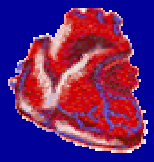
Le choc cardiogénique

Philippe Woods
RV Soins intensifs
17 novembre 2004



Choc

- Hypovolémique
- Cardiogénique
- Distributif (vasoplégique):
  Sepsis
  Surrénalien
  Neurogénique
  SIRS, anaphylactique, bypass ♥pulmonaire

Étiologie

-IMA
. Défaut de pompe: IM important ou petit sur antérieur
Extension/expansion IM/ré-infarctus
. Complications mécaniques: insuffisance mitrale aiguë, VSD, rupture paroi VG, tamponnade
. Infarctus VD
-Autres
. Cardiomyopathie terminale
. Myocardite
. Sepsis
. Obstruction VG: sténose aortique, ♥pathie obstructive hypert.
. Insuffisance mitrale/aortique aiguë, contusion, bypass prolongé

Clinique

- Signes d'hypoperfusion
- Oligurie, état conscience, extrémités froides
- Détresse respiratoire/OAP (1/3 Φ congestion)
- Tachycardie
- Hypotension systémique (sauf chez 5%...)

Facteurs de risque

(Gusto I et Gusto III)

- Âge
- TA systolique et FC
- Classification de Killip
- Oligurie
- Signes d'hypoperfusion périphérique
- FeVG et sévérité insuffisance mitrale

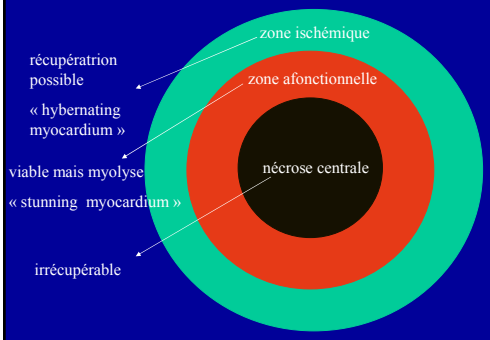
Choc ♥génique post-IM

- 6-8% des IM
- Avec ou sans élévation ST
- Gauche ou droit – MCAS sévère
- Dans les 1ères 24h suivant l'admission
- Si tardif: complication mécanique?
- Mortalité ↑↑ si > 40% nécrose myocarde
- Mortalité 55-70%

Killip Classification of Acute Myocardial Infarction

Class I	No evidence of heart failure
Class II	Findings consistent with mild to moderate heart failure (S3 gallop lung rales less than one-half way up the posterior lung fields, or jugular venous distension)
Class III	Overt pulmonary edema
Class IV	Cardiogenic shock

Infarctus: 3 zones concentriques



Monitoring

- *Cannule artérielle* (recommandation classe 1)
- *Cathéter Swan-Ganz* (recommandation classe 2)

  Recommandation classe 1: *progressive hypotension when unresponsive to fluid administration or when fluid administration may be contraindicated*
- Paramètres: IC⬇ et RVS ⬆
- PCB habituellement ⬆

Résistances vasculaires

- Vasopresseurs endogènes: NE, angiotensine II
- RVP élevées *mais…*

SHOCK trial: patients choc ♥ en 36 h post IM

Résistances très variables

SIRS – Activation de cytokines

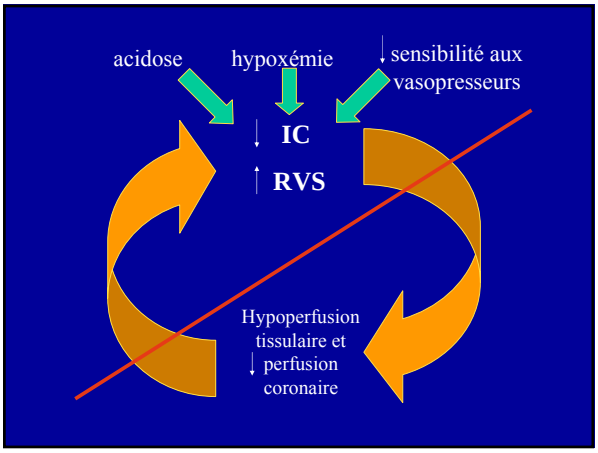
Induction de la NO synthase → libération NO

L-NMMA (⊖)

Traitement

- Pharmacologique ou non

  Recommandations ACC/AHA
- Mesures générales
- Support circulatoire
- Support métabolique (glucose – DIGAMI)
- Support ventilatoire



Mesures générales

- ASA
- Héparine
- Inhibiteurs GIIb/IIIa:
- Avec ou sans PCI (*abciximab*)
- Choc ♥génique: *eptifibatide* (PURSUIT)

Support circulatoire

- Volémie
- Monitoring hémodynamique
  - Pressions de remplissage
  - Évaluer la réponse du débit ♥

Support circulatoire

1. Rx:
- Amines: Dopamine, NE, Dobu/Milrinone
- Nitroglycérine/nitroprusside
2. Support mécanique: BIA
- Augmente flot coronarien et ↓ post-charge
- Mesure stabilisatrice (recommandation grade 1)

BIA

Recommendations for Intraaortic Balloon Counterpulsation in Acute Myocardial Infarction*

Class I
1. Cardiogenic shock not quickly reversed with pharmacological therapy as a stabilizing measure for angiography and prompt revascularization.
2. Acute mitral regurgitation or ventricular septal defect complicating myocardial infarction (MI) as a stabilizing therapy for angiography and repair/revascularization.
3. Recurrent intractable ventricular arrhythmias with hemodynamic instability.
4. Refractory post-MI angina as a bridge to angiography and revascularization.

Class IIa
1. Signs of hemodynamic instability, poor left ventricular function, or persistent ischemia in patients with large areas of myocardium at risk.

Class IIb
1. In patients with successful angioplasty after failed thrombolysis or those with three-vessel coronary disease to prevent reocclusion.
2. In patients known to have large areas of myocardium at risk with or without active ischemia.

ACC/AHA classification

Class I: Conditions for which there is evidence and/or general agreement that a given procedure or treatment is useful and effective.
Class II: Conditions for which there is conflicting evidence and/or a divergence of opinion about the usefulness/efficacy of a procedure or treatment.
Class IIa: Weight of evidence/opinion is in favor of usefulness/efficacy.
Class IIb: Usefulness/efficacy less well established by evidence/opinion.
Class III: Conditions for which there is evidence and/or general agreement that the procedure/treatment is not useful and in some cases may be harmful.

* Adapted from Ryan, TJ, Antman, EM, Brooks, NH et al. Circulation 1999; 100:1016.

Reperfusion

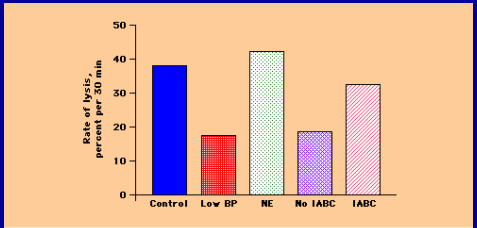
- Thrombolyse
- PCI
- Chirurgie pontages (CABG)

Thombolyse

Thrombolysis and Mortality in Cardiogenic Shock

Thrombolytic trial	Mortality rate
Society for Cardiac Angiography Registry n = 45	Intracoronary streptokinase (SK) Successful reperfusion 43% — Unsuccessful reperfusion 84%
GISSI trial n = 281	IV SK 69% — Placebo 70% (No ASA, no heparin, STEMI or NSTEMI)
FTT Collaborative Group n = 276	Thrombolytic 54% — Control 61% (STEMI and NSTEMI)
TIMI 2 trial n = 193	Alteplase 51% (ASA and heparin; STEMI only)
GUSTO trial n = 2500	Alteplase or SK or Alteplase/SK 55% (ASA and heparin; STEMI only)

Thombolyse



Importance of blood pressure maintenance in clot dissolution Dogs with a left anterior descending coronary artery occlusion by thrombus were made hypotensive by phlebotomy. Rates of thrombolysis (percent per 30 min) were depressed by low BP and restored with norepinephrine (NE) titrated to a systolic BP of 130 mmHg or with intraaortic balloon counterpulsation (IABC). (Data from Prewitt, RM, Gu, S, Garger, PJ, Ducas, J, J Am Coll Cardiol 1992; 20:1626, and Prewitt, RM, Gu, S, Schick, U, Ducas, J, J Am Coll Cardiol 1994; 23:794.)

Thombolyse et BIA

Pas d'études randomisées

Am Heart J 2001 Jun;141(6):933-9

The use of intra-aortic balloon counterpulsation in patients with cardiogenic shock complicating acute myocardial infarction: data from the National Registry of Myocardial Infarction 2.

23 180 patients; âge moyen 72 ans; mortalité globale 70%

Patients ayant reçu la thrombolyse:	mortalité
BIA (31%)	49%
Sans BIA	67%

Thombolyse tardive?

Choc 12-24 h après début IM:

Si occlusion récurrente des coronaires et angiographie/revascularisation urgentes ne peuvent être performées.

PCI primaire

- Habituellement sur l'artère coupable
- Diminue mortalité

GUSTO-1 2200 patients en choc cardiogénique

Mortalité 30 jours

Revascularisation en < 24 h	VS	Tx médical standard
38%		62%

Circulation 1997 Jul 1;96(1):122-7.

Succès du PCI

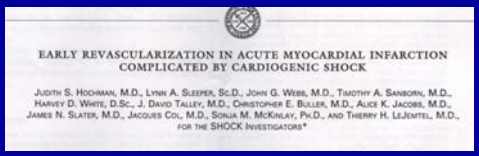
Mortalité dépend du degré de reperfusion

SHOCK trial registry 884 pts choc ♥

TIMI 3	33,3%
TIMI 2	50%
TIMI 0-1	85,7%

Am Heart J 2001 Jun;141(6):964-70

Thombolyse ou PCI/CABG?



EARLY REVASCULARIZATION IN ACUTE MYOCARDIAL INFARCTION COMPLICATED BY CARDIOGENIC SHOCK

JUDITH S. HOCHMAN, M.D., LYNN A. SLEEPER, SC.D., JOHN G. WEBB, M.D., TIMOTHY A. SANBORN, M.D., HARVEY D. WHITE, D.SC., J. DAVID TALLEY, M.D., CHRISTOPHER E. BULLER, M.D., ALICE K. JACOBS, M.D., JAMES N. SLATER, M.D., JACQUES COL, M.D., SONJA M. MCKINLAY, PH.D., AND THERRY H. LEJEMTEL, M.D., FOR THE SHOCK INVESTIGATORS*

NEJM Vol 341, 26 Aug 1999;9:625-34

SHOCK trial

302 patients choc ♥ < 36 h début IM

Randomisés (< 12 h): revasc. urgente < 6h
vs tx médical standard

Mortalité (%)	30 jours	46,7	56,0	p 0,11
	6 mois	50,3	63,1	p 0,027
	12 mois	53,3	66,4	p < 0,03

CABG

- Pour IVA prox/TC ou Mx 3 vaisseaux
- Bon résultat si précoce
- Mortalité patients choc ♥génique ~ 36% (chirurgie per-hospit)

Conclusion

. Identification/stabilisation rapide
. Échographie cardiaque
. Monitoring hémodynamique
. Support circulatoire: amines, BIA
Revascularisation: PCI primaire/cx urgente
Recom. classe I: < 75 ans STEMI choc < 36 heures
classe IIa: > 75 ans

Conclusion

. *Transfert* si possible centre revascularisation
→ BIA
→ thrombolyse
. Si thombolyse: vasopresseurs et/ ou BIA pour ↑ pressions perfusion coronarienne.

Management strategies for cardiogenic shock.
Sanborn TA, Feldman T.
Curr Opin Cardiol. 2004 Nov;19(6):608-12

Dx différentiel

. Choc hémorragique/hypovolémique
. Choc septique
. Insuffisance VD sur EP
. IMA sur dissection aorte ascendante
. Valvulopathie sévère
. Bradycardie sévère, arythmies rapides
. Inotropes négatifs