SAMU de Lyon

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ENS, amphi Descartes, avenue Jean Jaurès, face au numéro 247, 69007 Lyon

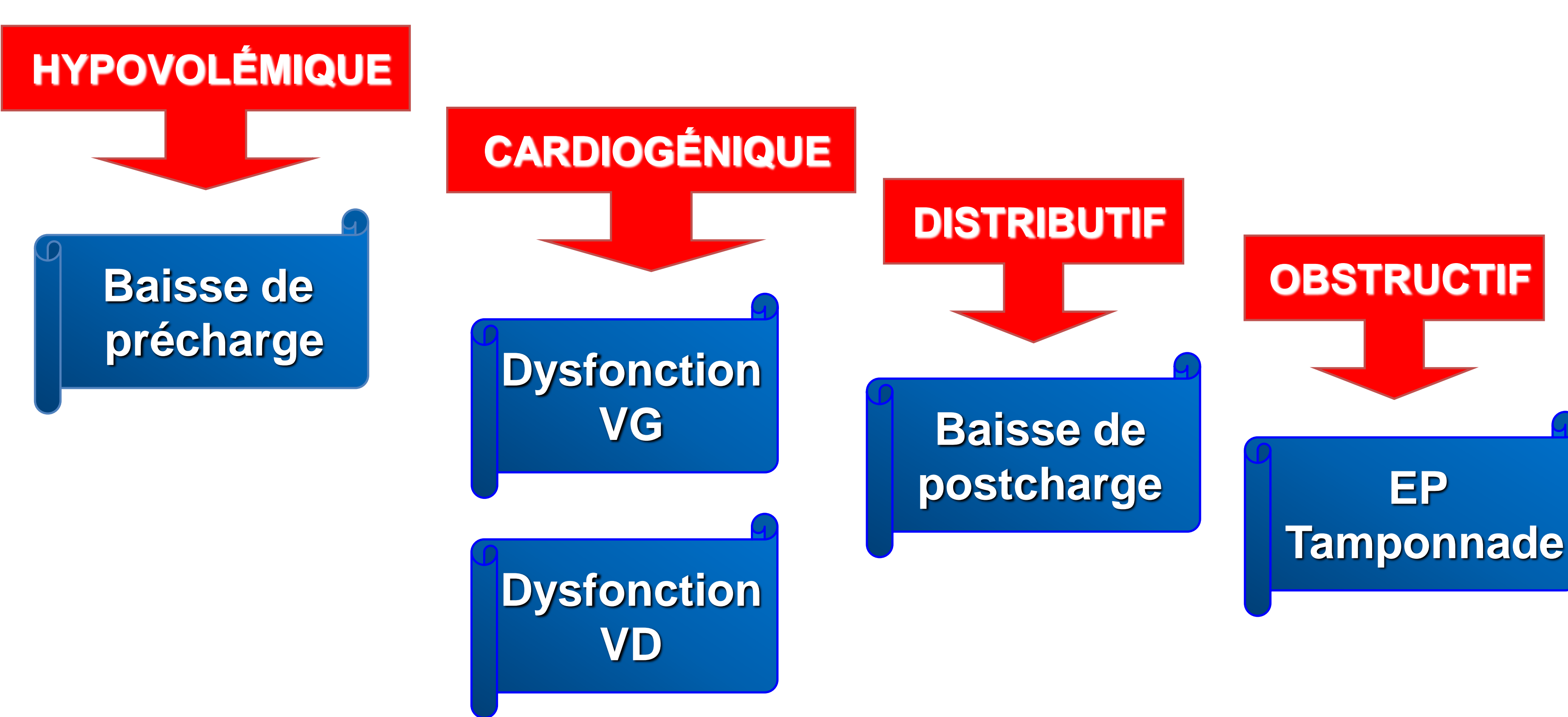
CHOC CARDIOGENIQUE :

PRISE EN CHARGE EN MILIEU HOSTILE

PY. Dubien

TYPE DE CHOC ?

Diminution des apports en O_2 et en nutriments aux tissus



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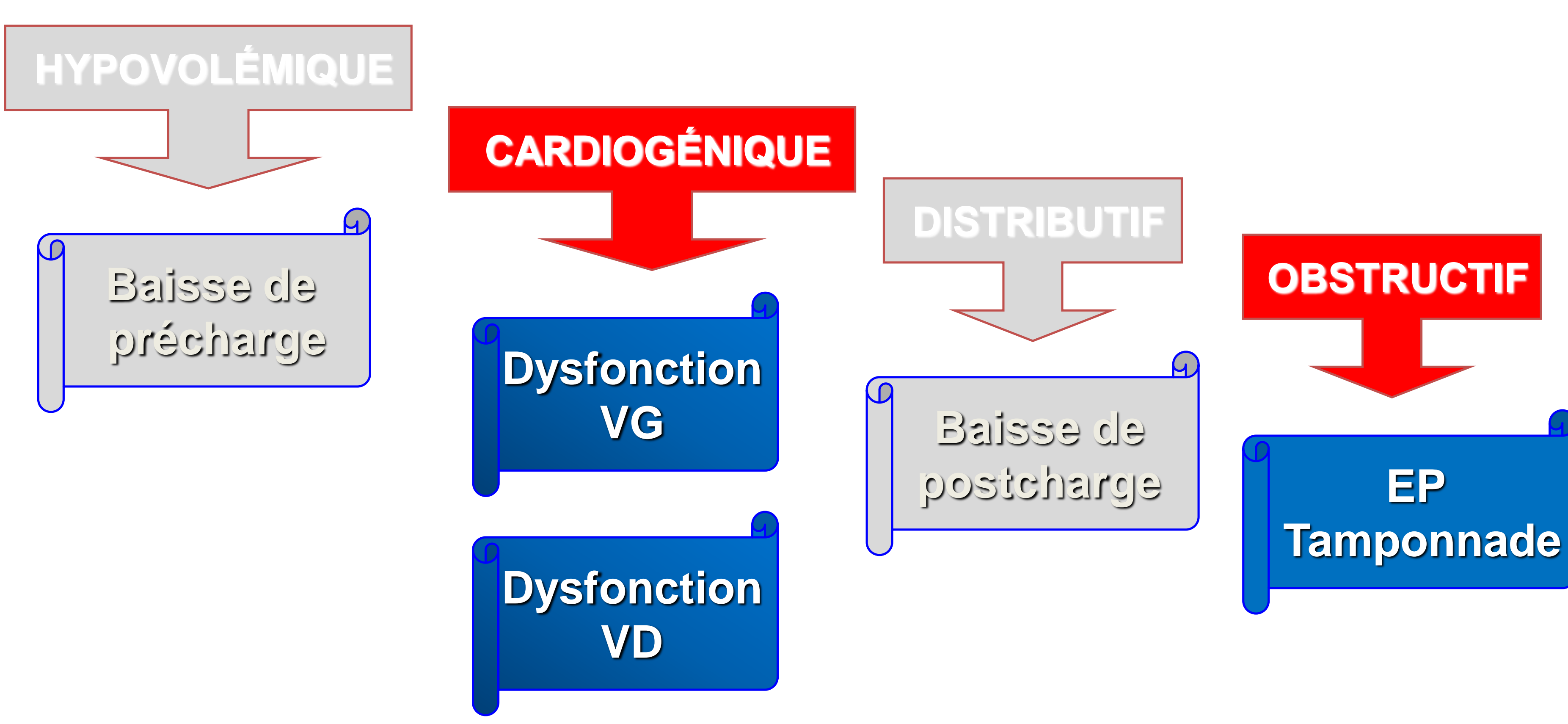


DIAGNOSTIC : TYPE DE CHOC ?

VG en cause :

- **Ischémique ++**
- Dilatée
- Valvulaire
- Hypertrophique
- Restrictive
- Septique
- Contusion (post traumatique)
- Myocardite
- Toxique
- Tako Tsubo

VD en cause :

- **CPA +**
- Infarctus
- Tamponnade
- Sepsis

Cœur sain:

- Aorte
- Hypovolémie
- Distributif

STRATEGIE DIAGNOSTIQUE

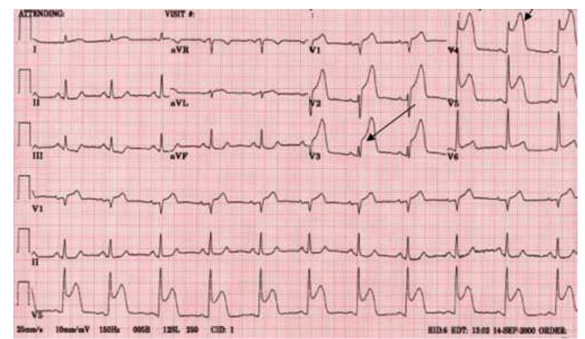
2 EXAMENS INCONTOURNABLES :

ECG = PRIORITE   Choc cardiogénique ischémique ?

ECHOGRAPHIE CARDIAQUE   Origine du choc ?

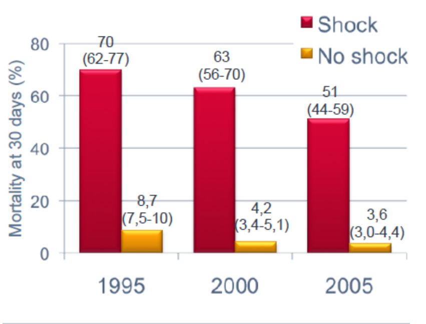
CHOC CARDIOGENIQUE ISCHEMIQUE

Antérieur étendu

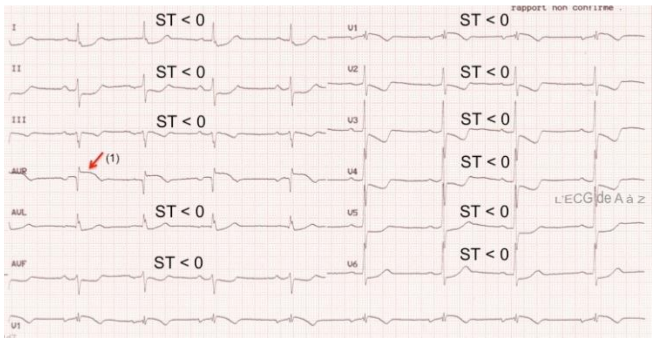


choc cardiogénique 6-10%

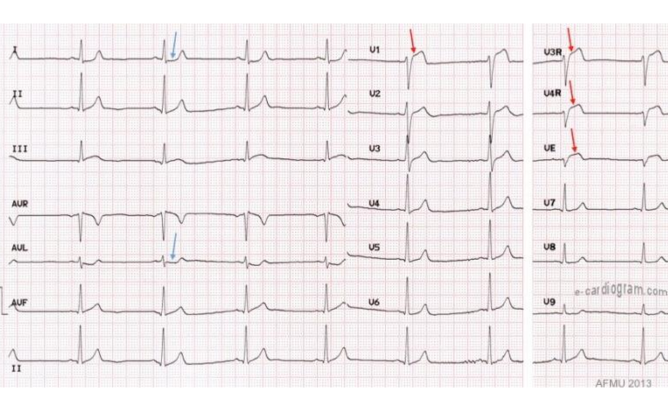
mortalité 50%



Tronc commun



VD



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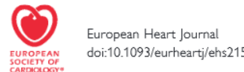


European Heart Journal
doi:10.1093/eurheartj/ehs215

ESC GUIDELINES

ESC Guidelines for the management of acute myocardial infarction in patients presenting with ST-segment elevation

2012

The Task Force on the management of ST-segment elevation acute myocardial infarction of the European Society of Cardiology (ESC)

Authors/Task Force Members: Ph. Gabriel Steg (Chairperson) (France)*,

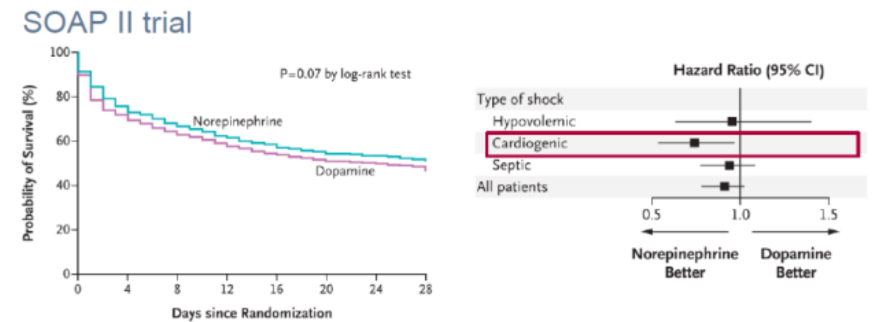
	Treatment of cardiogenic shock (Killip class IV)			
2	Oxygen/mechanical respiratory support is indicated according to blood gasses.	I	C	-
4	Urgent echocardiography/Doppler must be performed to detect mechanical complications, assess systolic function and loading conditions.	I	C	-
3	High-risk patients must be transferred early to tertiary centres.	I	C	-
	Emergency revascularization with either PCI or CABG in suitable patients must be considered.	I	B	100
	Fibrinolysis should be considered if revascularization is unavailable.	IIa	C	-
	Intra-aortic balloon pumping may be considered.	IIb	B	1, 98, 305
	LV assist devices may be considered for circulatory support in patients in refractory shock.	IIb	C	-
	Haemodynamic assessment with balloon floating catheter may be considered.	IIb	B	316
1	Inotropic/vasopressor agents should be considered: • Dopamine	IIa	C	-
	• Dobutamine	IIa	C	-
	• Norepinephrine (preferred over dopamine when blood pressure is low).	IIb	B	300, 317

STRATEGIE THERAPEUTIQUE

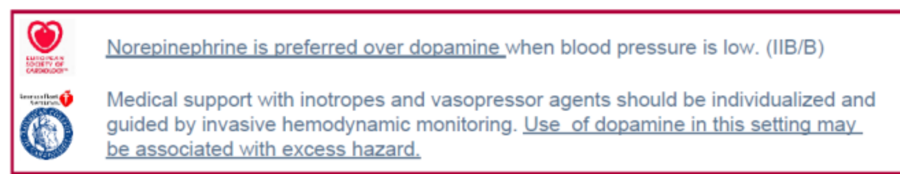
1- Amines inotropes et vasoactives (IIA) :

Objectif PAS **> 90 mmHg**

Administration **rapide sans** microbulles



~~Dopamine~~


Norepinephrine is preferred over dopamine when blood pressure is low. (IIB/B)

Medical support with inotropes and vasopressor agents should be individualized and guided by invasive hemodynamic monitoring. Use of dopamine in this setting may be associated with excess hazard.

De Backer et al. NEJM 2010;369:779-789

1ère intention : **dobutamine** +/- noradrénaline

5 µg / kg / min et de ↑ 5 µg / kg toutes les 5 - 10 min max 20 µg / kg / min

2ème intention ou **d'emblée : adrénaline**

0,2 µg / kg / min puis ↑ 0,1 µg / 10 min

STRATEGIE THERAPEUTIQUE

2- Ventilation mécanique (IC) :

Indications larges / délai transport / **systématique +++**

Effets oxygénation
Effets hémodynamiques
Sécurité angioplastie +++

ISR étomidate - suxaméthonium

Sédation sufentanyl +/- gammaOH

STRATEGIE THERAPEUTIQUE

3- Revascularisation (IB) +++

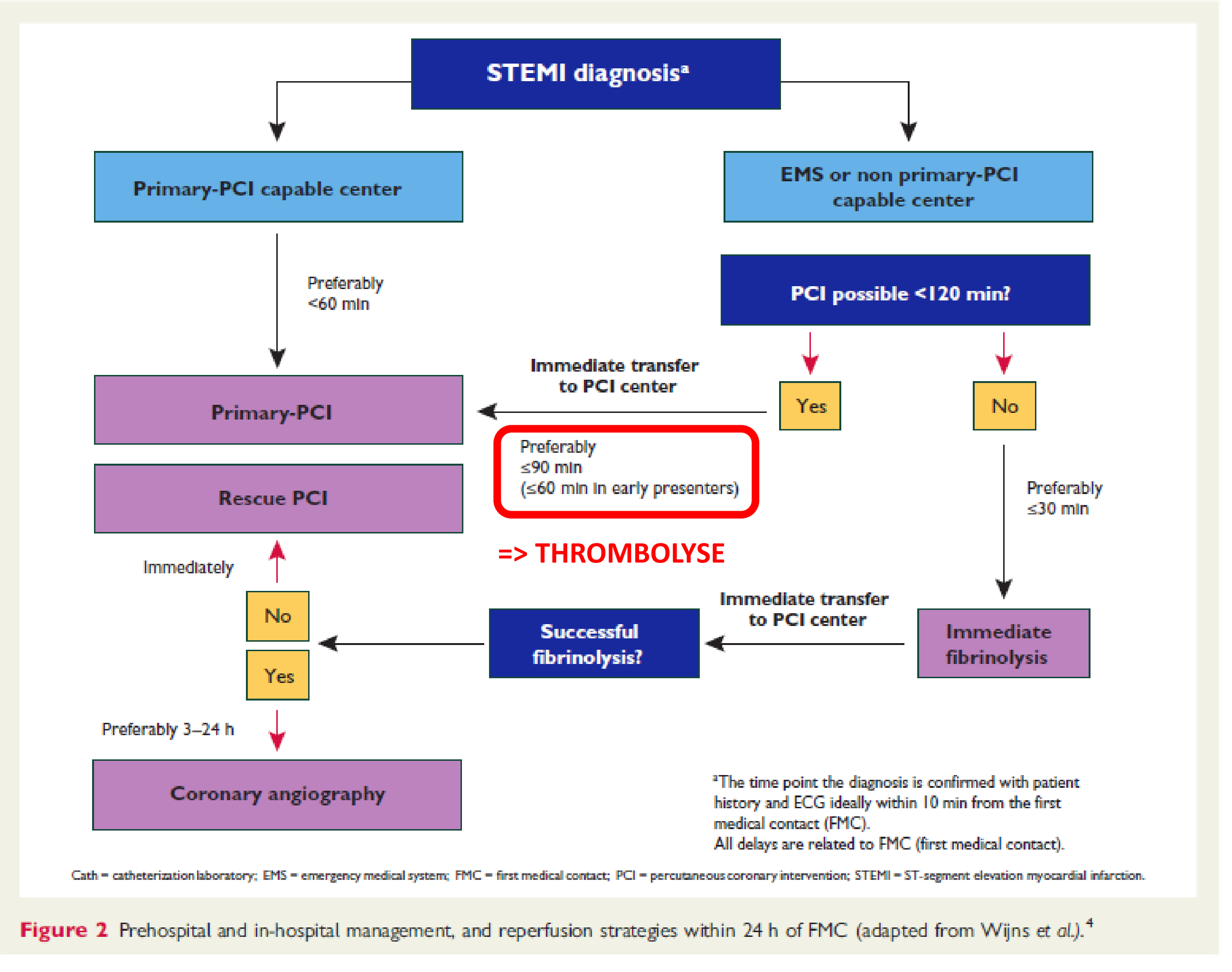
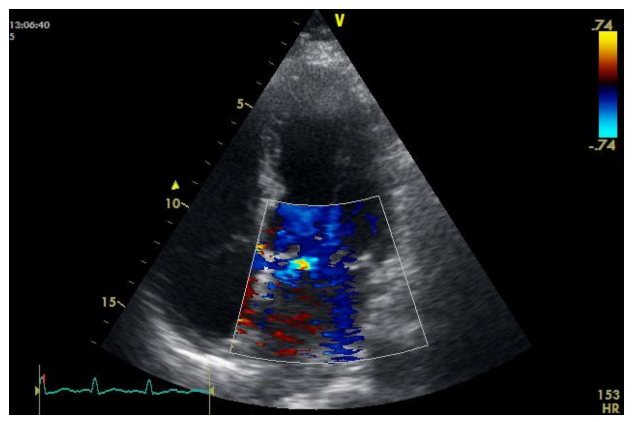


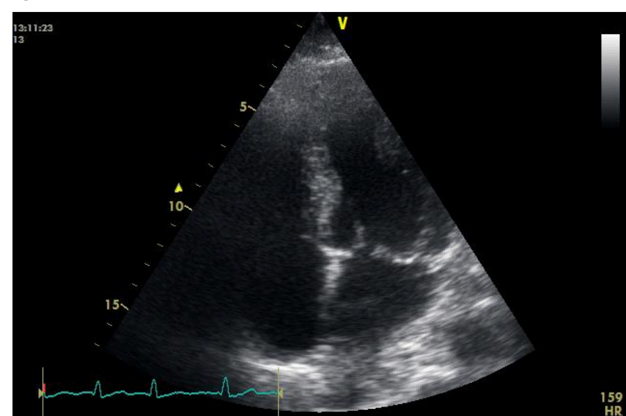
Figure 2 Prehospital and in-hospital management, and reperfusion strategies within 24 h of FMC (adapted from Wijns *et al.*).[4]

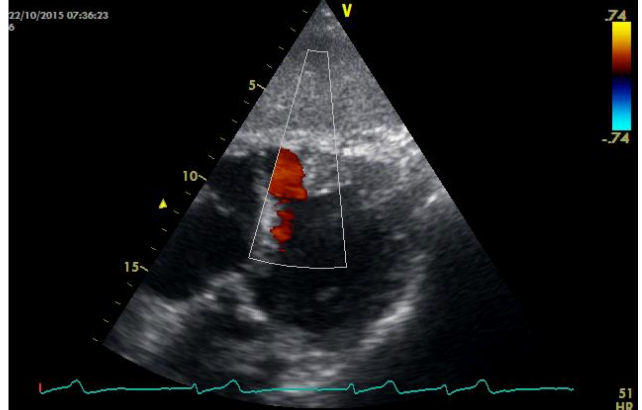
STRATEGIE THERAPEUTIQUE

4- Echographie cardiaque (IC) :

- ITV sousAo, cinétique segmentaire
- Complications mécaniques +++







CHOC CARDIOGENIQUE NON ISCHEMIQUE

European Heart Journal Advance Access published May 20, 2016

European Heart Journal
doi:10.1093/eurheartj/ehw128

ESC GUIDELINES

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

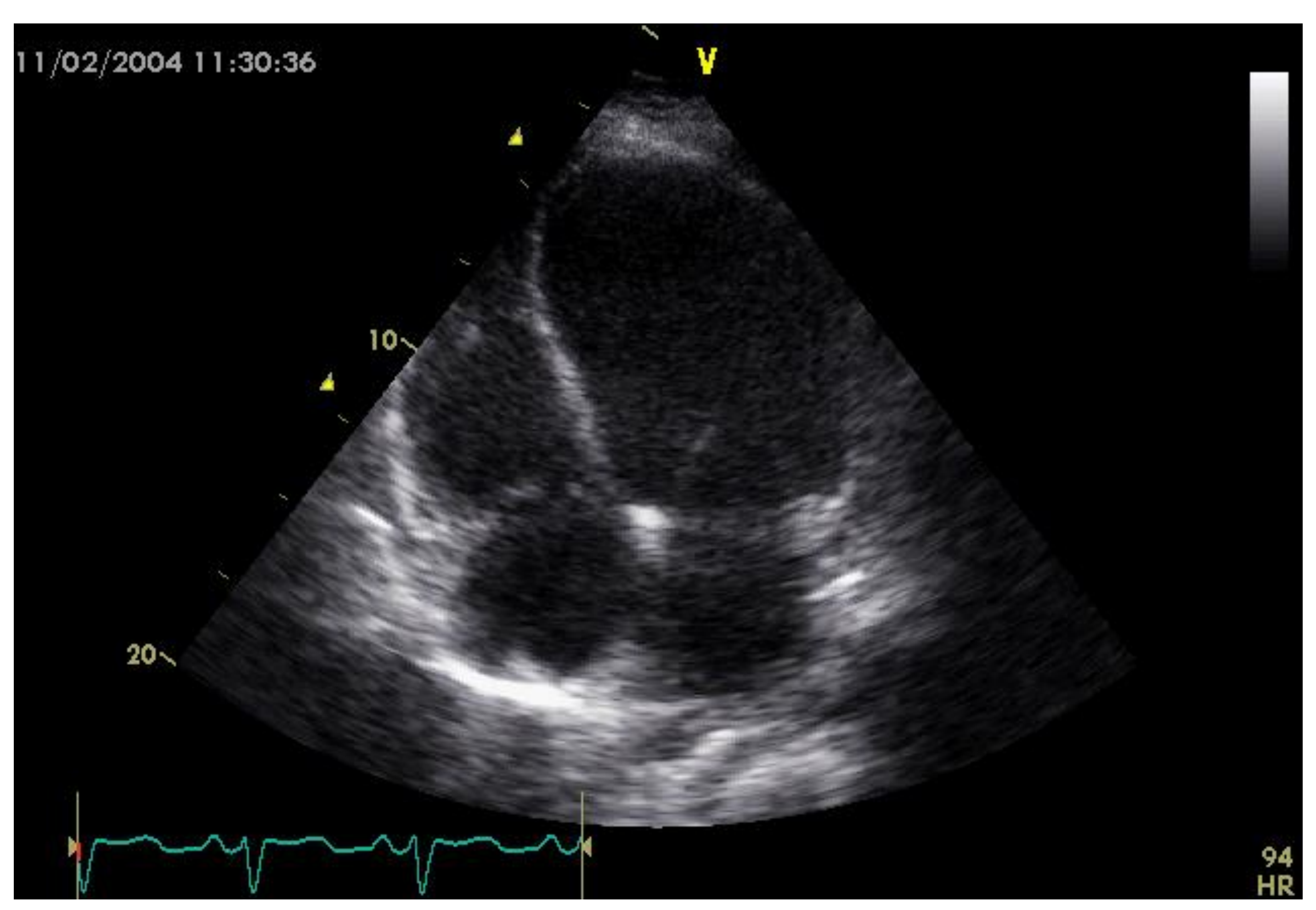
Recommendations regarding management of patients with cardiogenic shock

	Recommendations	Class[a]	Level[b]	Ref[c]
1	In all patients with suspected cardiogenic shock, immediate ECG and echocardiography are recommended	I	C	
	All patients with cardiogenic shock should be rapidly transferred to a tertiary care center which has a 24/7 service of cardiac catheterization, and a dedicated ICU/CCU with availability of short-term mechanical circulatory support.	I	C	
	In patients with cardiogenic shock complicating ACS an immediate coronary angiography is recommended (within 2 hours from hospital admission) with an intent to perform coronary revascularization.	I	C	
	Continous ECG and blood pressure monitoring are recommended.	I	C	
	Invasive monitoring with an arterial line is recommended.	I	C	
	Fluid challenge (saline or Ringer's lactate, >200 ml/15–30 min) is recommended as the first-line treatment if there is no sign of overt fluid overload.	I	C	
2	Intravenous inotropic agents (dobutamine) may be considered to increase cardiac output.	IIb	C	
	Vasopressors (norepinephrine preferable over dopamine) may be considered if there is a need to maintain SBP in the presence of persistent hypoperfusion.	IIb	B	558
	IABP is not routinely recommended in cardiogenic shock.	III	B	585, 586
	Short-term mechanical circulatory support may be considered in refractory cardiogenic shock depending on patient age, comorbidities and neurological function.	IIb	C	

Recommendations for the management of patients with acute heart failure: oxygen therapy and ventilatory support

	Recommendations	Class[a]	Level[b]	Ref[c]
	Monitoring of transcutaneous arterial oxygen saturation (SpO_2) is recommended.	I	C	
	Measurement of blood pH and carbon dioxide tension (possibly including lactate) should be considered, especially in patients with acute pulmonary oedema or previous history of COPD using venous blood. In patients with cardiogenic shock arterial blood is preferable.	IIa	C	
	Oxygen therapy is recommended in patients with AHF and SpO_2 <90% or PaO_2 <60 mmHg (8.0 kPa) to correct hypoxaemia.	I	C	
	Non-invasive positive pressure ventilation (CPAP, BiPAP) should be considered in patients with respiratory distress (respiratory rate >25 breaths/min, SpO_2 <90%) and started as soon as possible in order to decrease respiratory distress and reduce the rate of mechanical endotracheal intubation. Non-invasive positive pressure ventilation can reduce blood pressure and should be used with caution in hypotensive patients. Blood pressure should be monitored regularly when this treatment is used.	IIa	B	541–545
3	Intubation is recommended, if respiratory failure, leading to hypoxaemia (PaO_2 <60 mmHg (8.0 kPa)), hypercapnia ($PaCO_2$ >50 mmHg (6.65 kPa)) and acidosis (pH <7.35), cannot be managed non-invasively.	I	C	

CHOC CARDIOGENIQUE NON ISCHEMIQUE



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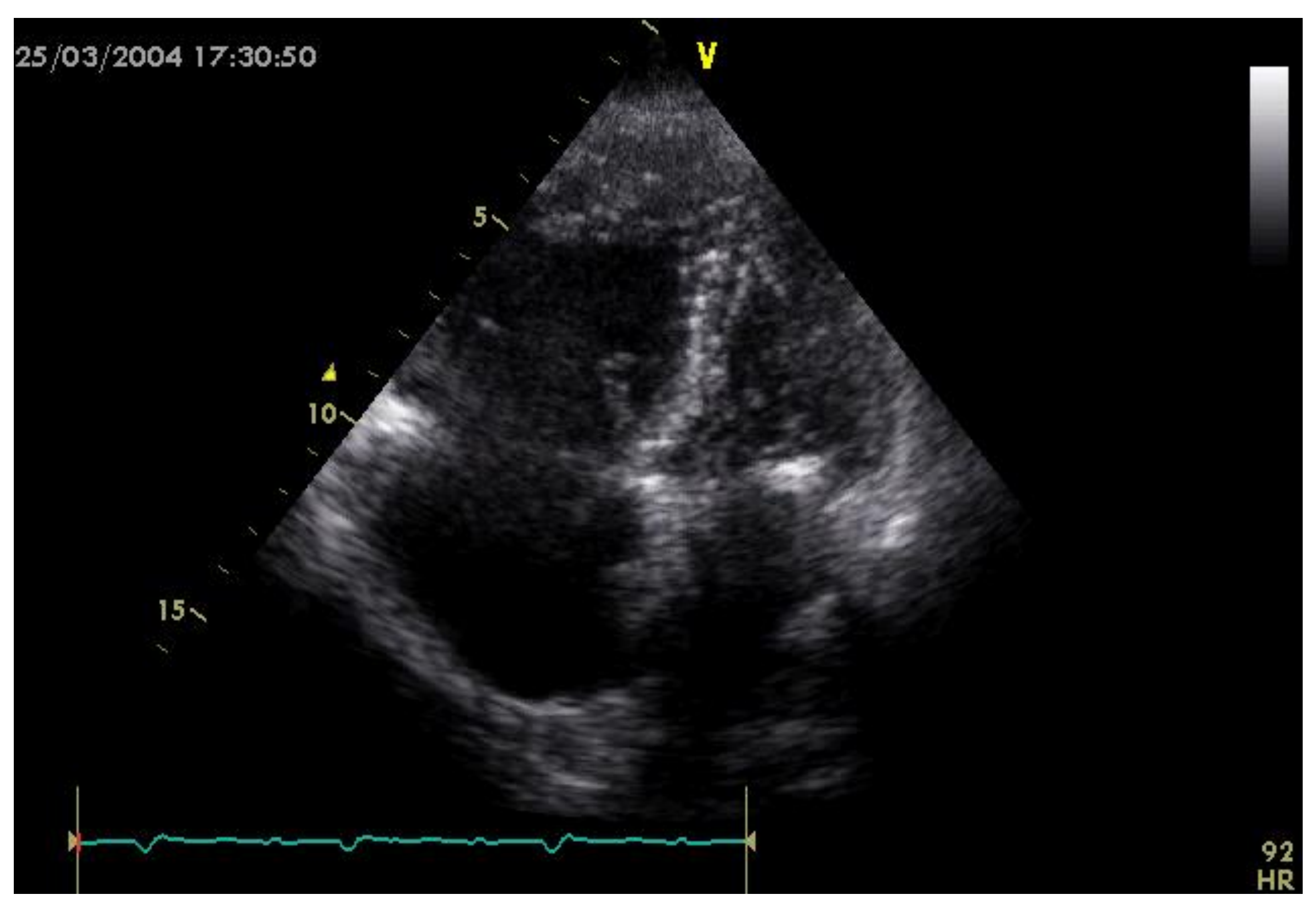

EMBOLIE PULMONAIRE

European Heart Journal Advance Access published September 17, 2014

European Heart Journal
doi:10.1093/eurheartj/ehu283

ESC GUIDELINES

2014 ESC Guidelines on the diagnosis and management of acute pulmonary embolism

The Task Force for the Diagnosis and Management of Acute Pulmonary Embolism of the European Society of Cardiology (ESC)

Endorsed by the European Respiratory Society (ERS)

Authors/Task Force Members: Stavros V. Konstantinides* (Chairperson) (Germany/

- Remplissage prudent : mini fluid challenge 100 ml / échographie ITV Sous Ao
- Amines vaso-actives **noradrénaline** + / - dobutamine
- Thrombolyse +++

Recommendations	Class[a]	Level[b]	Ref[c]
PE with shock or hypotension (high-risk)			
It is recommended that intravenous anticoagulation with UFH be initiated without delay in patients with high-risk PE.	I	C	
Thrombolytic therapy is recommended.	I	B	168
Surgical pulmonary embolectomy is recommended for patients in whom thrombolysis is contraindicated or has failed.[d]	I	C	313
Percutaneous catheter-directed treatment should be considered as an alternative to surgical pulmonary embolectomy for patients in whom full-dose systemic thrombolysis is contraindicated or has failed.[d]	IIa	C	

- Ventilation mécanique derniers recours

  Petit Vt 6 ml /kg Pmax 30

CHOC CARDIOGENIQUE

VERSION : 4
ECRITURE : PY. DUBIEN D. PINERO
VALIDATION : Comité de lecture
DATE : 17 / 11 / 2015

DEFINITION :

Défaillance de la pompe cardiaque, par dysfonction VG et / ou VD, à l'origine d'un effondrement du débit cardiaque et d'une anoxie tissulaire progressive

DIAGNOSTIC :

Contexte : douleur thoracique, myocardiopathie

Signes cliniques :

Anxiété, agitation, troubles de conscience ± convulsions (bas débit cérébral)
Polypnée, tachycardie
Hypotension artérielle systolique ≤ 80 mm Hg
Signes de choc : extrémités froides, sueurs, cyanose, marbrures
Dysfonction VG : crépitants, sibilants, galop gauche, souffle systolique (IM ischémique, CIV)
Dysfonction VD : poumons secs, galop droit, Harzer, turgescence jugulaire, reflux hépatojugulaire hépatomégalie douloureuse
Echographie cardiaque si disponible : fonction VG globale, ITV sousAo, doppler mitral…

TRAITEMENT :

Symptomatique :

Oxygénothérapie : MHC QSP SpO_2 ≥ 95 %
2 voies veineuses périphériques (± VVC si TIH) pour l'administration des amines
Remplissage prudent : 250 ml de cristalloïdes en 10 min, possibilité de renouveler jusqu'à 500 ml
Amines vasoactives et inotropes :

1ère intention :

Dobutrex® 5 µg / kg / min et de ↑ 5 µg / kg toutes les 5 - 10 min sans dépasser 20 µg / kg / min
250 mg / 50 ml, vit 5 à 20 ml / h

2ème intention si insuffisant : associer

Adrénaline débuter à 1 mg / h et ↑ 0,5 mg / 10 min
20 mg / 40 ml, vit 2 ml / h

Si inefficace :

Ventilation contrôlée après ISR : **Kétalar®** 2 mg / kg ou **Etomidate®** 0,3 - 0,4 mg / kg + **Célocurine®** 1 mg / kg
Vt = 6 - 8 ml / kg, FR = 12, FiO_2 pour SpO_2 ≥ 95 %, pas de PEP au départ en l'absence d'OAP

Si TIH :

Discuter l'indication d'une technique d'assistance circulatoire
CPBIA : contre pulsion par ballon intra aortique (équipe SMUR) : IM grade IV, CIV
ECMO veino-artérielle : extracorporeal membrane oxygenation (équipe cardio B16)

Si choc cardiogénique de l'infarctus du myocarde :

Priorité au transport rapide +++ en salle de coronarographie
Adrénaline d'emblée +++ : débuter à 1 mg / h et ↑ 0,5 mg / 10 min
Ventilation mécanique d'indications larges

Etiologique : désobstruction coronaire par
Thrombolyse si délai pour accéder à la salle de coronarographie > 60 min
Angioplastie primaire +++ systématique dans tous les cas

TRANSPORT :

Surveillance : paramètres vitaux, $PetCO_2$, intérêt PI en TIH
Position : décubitus dorsal

ORIENTATION :

Salle de coronarographie (SCA) ou USIC ou réanimation