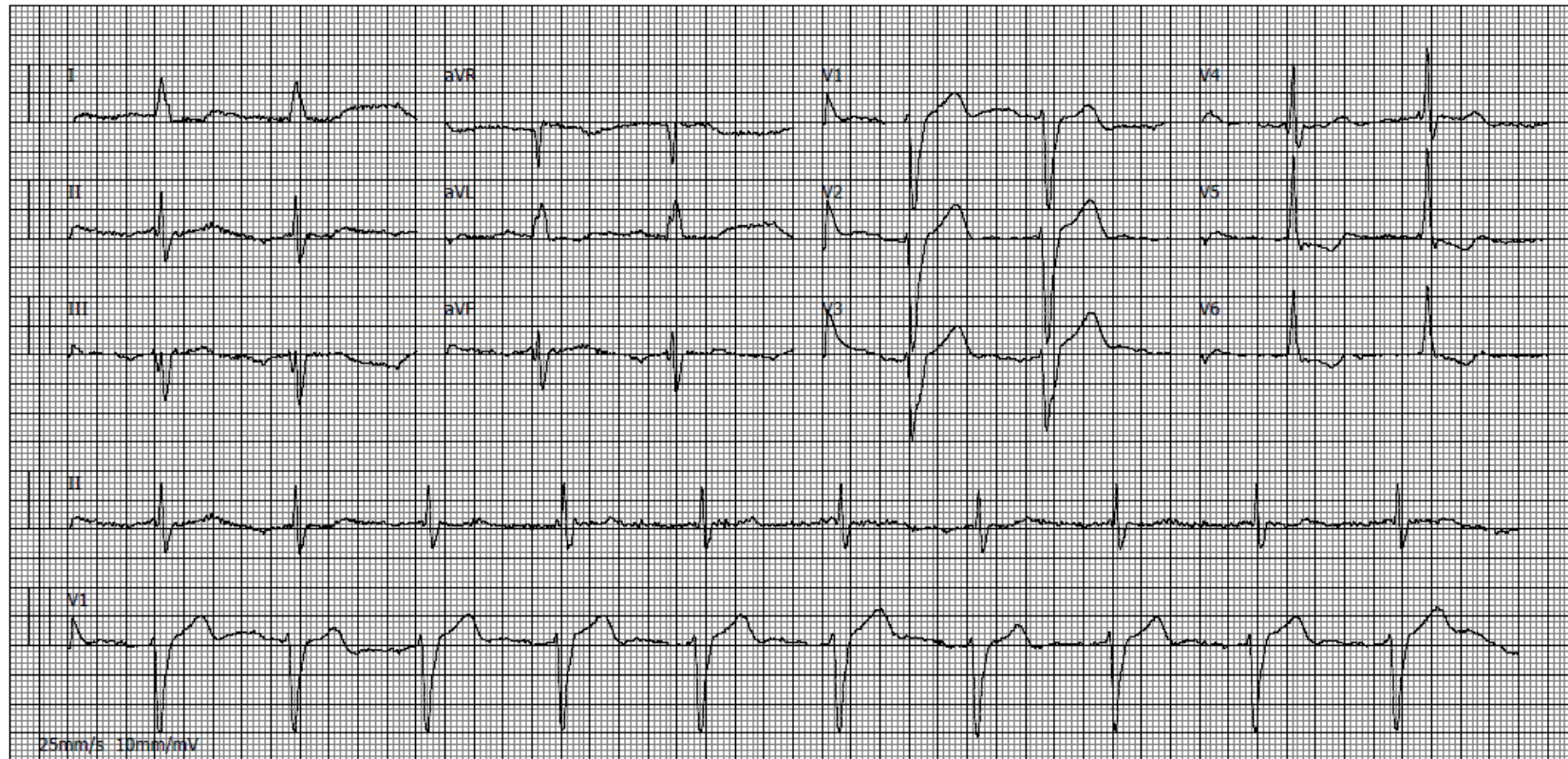
■ 1/2016

- Chronic heart failure NYHA class II - stage AAH/ACC C
- Max VO₂: 14 mL/kg (RER 1.1)
- NT-proBNP (ambulatory): 900 pg/mL
- Transthoracic Echo: Dilated left ventricle; EF. 40%; secondary moderate mitral regurgitation
- ECG: sinus rhythm, HR 66 bpm, QRS 128 ms (LBBB)

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Follow up. HF Clinic

■ 1/2016



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Follow up. HF Clinic

■ 1/2016

Optimized medication

Acetylsalicylic acid 100 mg q.d.

Clopidogrel 75 mg q.d.

Carvedilol 25 mg b.i.d.

Enalapril 20 mg b.i.d.

Spironolactone 25 mg q.d.

Furosemide 40 mg q.d.

Rosuvastatin 10 mg q.b.

Metformin/vidagliptin 1000/50 b.i.d.

Ambulatory:

✓ BP: 90/60 mmHg

✓ HR: 63 bpm

✓ Weight: 78 Kg

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3 EPISODES OF ACUTE HEART FAILURE



02/2016

ED → ICU

1 hour: Sudden onset of dyspnea and irregular palpitations after an effort

Pulmonary congestion

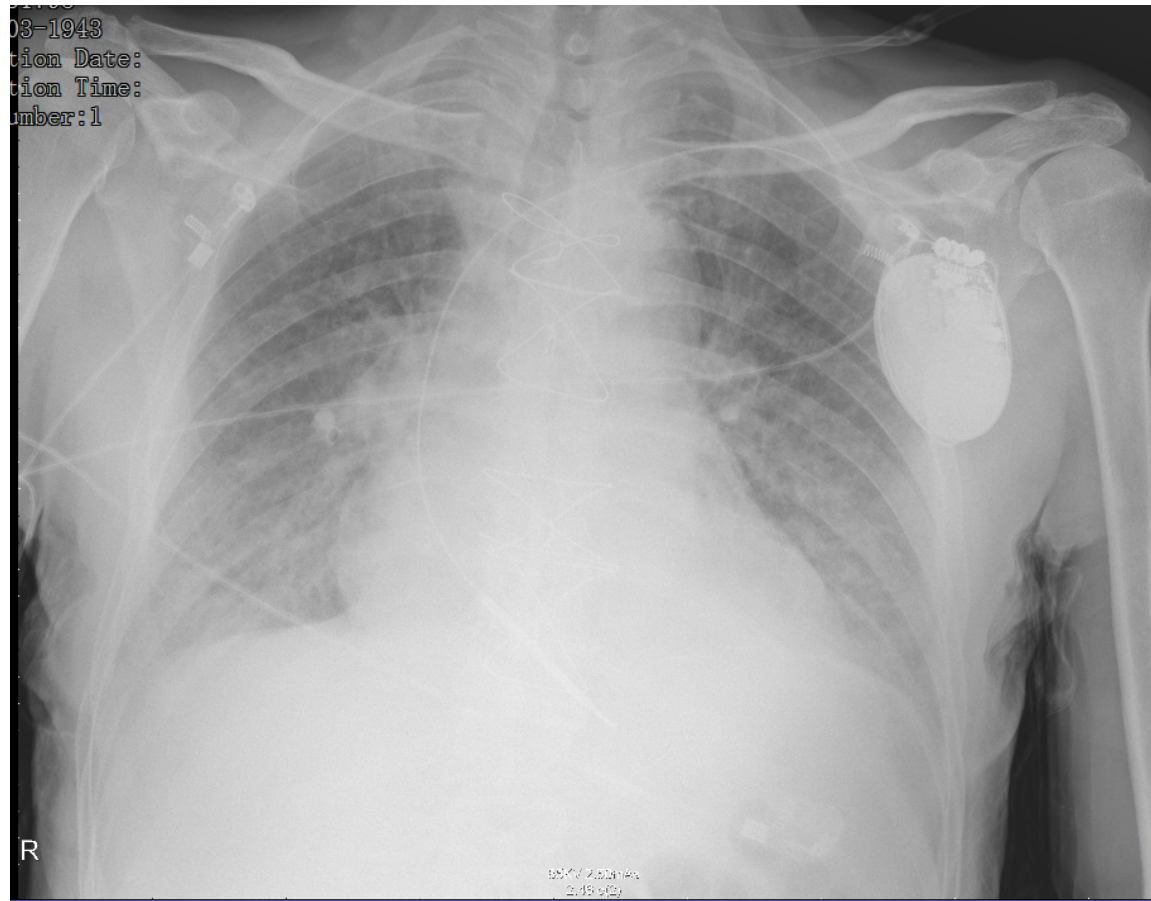
No systemic congestion (no weight gain in previous days)

BP 150/90 mmHg - HR 130 bpm - O₂ Sat 83%

**ACUTE
PULMONARY
EDEMA**

Case 4

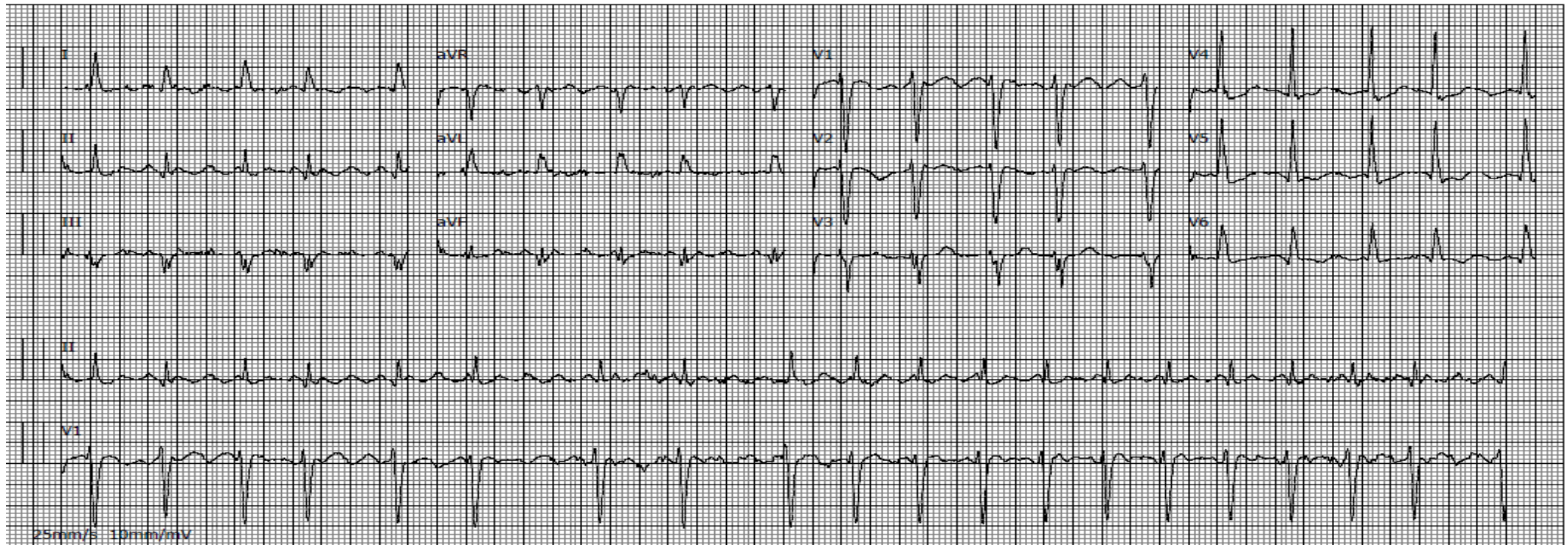
X-ray



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ECG



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Blood analysis

	value
Hemoglobin	13.8 g/dL
Creatinine	1.8 mg/dL (=)
NT-proBNP	1800 pg/mL
Hs T Troponin	18 pg/mL → 13 pg/mL
Na/K	138/3.8 mmol/L

Blood GAS analysis:

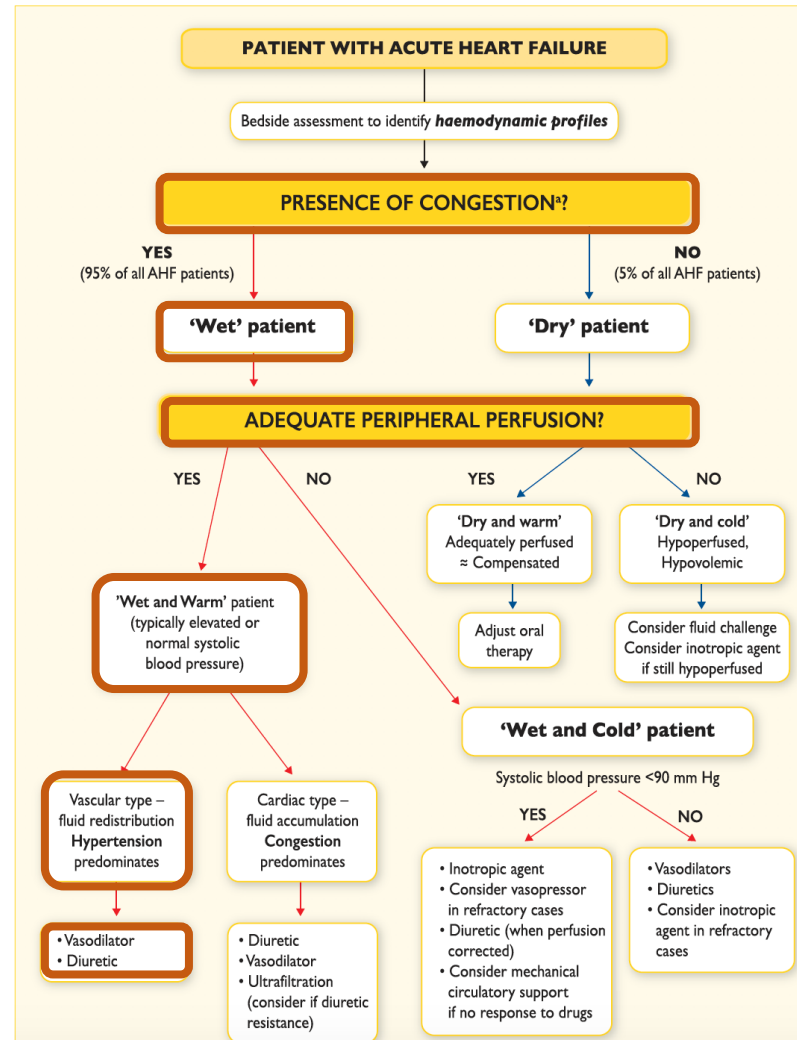
pH 7.43

pO2 56

pCO2 33

HCO3 25

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Ponikowski et al., EHJ. 2018

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Case 4

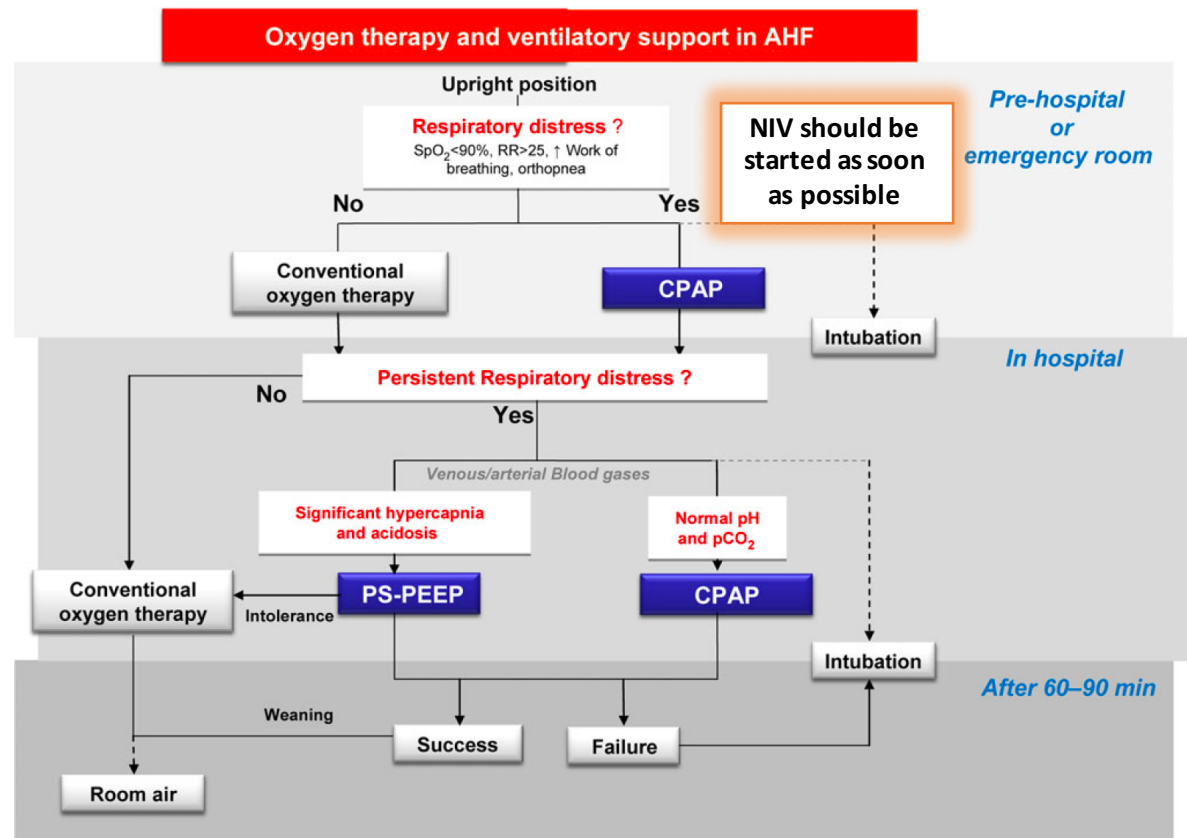


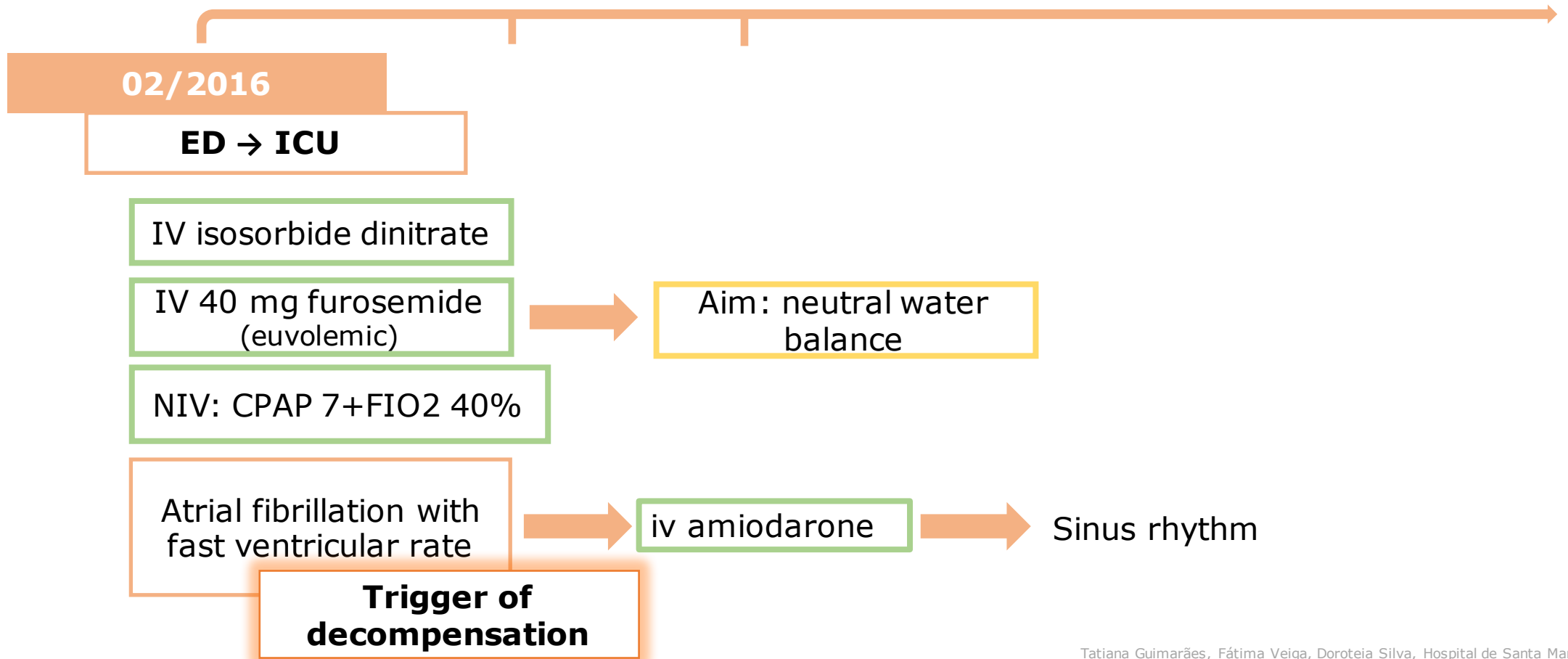
Figure 3 Oxygen and ventilatory support in acute heart failure. PS-PEEP, pressure support-positive end-expiratory pressure. CPAP, continuous positive airway pressure; RR, respiration rate; SpO₂, oxygen saturation.

Mebazaa A. EHJ. 2015, 1958-1966

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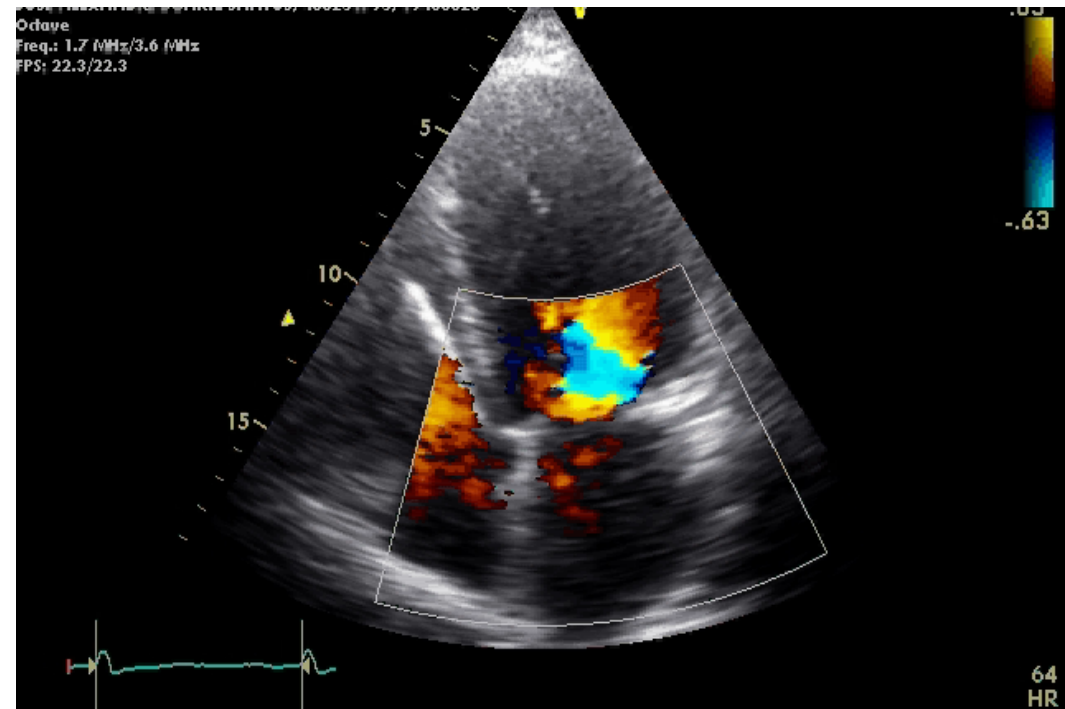
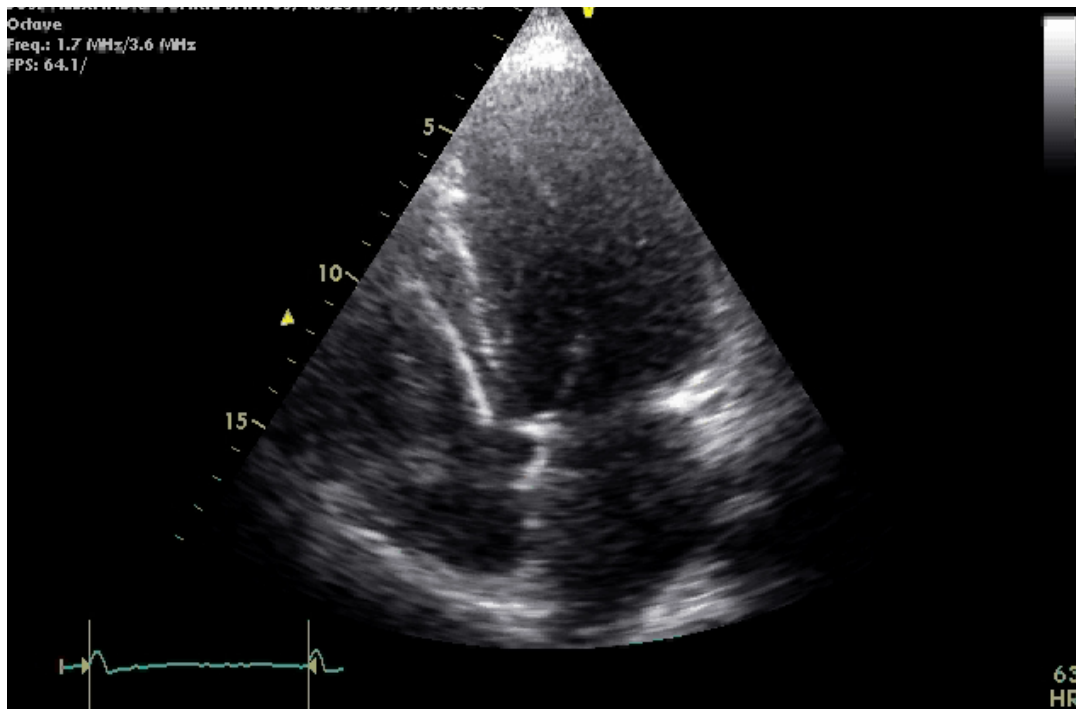
FIRST EPISODE OF ACUTE HEART FAILURE



Case 4

Echo

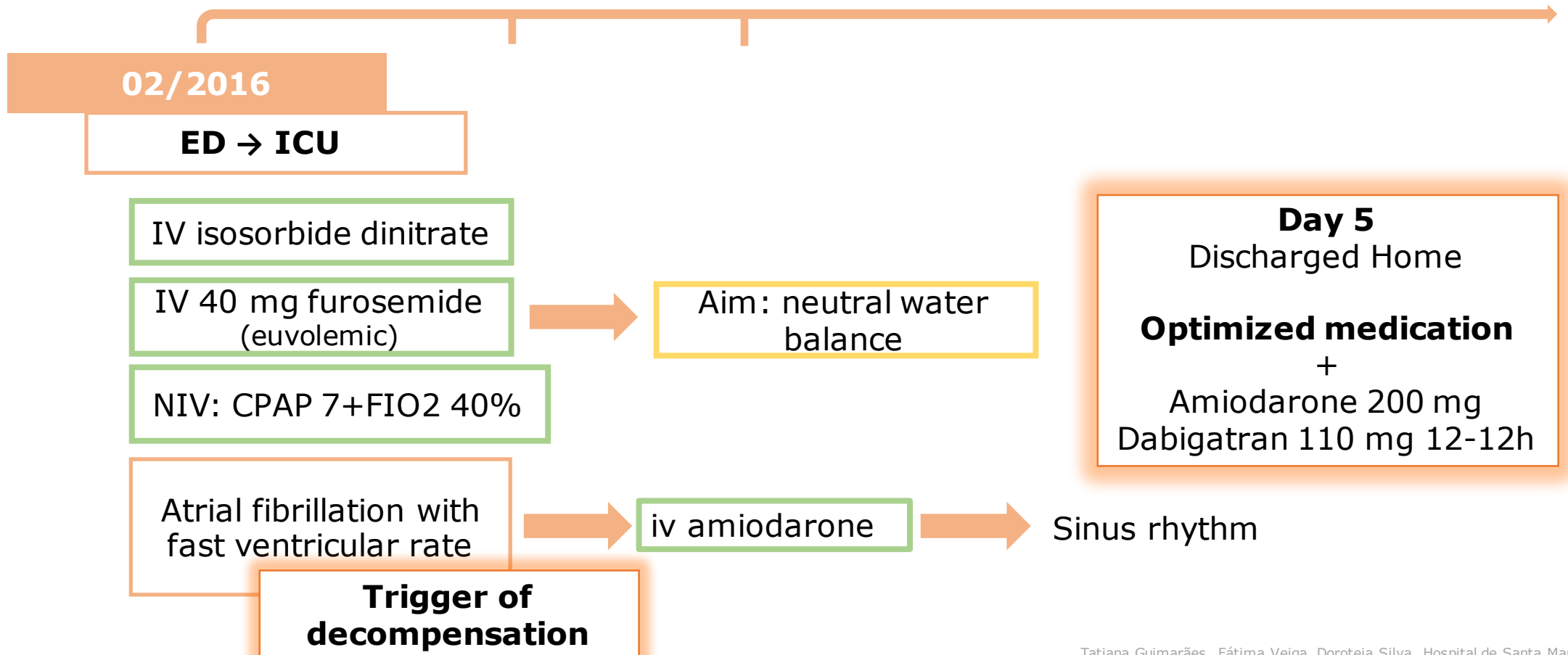
(BP 90/60 mmHg)



- **Dilated LV, EF 40%, secondary moderate MR, LA moderate enlargement**

Case 4

FIRST EPISODE OF ACUTE HEART FAILURE



Case 4

SECOND EPISODE OF ACUTE HEART FAILURE

03/2016

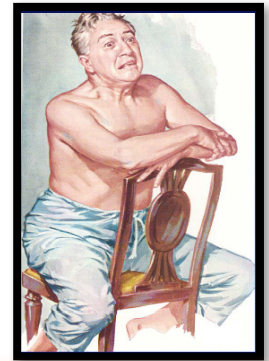
ED → ICU

BP 140/90 mmHg (*Trigger?*)

ECG: Sinus rhythm, HR 90 bpm, no ischemia

hs Troponin T: 16 → 15 ng/mL

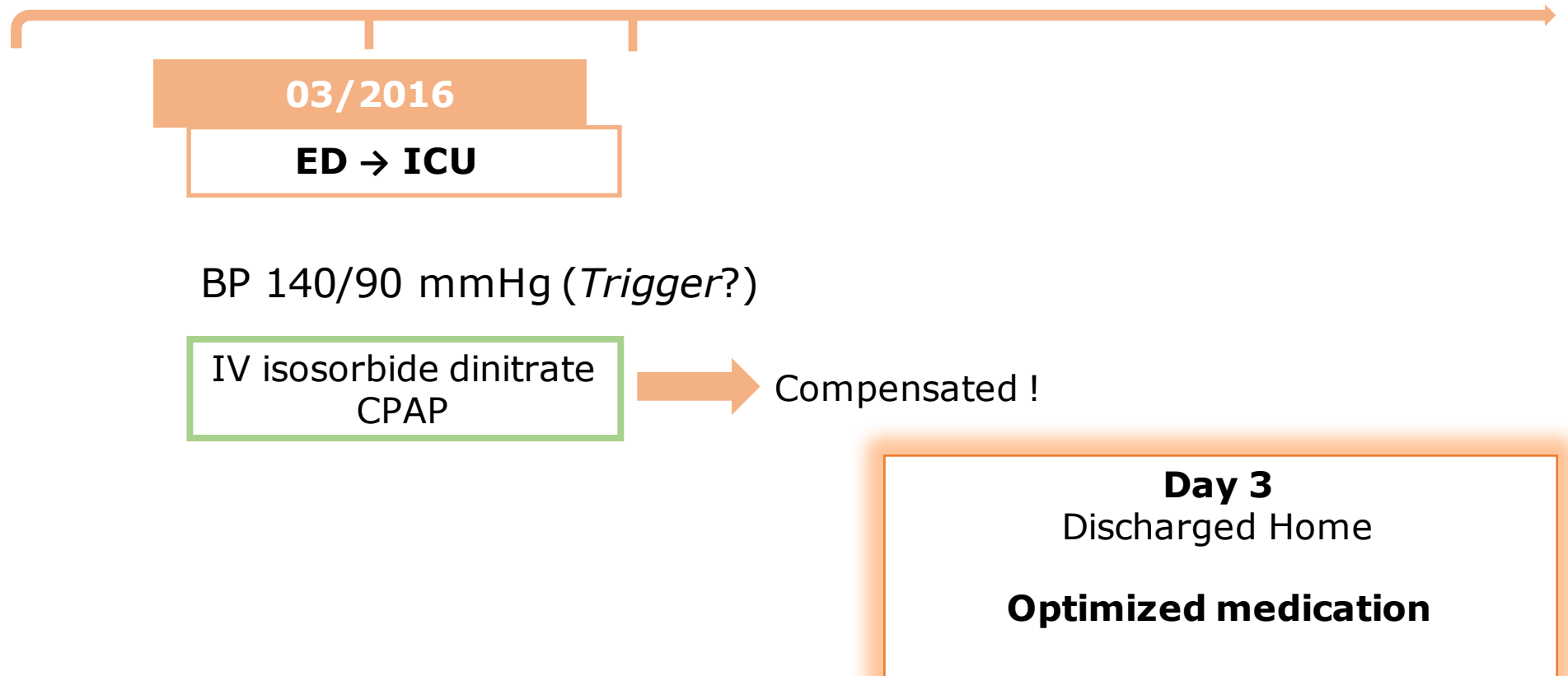
Echo (BP 90/60 mmHg): EF. 40%, secondary moderate MR



**Wet and warm
Vascular type**

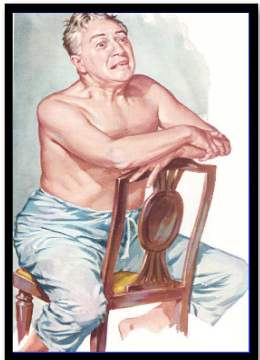
Case 4

SECOND EPISODE OF ACUTE HEART FAILURE



Case 4

THIRD EPISODE OF ACUTE HEART FAILURE



**Wet and warm
Vascular type**

04/2016

ED → ICU

BP 130/90 mmHg
ECG: Sinus rhythm, HR 88 bpm, no ischemia
Blood analysis: OK

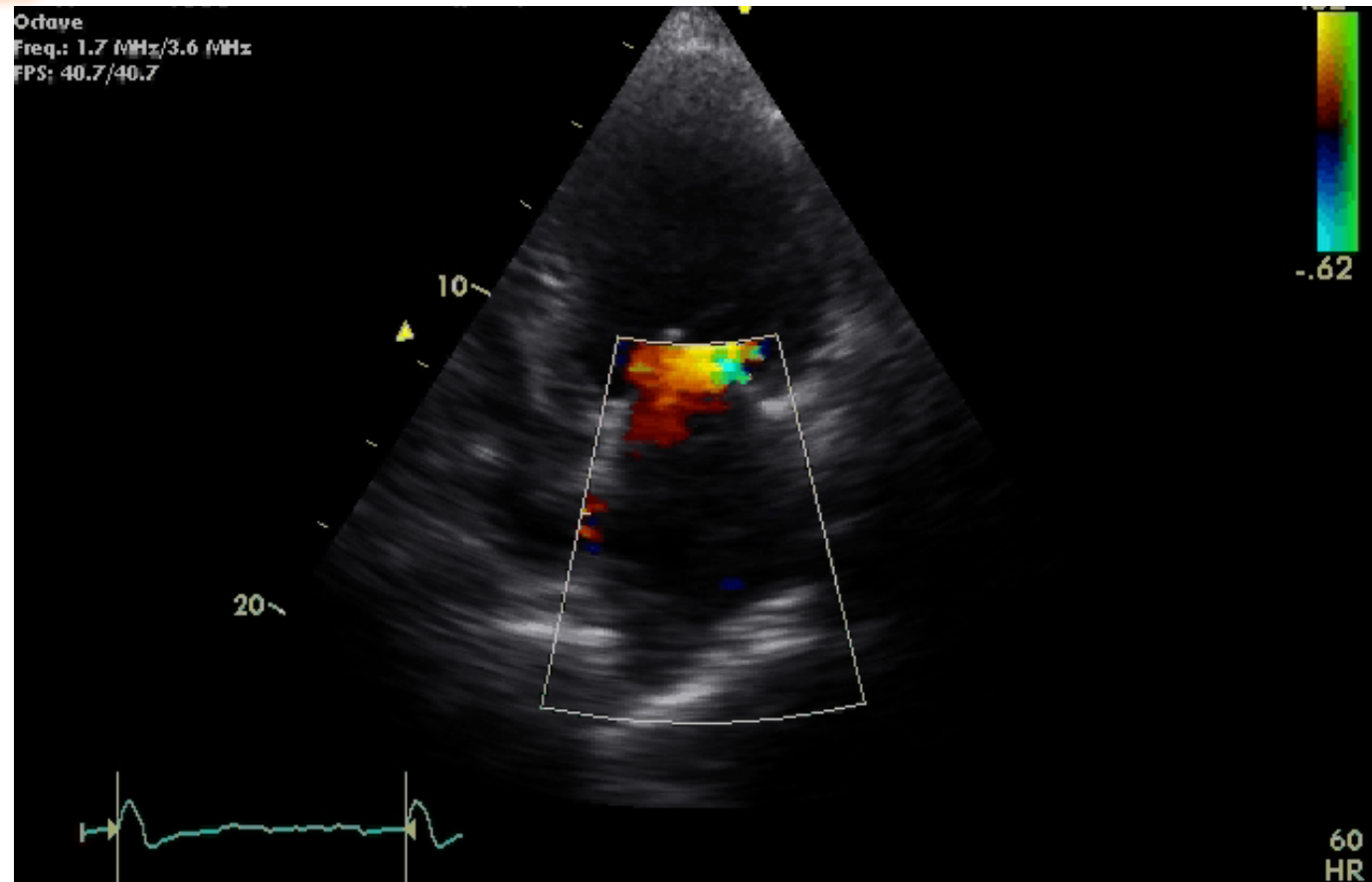
IV vasodilator
Low dose furosemide

Case 4

Echo

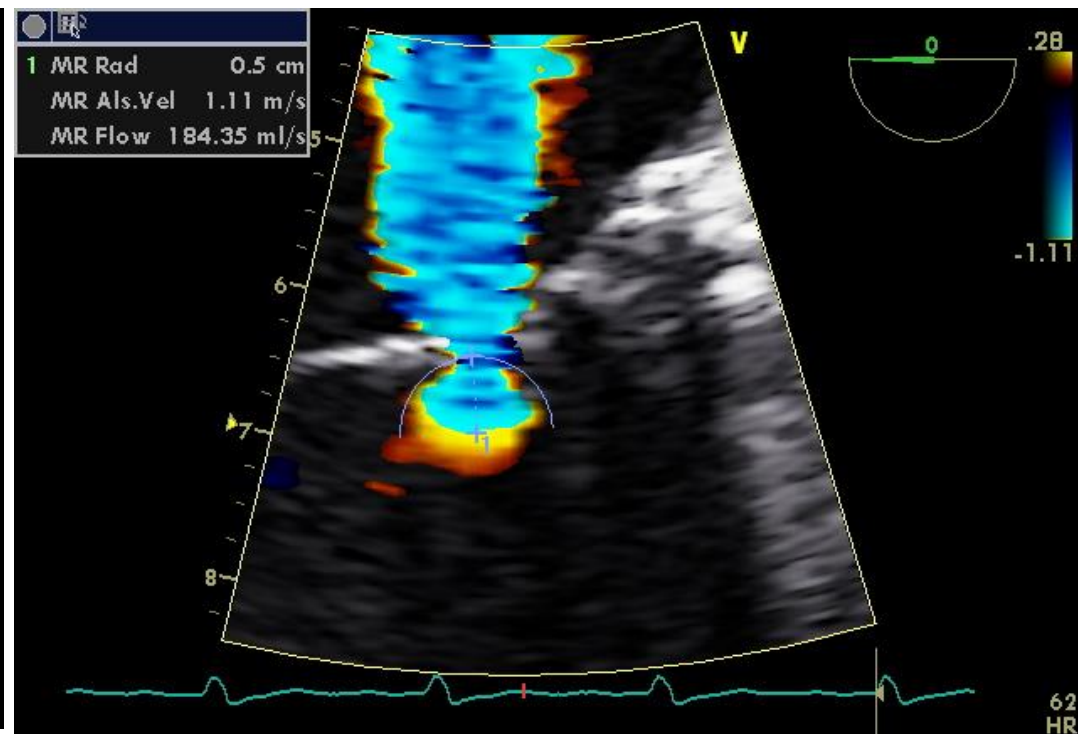
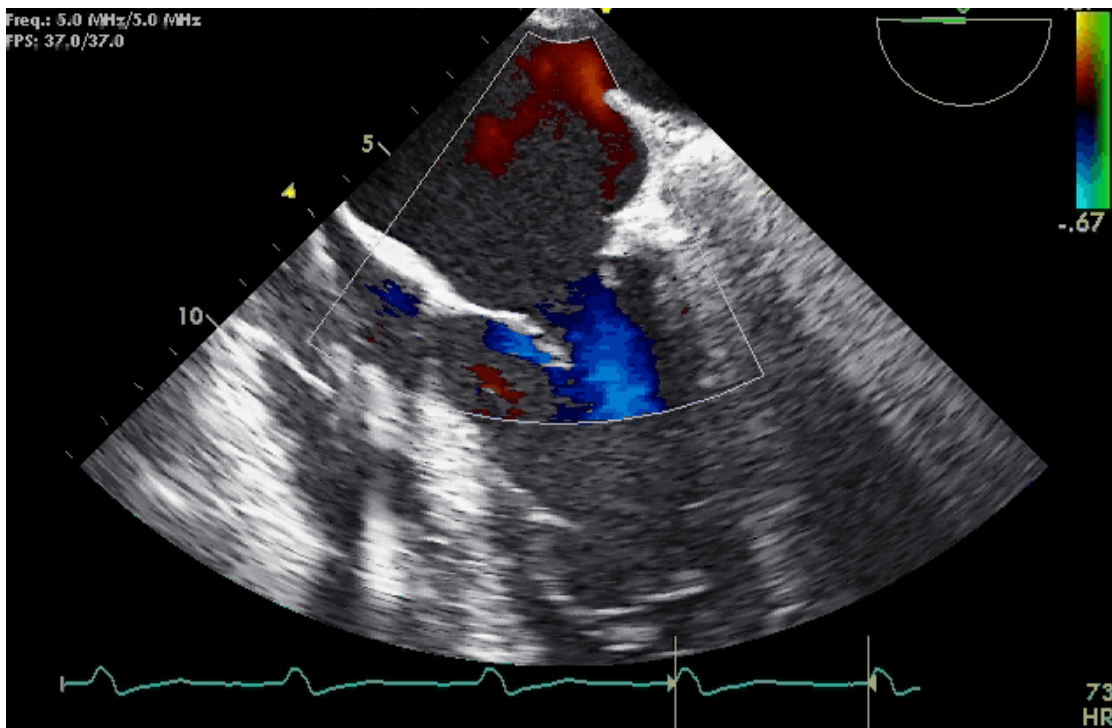
(BP 140/70 mmHg)

- EF. 40%
- Secondary MR
- PV flow inversion
- RV 39 ml



Case 4

Transesophageal Echo (BP 130/70 mmHg)



- PISA 6 mm; Vol 56 ml; PV flow inversion; Annulus 34 mm
- Carpentier I

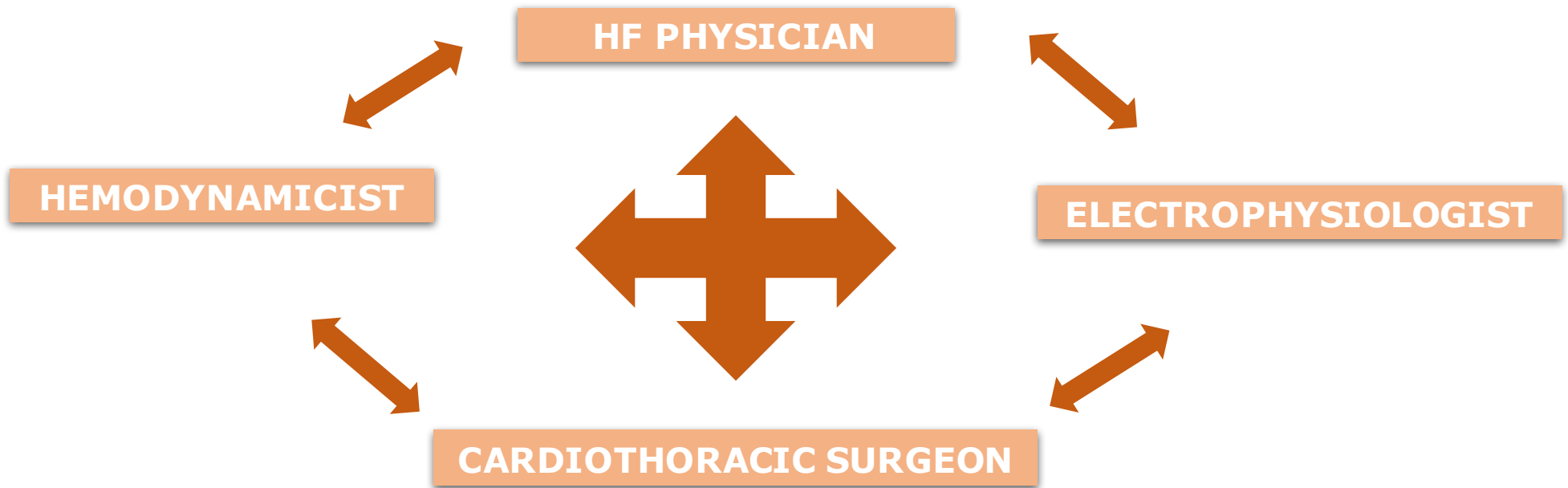
Case 4

Secondary moderate to severe mitral regurgitation And now, what to do?

- A: Optimize oral therapy
- B: Upgrade ICD → CRTD
- C: Percutaneous mitral valve repair (MitraClip®)
- D: Surgical mitral valve repair
- E: Surgical mitral valve replacement

Case 4

**Secondary moderate to severe mitral regurgitation
And now, what to do?**



Case 4

Secondary moderate to severe mitral regurgitation And now, what to do?

- A: Optimize oral therapy
 - Not enough
- B: Upgrade ICD → CRTD
 - EF 40%
 - QRS 128 msec
- C: Percutaneous mitral valve repair (MitraClip®)
- D: Surgical mitral valve repair/replacement
 - High surgical risk (EUROSCOREII:21; STS:9)

CRT:
not a
candidate

Case 4

Secondary moderate to severe mitral regurgitation And now, what to do?

- A: Optimize oral therapy
 - Not enough
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- D: Surgical mitral valve repair/replacement
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CRT:
not a
candidate

Case 4



European Heart Journal
doi:10.1093/eurheartj/ehw128

ESC GUIDELINES

2016 ESC Guidelines for the diagnosis and treatment of acute and chronic heart failure

... In patients with HF with **moderate-severe, secondary mitral regurgitation** who are judged inoperable or at high surgical risk, **percutaneous mitral valve intervention (percutaneous edge-to-edge repair) may be considered in order to improve symptoms and quality of life,** although no RCT evidence of improvement has been published, only registry studies...



ESC
European Society
of Cardiology
European Heart Journal (2017) 38, 2739–2791
doi:10.1093/eurheartj/ehx391

ESC/EACTS GUIDELINES

2017 ESC/EACTS Guidelines for the management of valvular heart disease

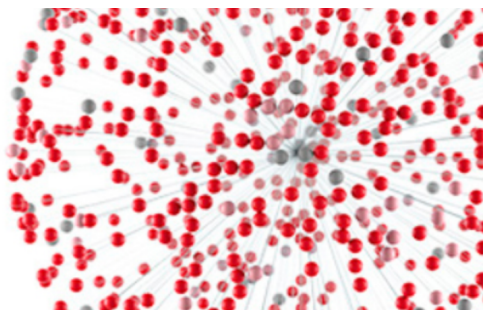
When revascularization is not indicated, surgery may be considered in patients with severe secondary mitral regurgitation and LVEF >30% who remain symptomatic despite optimal medical management (including CRT if indicated) and have a low surgical risk.	IIb	C
When revascularization is not indicated and surgical risk is not low, a percutaneous edge-to-edge procedure may be considered in patients with severe secondary mitral regurgitation and LVEF >30% who remain symptomatic despite optimal medical management (including CRT if indicated) and who have a suitable valve morphology by echocardiography, avoiding futility.	IIb	C

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ESC Congress Munich 2018

25-29 August

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cardiology comes together



The NEW ENGLAND JOURNAL of MEDICINE

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Percutaneous Repair or Medical Treatment for Secondary Mitral Regurgitation

J.-F. Obadia, D. Messika-Zeitoun, G. Leurent, B. Iung, G. Bonnet, N. Piriou, T. Lefèvre, C. Piot, F. Rouleau, D. Carrié, M. Nejari, P. Ohlmann, F. Leclercq, C. Saint Etienne, E. Teiger, L. Leroux, N. Karam, N. Michel, M. Gilard, E. Donal, J.-N. Trochu, B. Cormier, X. Armoiry, F. Boutitie, D. Maucort-Boulch, C. Banel, G. Samson, P. Guerin, A. Vahanian, and N. Newton, for the MITRA-FR Investigators*

ORIGINAL ARTICLE

Transcatheter Mitral-Valve Repair in Patients with Heart Failure

G.W. Stone, J.A. Lindenfeld, W.T. Abraham, S. Kar, D.S. Lim, J.M. Mishell, B. Whisenant, P.A. Grayburn, M. Rinaldi, S.R. Kapadia, V. Rajagopal, I.J. Sarembock, A. Brieke, S.O. Marx, D.J. Cohen, N.J. Weissman, and M.J. Mack, for the COAPT Investigators*

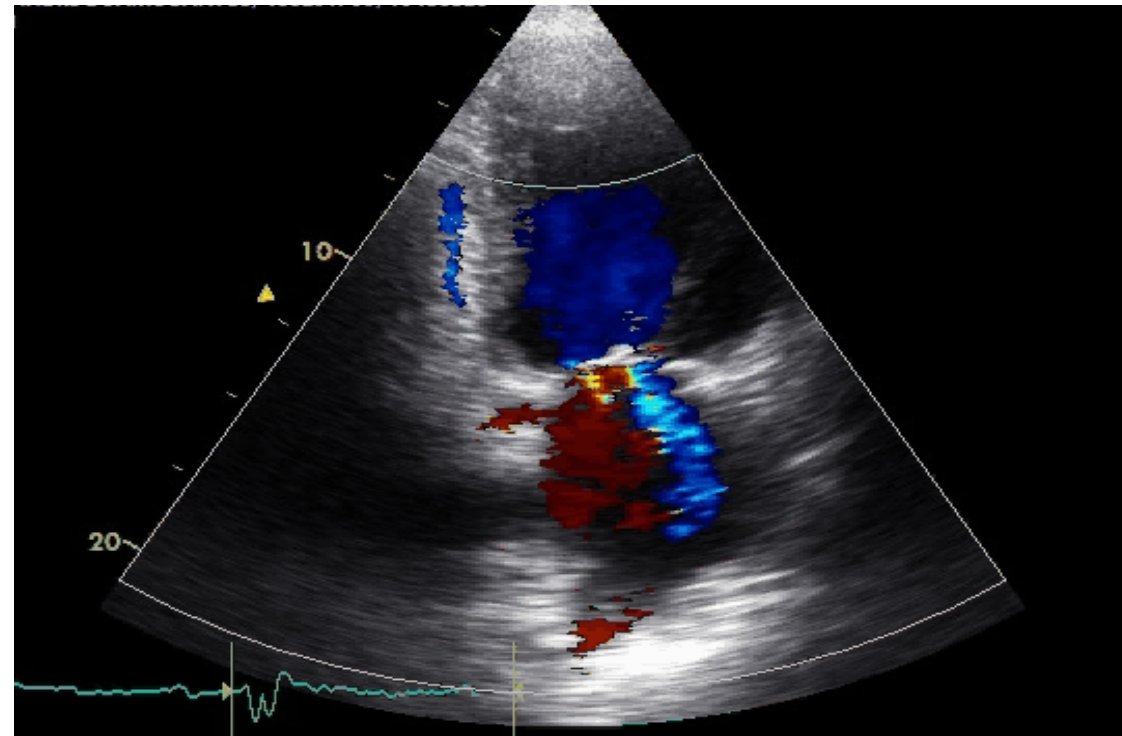
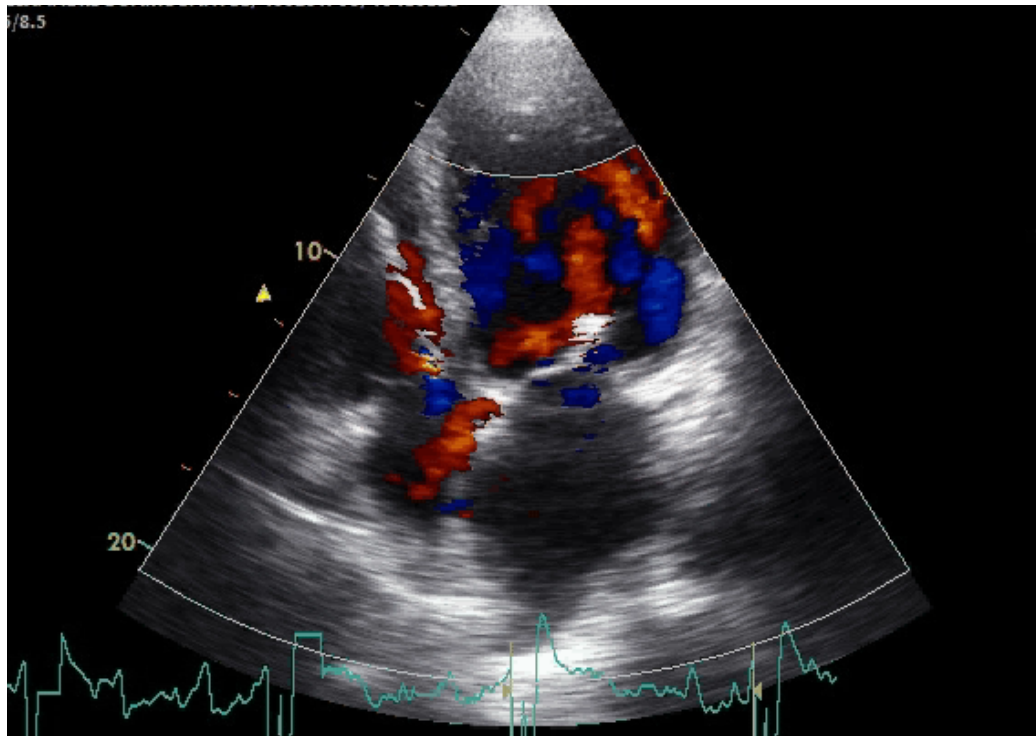
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	MITRA-FR	COAPT
Primary endpoint	All cause death ± HF hospitalization at 12 months 54.6% vs 51.3% (p = 0.53)	HF hospitalization at 24 months 35.8% vs. 67.9% (HR: 0.53, p < 0.001)
Severe MR entry criteria	Severe FMR by EU guidelines: EROA>20 mm ² or RV>30 mL/beat	Severe FMR by US guidelines: EROA>30 mm ² or RV>45 mL/beat
EROA (mean±SD)	31±10 mm ²	41±15 mm ²
LVEDV (mean±SD)	135±35 mL/m ²	101±34 mL/m ²
LVEF (mean±SD)	33±7%	31±9%
GDMT at baseline and FU	Receiving HF meds at baseline – allowed variable adjustment in each group during follow-up per “real-world” practice	CEC confirmed pts were failing maximally-tolerated GDMT at baseline- few major changes during follow-up
Acute results: No clip/>3+ MR	9%/9%	5%/5%
Procedural complications	14.6%	8.5%
12- Months Mitraclip >3+ MR	17%	5%

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Echo post MitraClip®



Case 4

LAST FOLLOW UP – two years post Mitraclip®



- NYHA class II
- **No further acute heart failure episodes**
- Max VO_2 : 16 mL/kg (RER 1.1)
- NT-proBNP: 780 pg/mL
- ECHO: Volume (=) ; EF (=); MR I/IV

TAKE HOME MESSAGES

- **Congestion** is the main problem in acute heart failure.
- **Vasodilators** are first line therapy if a **vascular type patient**.
- Appropriate the timing: **early administration of therapy** is important .
- Don ´t forget to considered **percutaneous mitral valve intervention** in patients with HF and moderate-severe secondary mitral regurgitation
- Take into account: **after load (BP) modify the magnitude of (secondary) mitral regurgitation.**