Péricardite:
Quelle surveillance ?
Quel traitement ?

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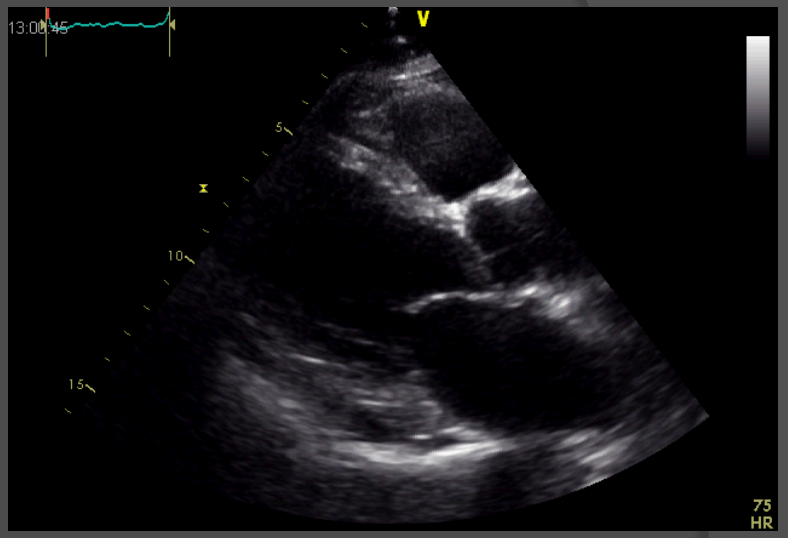
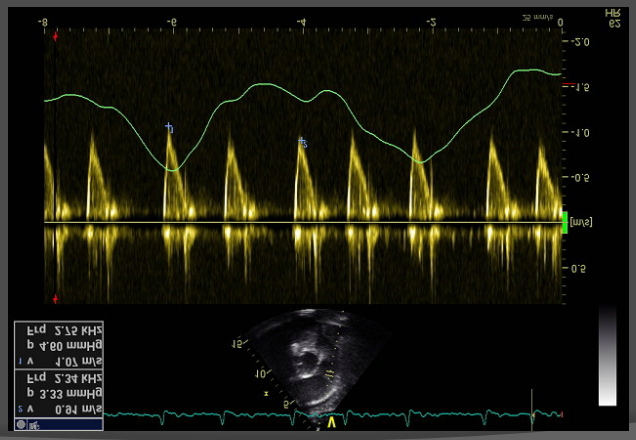
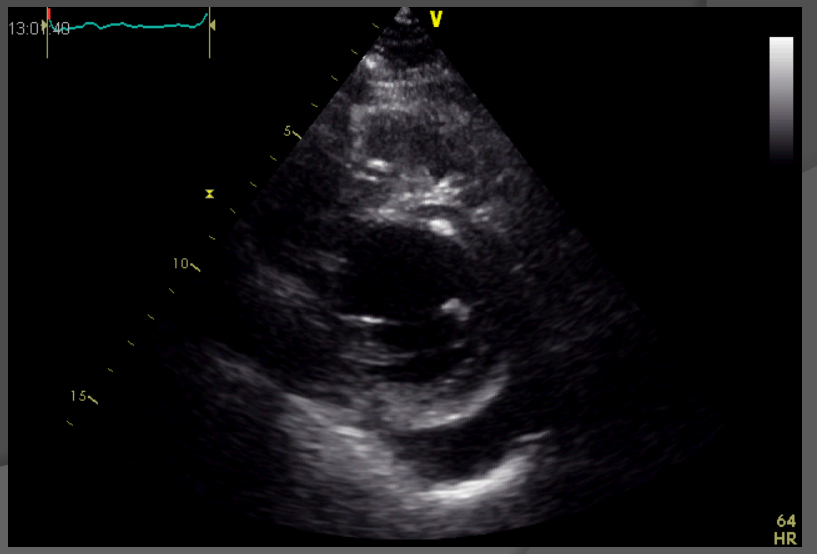
Péricardite aigue
Cas Clinique

- Homme, 62 ans
- AOMI, Tabac ++, HTA
- Novembre 2012 : douleur thoracique aigue, prolongée pendant 24h
  - Frottement Péricardique+
  - ECG : sous décalage PQ
  - Décollement péricardique modéré postero lateral
  - CRP : 156 mg/l, Fibrine 5.77 g/l, Tropinine < 0.01 ng/ml
  - TT antalgique (Perfalgan IV) et ASPIRINE 3g/j

Péricardite Aigue
Cas Clinique







Péricardite aigue
Suivi de la CRP ?

Une réponse est correcte:

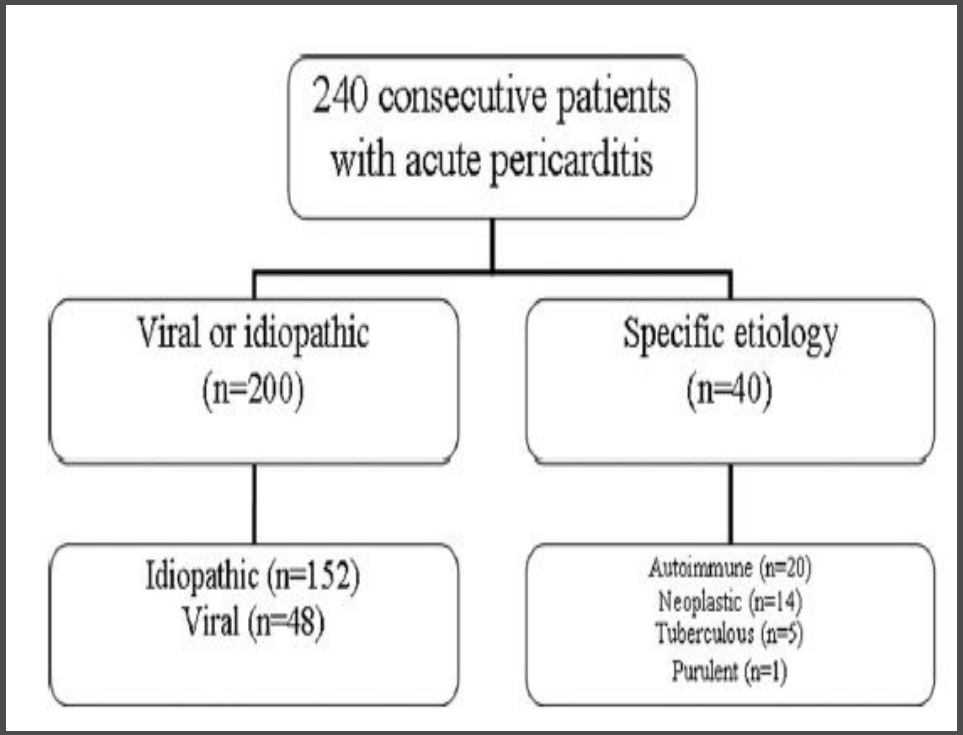
- A/ contrôle CRP: fin de la 1ère semaine
- B/ contrôle CRP : fin du 1er mois
- C/ contrôle CRP : M1, M3, M6
- D/ autre réponse

Péricardite aigue
Suivi de la CRP ?

- Réponse correcte:

  A/

PERICARDITE AIGUE
CRP valeur diagnostique

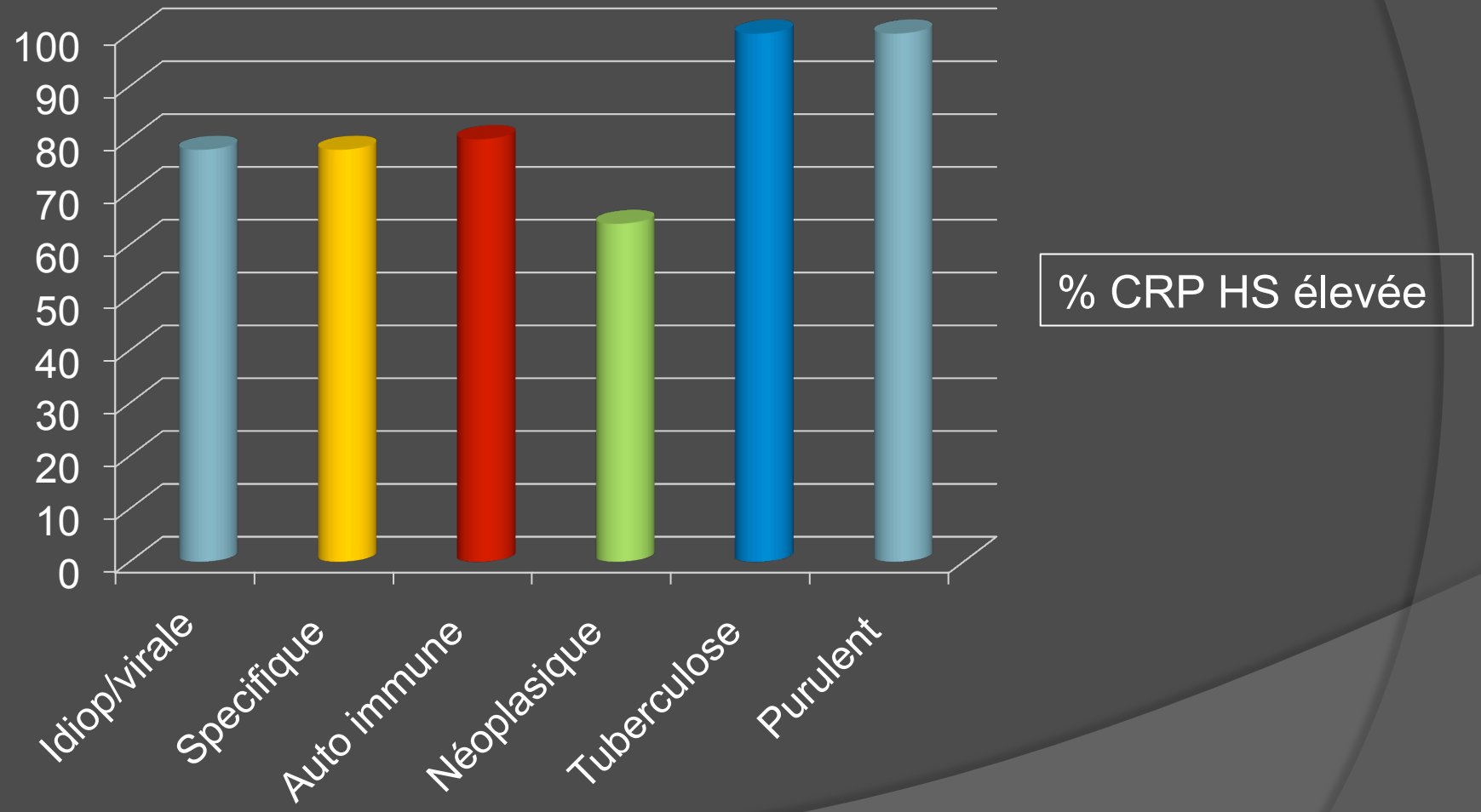


	CRP HS < 3 mg/l n=44	CRP HS > 3 mg/l n=156
Age	52 (16)	53 (14)
Femme	22 (50%)	75 (48%)
Douleur	44 (100%)	156 (100%)
Frottement	14 (32%)	52 (33%)
Modif ECG	37 (84%)	133 (85%)
Aspirine	37 (84%)	133 (85%)
Corticoides	7 (15%)	23 (14.7%)
Colchicine	21 (47.7%)	79 (50.6%)

Imazio Circulation. 2011;123:1092

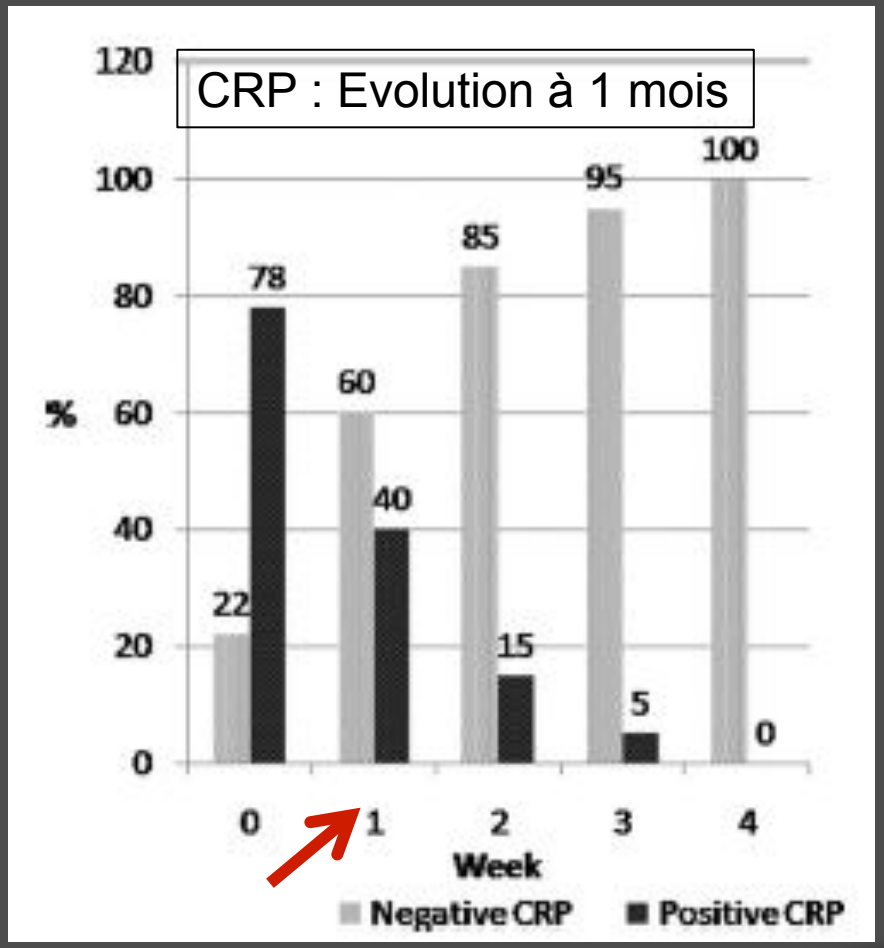
Aucune différence entre les 2 groupes

PERICARDITE AIGUE
CRP valeur diagnostique



Imazio Circulation. 2011;123:1092

PERICARDITE AIGUE
CRP signification pronostique



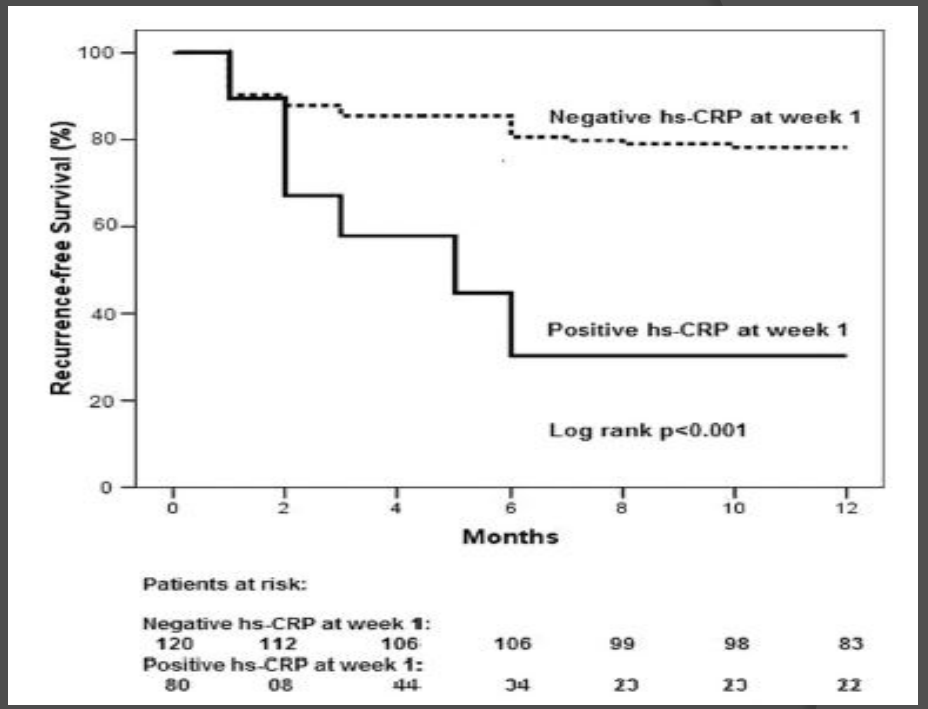


Table 2. Hazard Ratios for Recurrence in the Cox Proportional Hazards Model

Risk Factor	Hazard Ratio	95% Confidence Interval	*P*
Incomplete response to therapy at week 1	2.98	1.80–4.94	<0.001
Corticosteroid therapy	2.80	1.59–4.95	<0.001
Elevated hs-CRP at week 1	2.36	1.32–4.21	0.004

Imazio Circulation. 2011;123:1092-1097

Péricardite aigue
Troponine élevée ?

Une réponse est correcte:

- A/ facteur pronostique défavorable
- B/ facteur pronostique sans intérêt
- C/ autre réponse

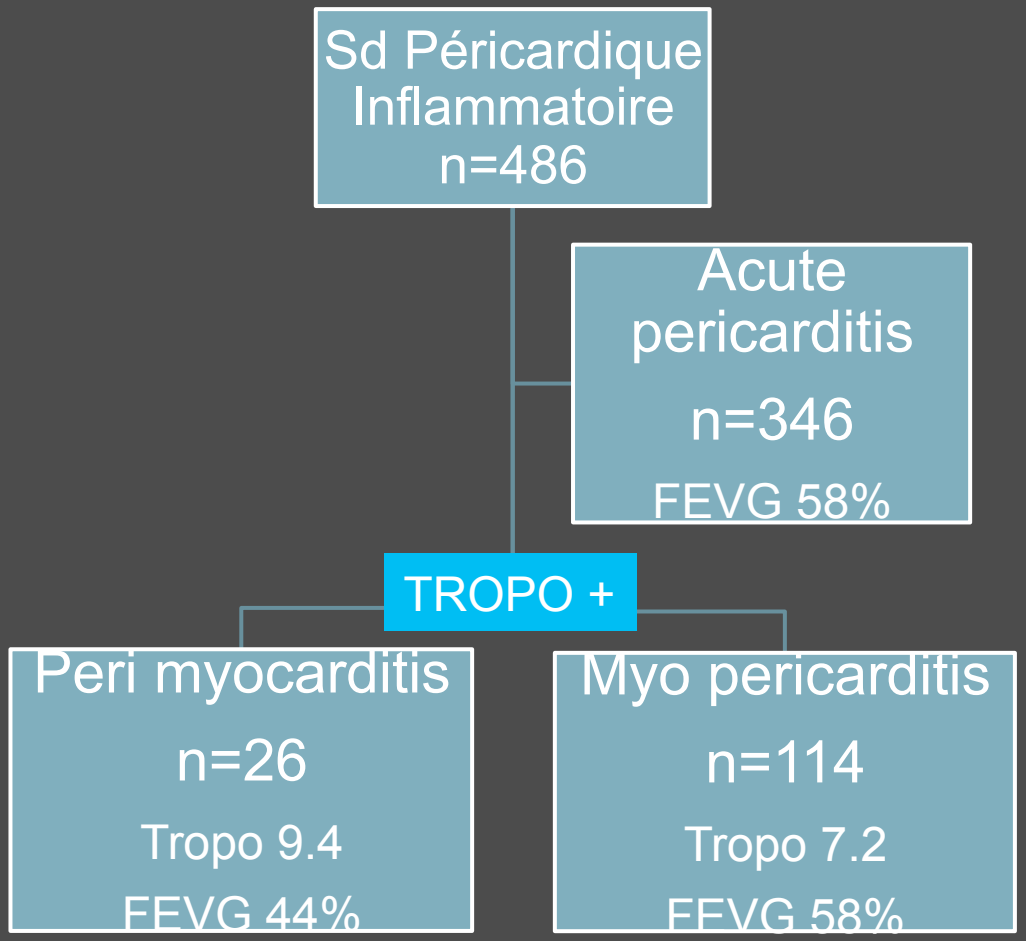
Péricardite aigue
Troponine élevée?

- Réponse correcte:

  B/

PERICARDITE AIGUE

Troponine: valeur pronostique ?



« Acute pericarditis »

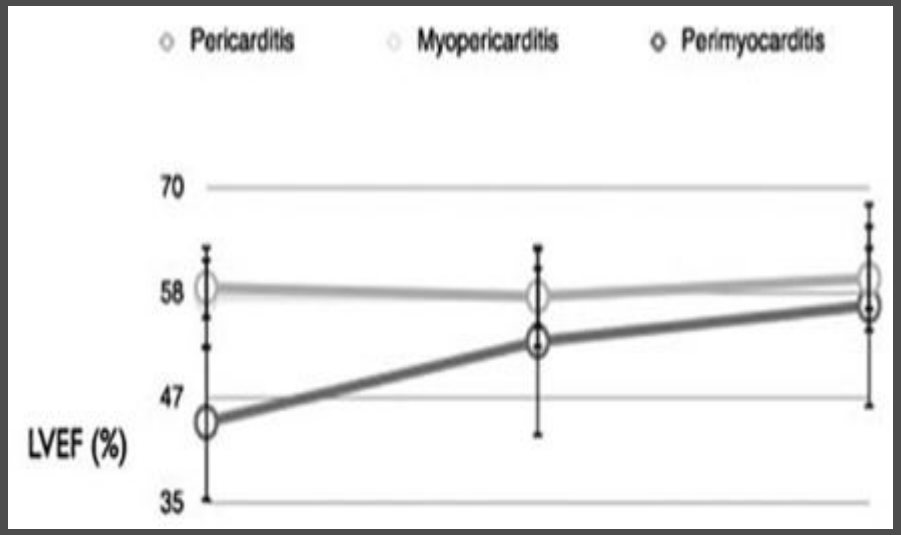
- Douleur thoracique
- Frottement pericardique
- ST élévation/PQ
- Ept Péricardique écho

- CMR was performed within 2 weeks from symptom onset when myocardial inflammatory involvement was suspected
- T2-weighted imaging : hyperhemia in 93% patients
- Late gadolinium: positive in 100%

IMAZIO Circulation 2013 128:42-49

PERICARDITE AIGUE

Troponine: signification pronostique



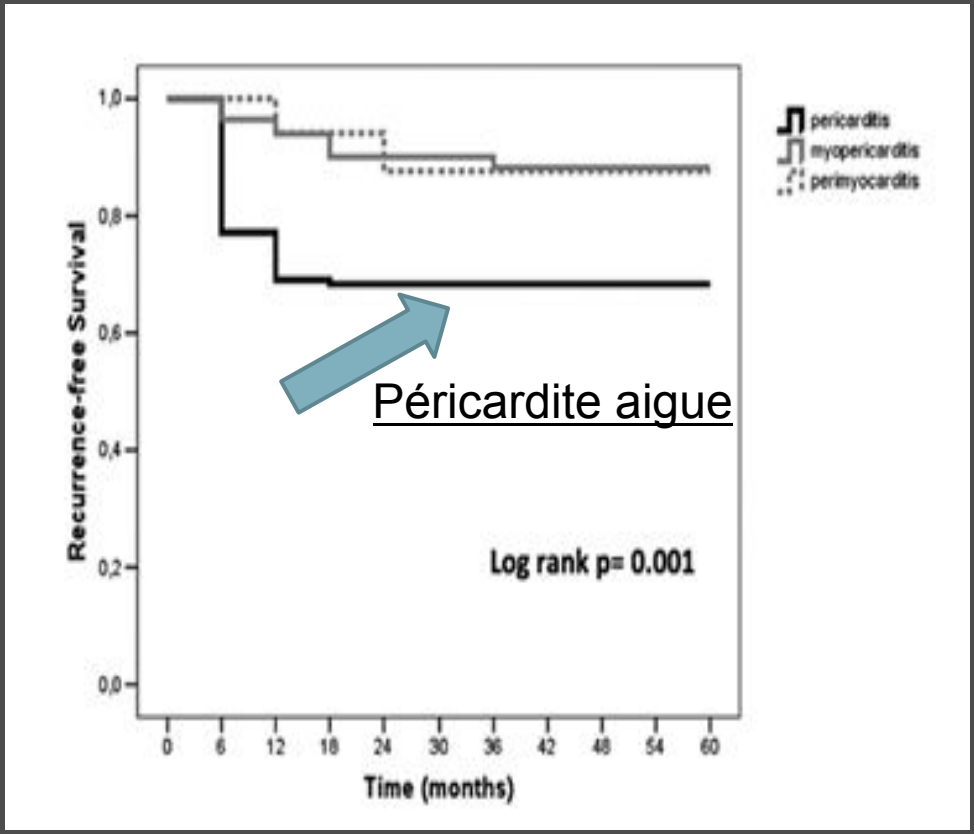
Basal 6 mois 12 mois

- Restauration progressive de la FEVG dans le sous groupe “Peri myocarditis”
- Suivi à 36 mois: normalisation de la FEVG >90% des patients “myo et peri pericarditis »
- L’élévation de la Troponine n’est pas associée à un taux plus élevé de complications.

IMAZIO Circulation 2013 128:42-49

PERICARDITE AIGUE

Troponine: signification pronostique



Les “rechutes” – en priorité des péricardites récidivantes-

- sont la complication la plus commune
- sont observées plus frequemment après péricardite aigue (32%) par comparaison aux “myopericarditis” (11%) ou “perimyocarditis” (12%; *P*<0.001).

Troponin elevation is not a negative prognostic marker in this setting

IMAZIO Circulation 2013 128:42-49

Péricardite aigue
Quel traitement ?

Une réponse est correcte:

- A/ Aspirine 3g/j
- B/ Ibuprofène
- C/ Corticoides
- D/ Colchicine
- E/ Autres

Péricardite Aigue Traitement

ICAP study

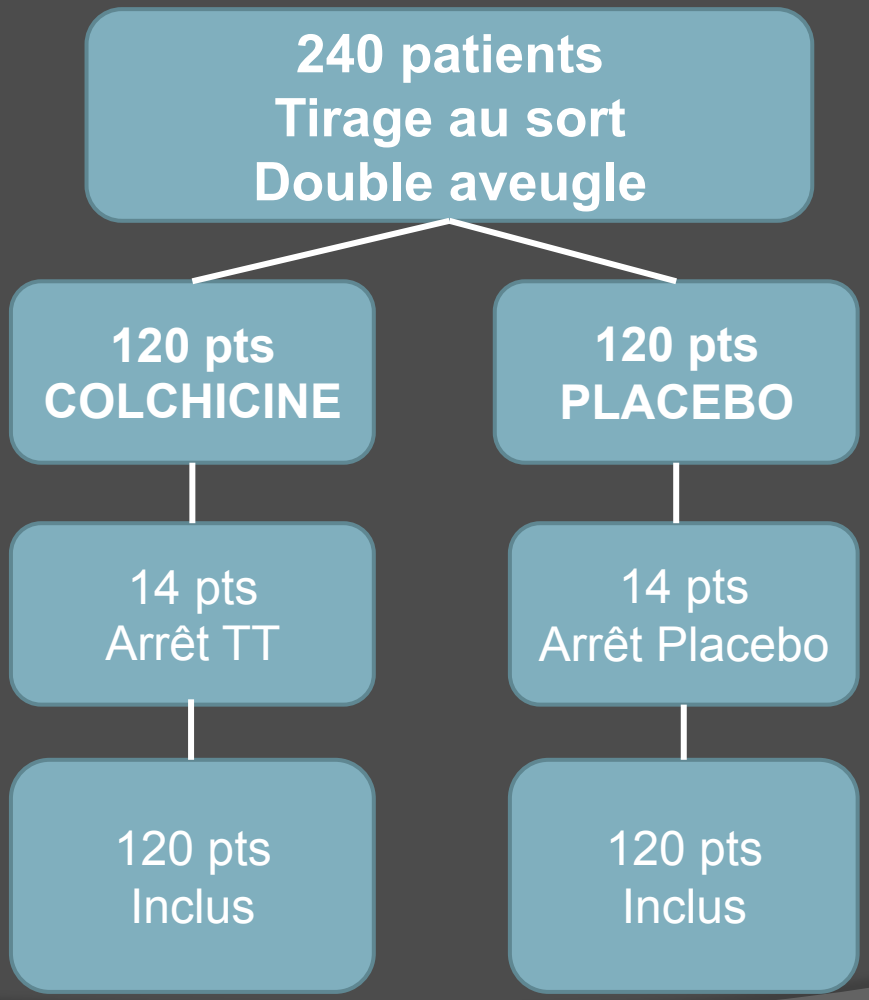


Table 1. Characteristics of the Patients at Baseline.*

Characteristic	Placebo (N=120)	Colchicine (N=120)
Age — yr	50.7±17.5	53.5±16.2
Male sex — no. (%)	74 (61.7)	71 (59.2)
Cause of pericarditis — no. (%)		
Idiopathic	93 (77.5)	92 (76.7)
Post–cardiac injury syndrome	23 (19.2)	25 (20.8)
Connective-tissue disease†	4 (3.3)	3 (2.5)
Clinical findings — no. (%)		
Pericarditic chest pain	119 (99.2)	120 (100.0)
Pericardial rub	38 (31.7)	44 (36.7)
ST-segment elevation	26 (21.7)	35 (29.2)
Pericardial effusion‡	82 (68.3)	76 (63.3)
Mild (<10 mm)	76 (63.3)	64 (53.3)
Moderate (10–20 mm)	2 (1.7)	9 (7.5)
Large (>20 mm)	4 (3.3)	3 (2.5)
Cardiac tamponade	2 (1.7)	2 (1.7)
Elevated C-reactive protein level	89 (74.2)	85 (70.8)
Medications — no. (%)		
Aspirin	96 (80.0)	86 (71.7)
Ibuprofen	18 (15.0)	24 (20.0)
Prednisone	6 (5.0)	10 (8.3)

IMAZIO M ICAP study N Engl J Med 2013; 369:1522-1528

Péricardite Aigue
Traitement : suivi 22 semaines

Evolution	Placebo n=120	Colchicine n=120
SF persistant à J3	48 (40%)	23 (19.2%) *
Rémission à 1 sem	70 (58.3%)	102 (85%) *
« Incessant ** or recurrent pericarditis »	45 (37.5%)	20 (16.7%) *
Rechute	25 (20.8%)	11 (9.2) *
Délai rechute/sem	17.7 (9)	24.7 (11) *
Nb réchute/pt	0.52 (0.8 pt)	0.21 (0.5 pt) *
Tamponnade	3 (2.5)	0 ns

**Incessant : persistent pericarditis or symptom-free interval < 6 weeks

IMAZIO M ICAP study
N Engl J Med 2013; 369:1522-1528

Péricardite Aigue
Traitement : tolérance

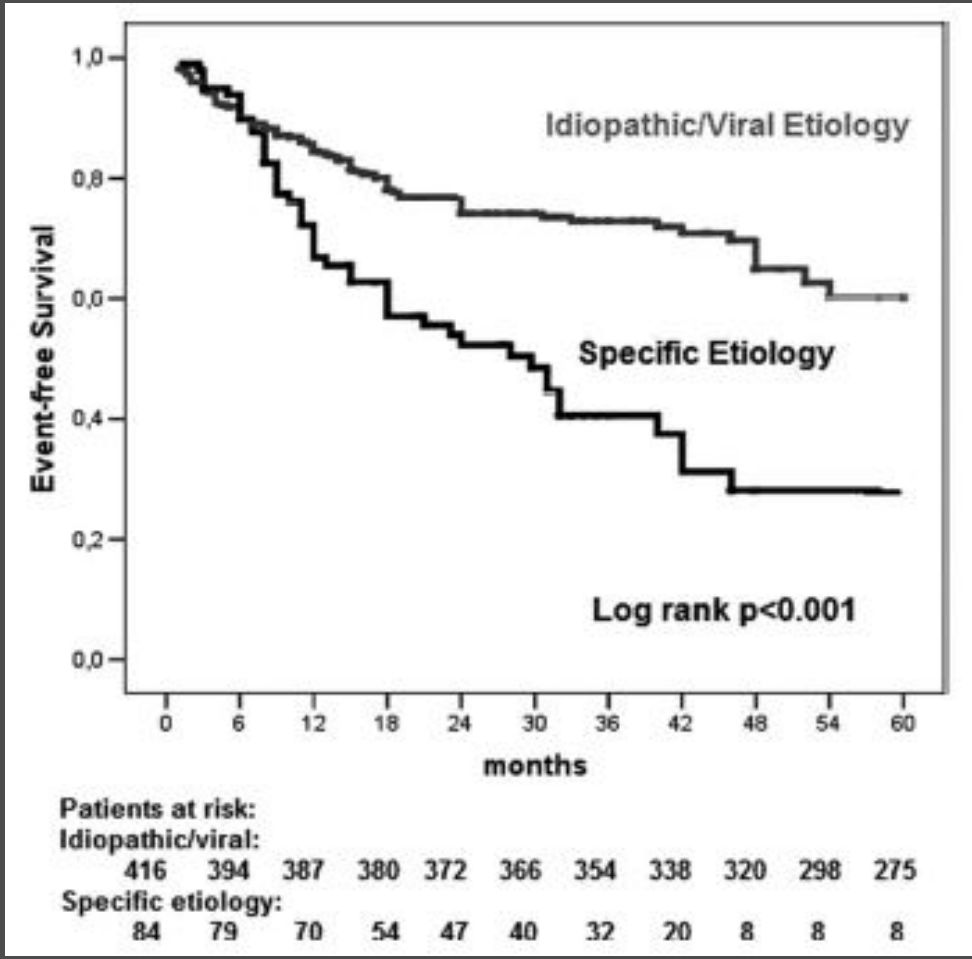
Adverse Event	Placebo (N=120)	Colchicine (N=120)	P Value
	no. (%)		
Overall	12 (10.0)	14 (11.7)	0.84
Gastrointestinal disorder*	10 (8.3)	11 (9.2)	0.67
Hepatotoxicity†	1 (0.8)	2 (1.7)	
Myotoxicity	0	0	
Alopecia	1 (0.8)	1 (0.8)	
Other	0	0	
Serious adverse event‡	0	0	
Drug discontinuation	10 (8.3)	14 (11.7)	0.52
Physician decision	9 (7.5)	12 (10.0)	
Patient decision	1 (0.8)	2 (1.7)	

CONCLUSIONS

In patients with acute pericarditis, colchicine, when added to conventional anti-inflammatory therapy, significantly reduced the rate of incessant or recurrent pericarditis. (Funded by former Azienda Sanitaria Locale 3 of Turin [now Azienda

IMAZIO M ICAP study N Engl J Med 2013; 369:1522-1528

PERICARDITE AIGUE
Etiologie et pronostic



Janv 2000 - Déc 2008,
500 patients consécutifs avec 1er épisode de péricardite aigue

Evènements retenus pendant le suivi :

- Douleur péricardique récidivante ,
- Péricardite récidivante ,
- Tamponnade,
- Constriction péricardique.

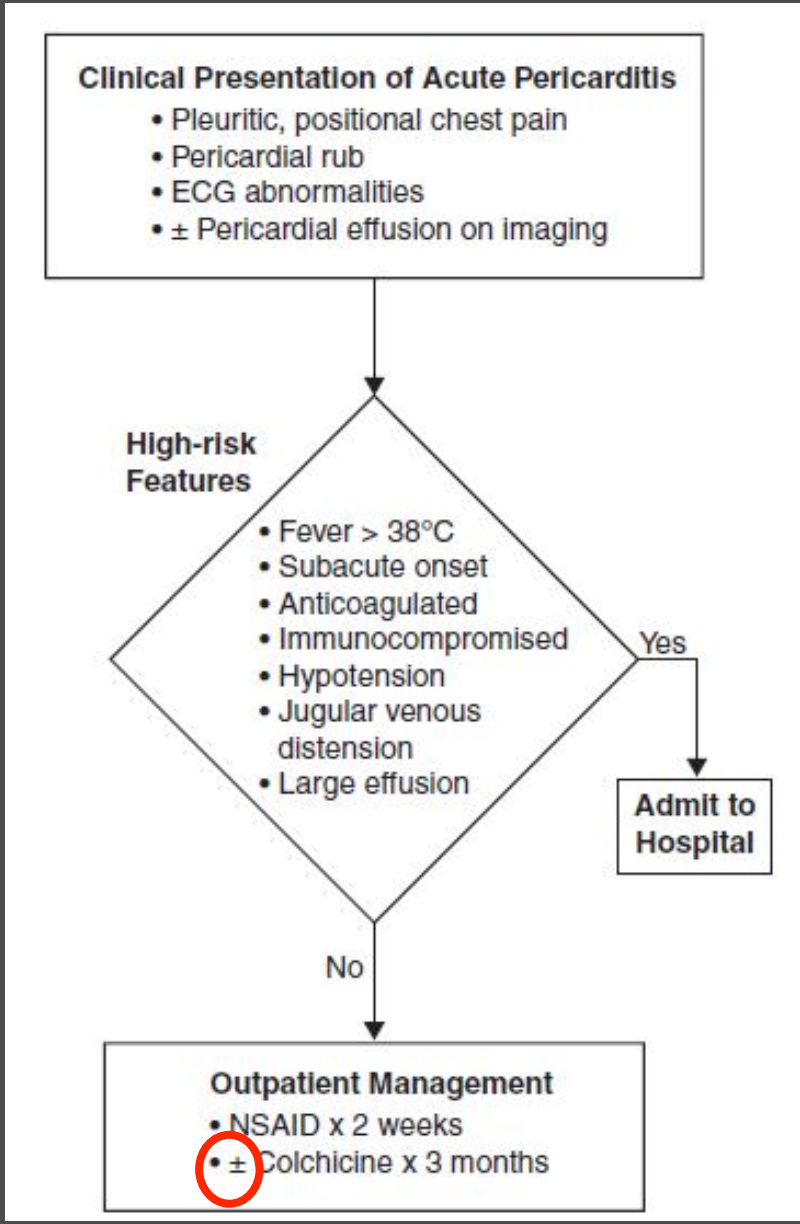
IMAZIO & ADLER Circulation. 2011;124:1270-1275

PERICARDITE AIGUE
risque d'évolution vers la PCC

Etiologies	Incidence PCC
Péricardite idiopathique/virale	0.76 cas / 1000 pts-année
Maladie auto immune	4.4 cas / 1000 pts-année
Néoplasie péricardique	6.33 cas / 1000 pts-année
Tuberculose péricardique	31.65 cas / 1000 pts-année
Péricardite purulente	52.74 cas / 1000 pts-année

IMAZIO & ADLER Circulation. 2011;124:1270-1275

Péricardite aigue en pratique....



Lilly LS *Circulation.* 2013;127:1723-1726

Acute pericarditis with small or no effusion (non-complicated course)	Class
TTE to confirm clinical diagnosis	Recommended
CMR to confirm clinical diagnosis if clinical context of myocarditis	Recommended
CT/CMR to confirm clinical diagnosis if echocardiography inconclusive	Not recommended
TOE if poor TTE quality of imaging	Not recommended
TTE for follow-up	Not recommended

Cosyns B et al
EACVI Multi modality imaging in pericardial disease
EHJ C imaging 2015;16:12

Acute pericarditis
Image modality for follow-up ? ?

One answer is correct:

- A/ Echocardiography: M1, M6
- B/ CT Scan: M1, M6
- C/ Cardiac MRI: M1, M6
- D None of these

Acute pericarditis

Case report : which follow-up ?

- Correct answer :

  D/

ACUTE PERICARDITIS
Cardiac Imaging : guidelines

ECHO — CONSENSUS SUR LES INDICATIONS DE L'ÉCHOGRAPHIE DOPPLER TRANSTHORACIQUE DANS LE DIAGNOSTIC DES ÉPANCHEMENTS PÉRICARDIQUES

Classe 1

- Suspicion clinique de péricardite aiguë.
- Contrôle précoce (< J5) d'un épanchement péricardique moyen à important (appréciation de son évolutivité et de sa tolérance).
- Surveillance régulière d'un épanchement péricardique chronique récidivant.
- Frottement péricardique à la phase aiguë d'un infarctus du myocarde.
- Surveillance après drainage péricardique chirurgical ou guidé par échocardiographie (au décours immédiat puis après 48 à 72 h).
- Contrôle systématique dans les jours suivant une chirurgie cardiaque.

CT Scan & MRI : no definite guidelines…

Cohen A, Lardoux H et coll Arch Mal Cœur Vx 2003;96:223

ACUTE PERICARDITIS
Cardiac Imaging : guidelines

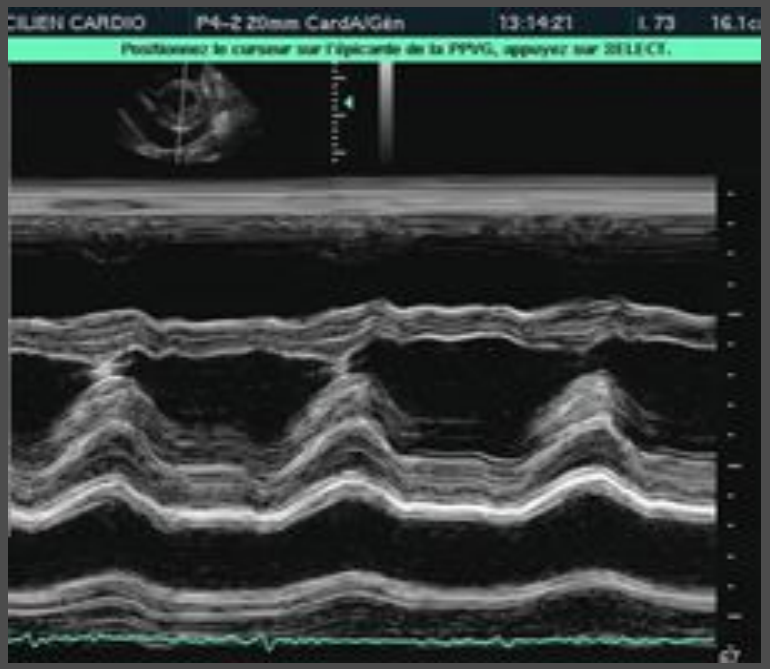
Cohen A, Lardoux H et coll Arch Mal Cœur Vx 2003;96:223

Recurrent Pericarditis
Case report

- 27 years, computer engineer
- Medical history
  - 2009 : pleuro-pericarditis ; TT : ASPIRIN 3g/day for 6 weeks
  - Recurrent thoracic pain episodes : auto medication… with ASPIRINE 1g/day for 8 to 10 days
  - January 2011 : pleuro-pericarditis recurrence

Recurrent Pericarditis
Case report

- Fever = 38,7°C, péricardial rub, left lung flatness
- Echo : circonferential pericardial effusion;
- CT Scan : pericardial & left pleural effusion
- CRP = 225 mg/l; Fibrin = 7,25g/l
- Immunological & serological data negative



Recurrent Pericarditis
What is your therapeutic choice ?

Only one answer is correct :

A/ Aspirin

B/ Non steroid anti-inflammatory drug

C/ Short & high dose steroid treatment

D/ Anti-tuberculosis treatment

E/ None of the above items

Recurrent Pericarditis
what is your therapeutic choice ?

- Correct answer : E

Recurrent pericarditis
Colchicine : early experience

28
recurrent pericarditis
(13 idiopathic)
41 years (10-62)

- **2 episodes**
- **1 month**

between each episode
From 1989 up to 1999

TT failure
Aspirin 13/13
Non Steroïd drug 13/13,
Steroïds 9/13,
Drainage 3/13

COLCHICINE 1-2 mg/d
Improvement 10/13 patients
Lower frequency, duration,
and severity of episode
NSAIDS et Steroïds withdrawal
8/10

Cacoub P, Piette JC Arch Mal Cœur 2000;93:1511
Adler Y Circulation 1998;97:2183

CORE trial
COlchicine for REcurrent pericarditis

- Randomized open prospective study (2001-2004)
  - 84 patients (42X2), age = 55
  - Steroïds > 33% of the patients
  - Inclusion : Interval of 5 weeks after 1st episode of acute pericarditis
- Main end point
  - Efficacy and tolerance of COLCHICINE as adjuvant therapy to ASPIRIN
- COLCHICINE : 1-2 mg (day 1) followed by 0.5 à 1 mg/d for 6 months
- Evaluation criteria : recurrency (20 weeks)

Imazio M Arch Intern Med 2005;165:1987

CORE trial

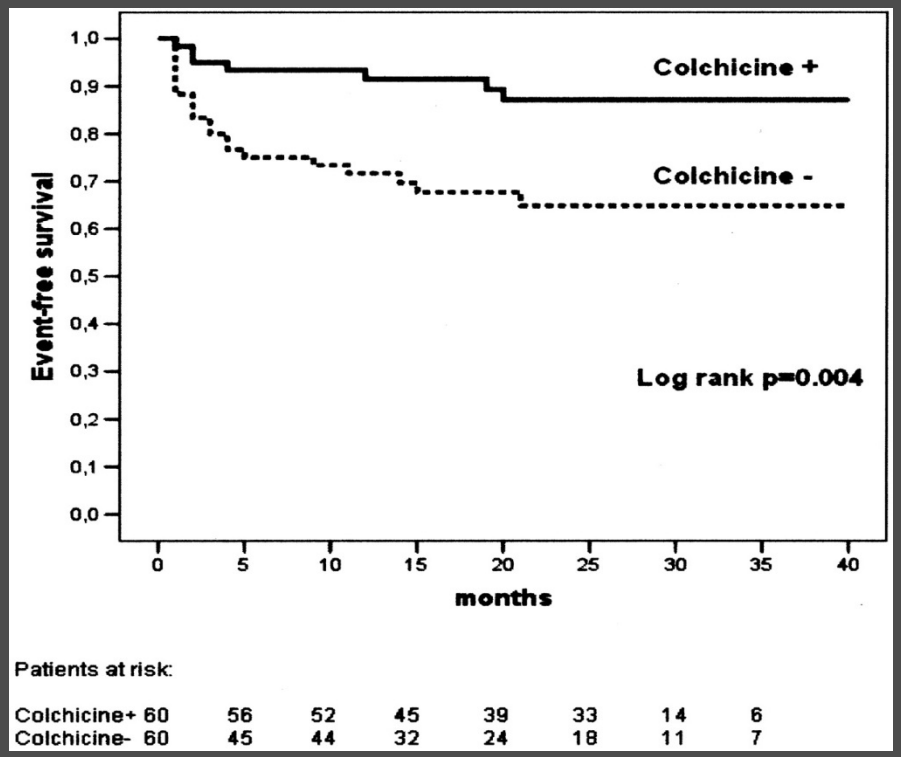
COlchicine for REcurrent pericarditis

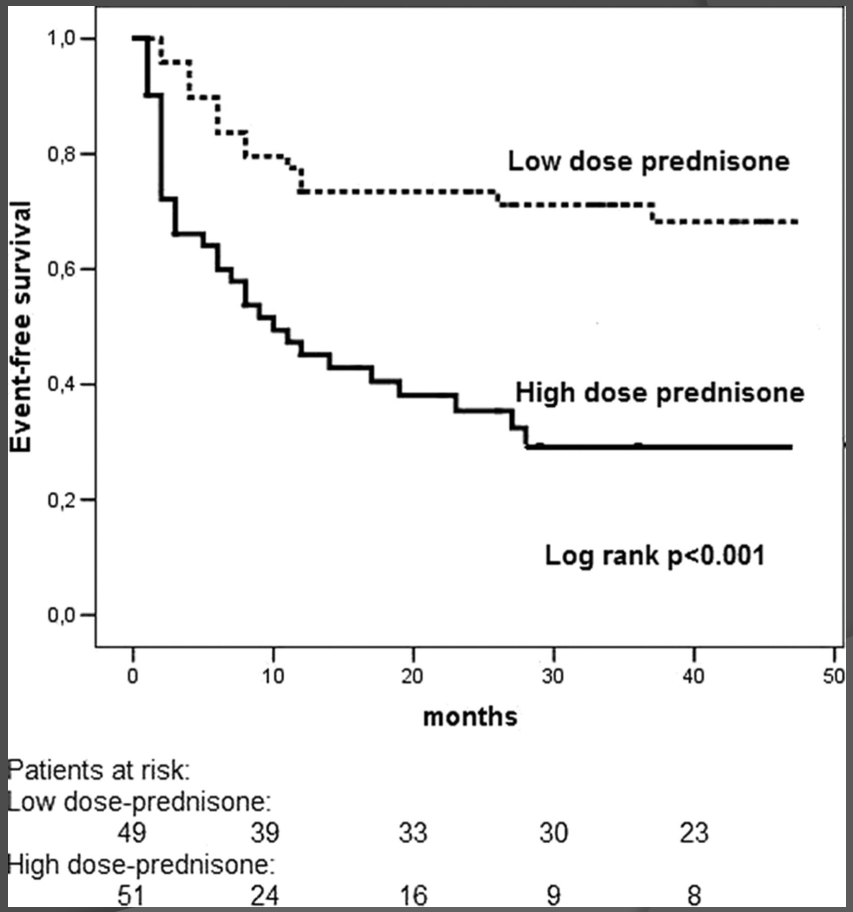
	Group 1	Group 2 Colchicine	
Follow up (weeks)	21.4+/-13	18.6+/-11	ns
Thoracic pain (72h after onset TT)	13 (31%)	4 (10%)	<0.03
Recurrency	50%	24%	<0.04
Side effects	6 (14%)	3 (7%)	ns

Previous therapy with steroïds : recurrency risk factor (OR=2.9)

Imazio M Arch Intern Med 2005;165:1987

CORE trial
COlchicine for REcurrent pericarditis





Imazio,M. Arch Intern Med 2005;165:1987

Imazio, M. Circulation 2008;118:667-671

Post-pericardiotomy Syndrome
COPPS trial

Assessed
for eligibility
(Day 3 post-op)
n=600

Excluded
N=240

Allocated to Placebo
N = 180
Follow-up 1 year

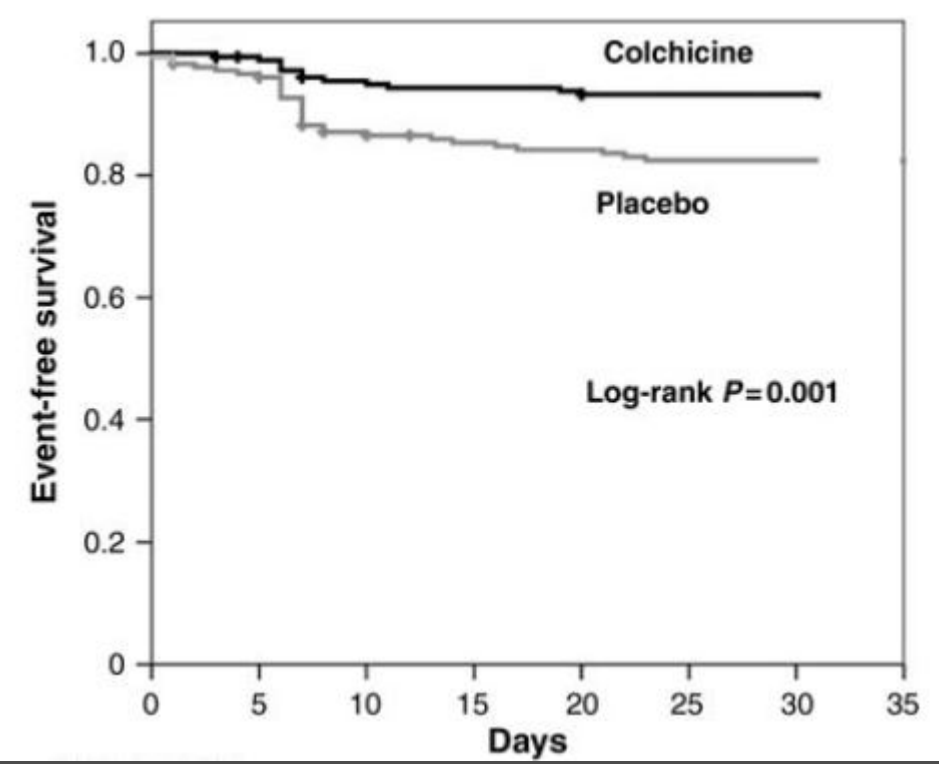
Allocated to Colchicine
N= 180
Follow-up 1 year

Post-pericardiotomy syndrome
Diagnosis based on at least 2 criteria

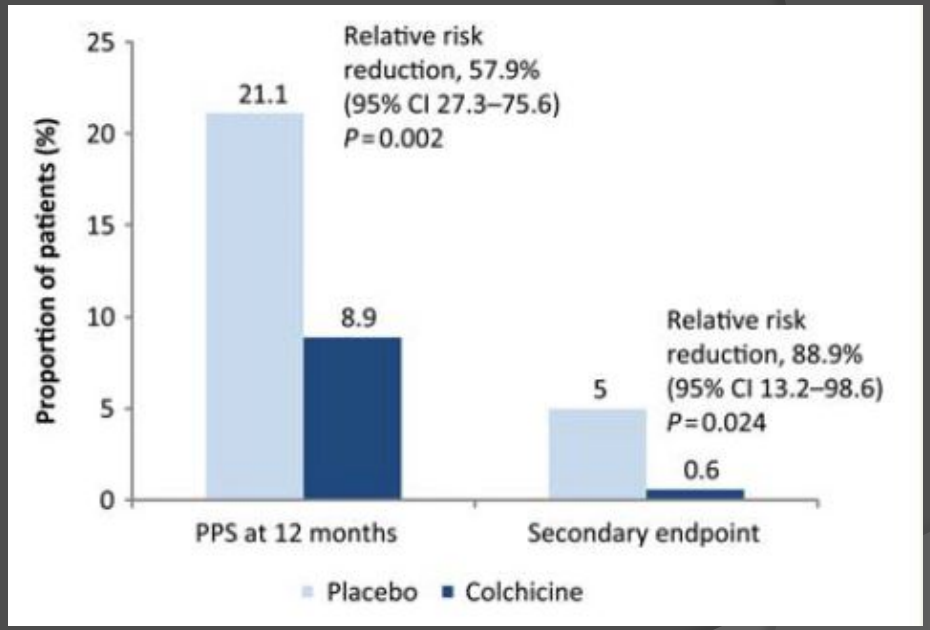
1. Fever lasting beyond the first post-operative week without evidence of systemic or focal infection
2. Pleuritic chest pain
3. Friction rub
4. Evidence of pleural effusion
5. Evidence of new or worsening pericardial effusion

Imazio M. EHJ 2010;31:2749-54

Post-Pericardiotomy Syndrome
COPPS trial



Kaplan-Meier event-free curves at 30 days



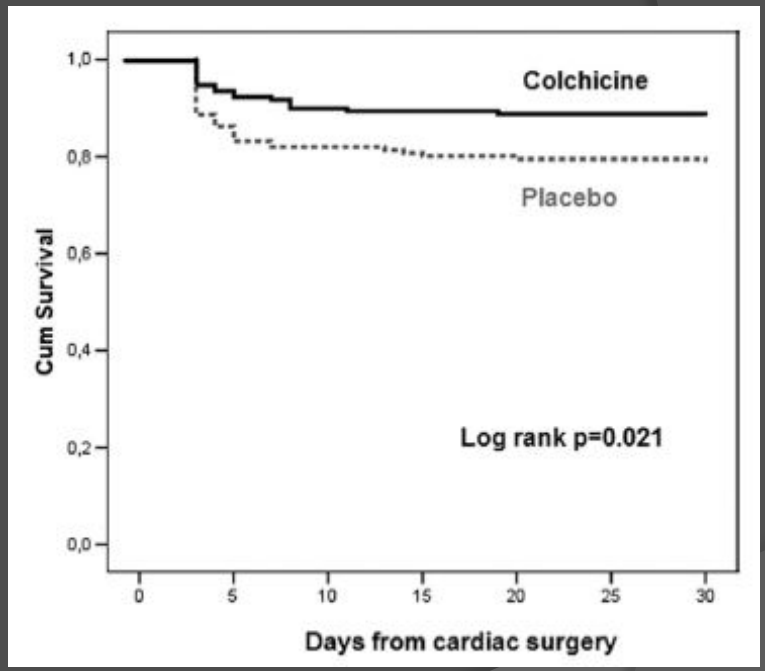
primary end point at 12 months

Imazio M. EHJ 2010;31:2749-54

Post-pericardiotomy Syndrome
COPPS Atrial Fibrillation sub study

Table 2. Prevention of the Postpericardiotomy Syndrome (COPPS) Postoperative Atrial Fibrillation Substudy End Points

Event	Placebo (n=167)	Colchicine (n=169)	*P*	RRR, % (95% CI)
Primary end point				
POAF on placebo/ colchicine, %*	22.0	12.0	0.021	45.5 (34.0–94.0)
Additional items				
Cardiac surgery stay, d	10.3±4.3	9.4±3.7	0.040	
Rehabilitation stay, d	13.9±6.5	12.1±6.1	0.009	
Overall hospital stay, d	24.2±8.9	21.4±7.9	0.030	
Death or stroke, n (%)	2 (1.2%)	2 (1.2%)	0.616	

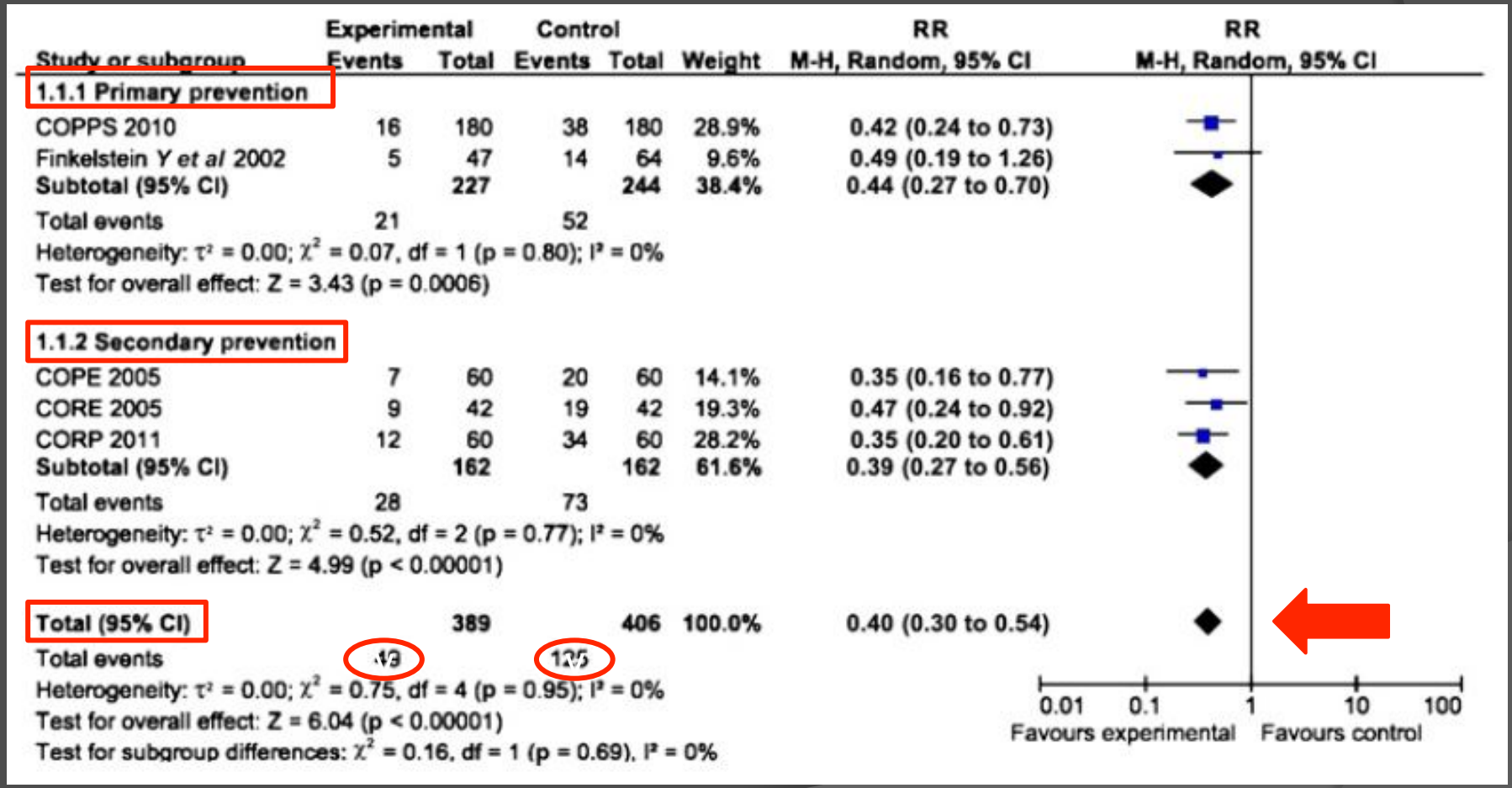


primary end point at 30 days

Colchine seems effective and safe
In the reduction of post-op AF

Imazio M. Circulation 2011.124:2290-95

Pericarditis and Colchicine meta-analysis : prevention studies



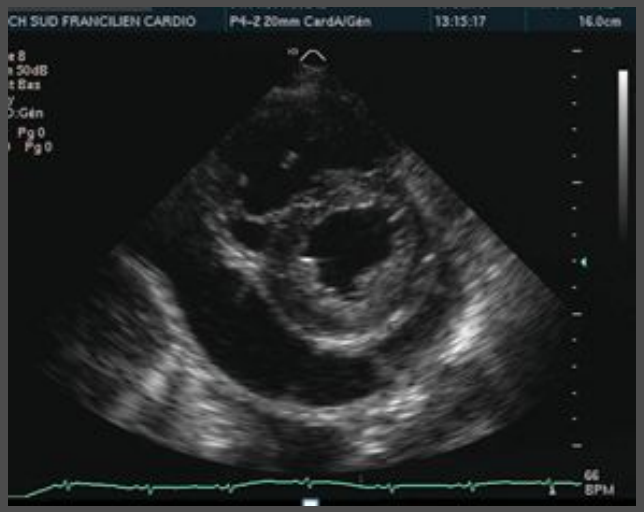
Imazio M EHJ 2012; 98:1078-1082

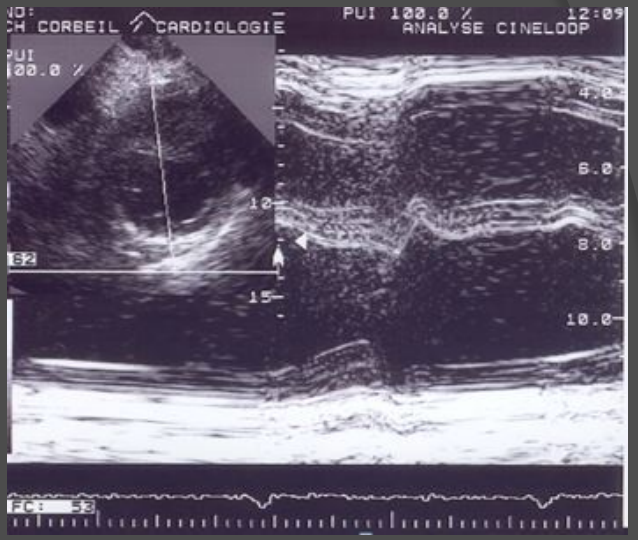
Colchicine for pericarditis : hype « pub » or hope ?

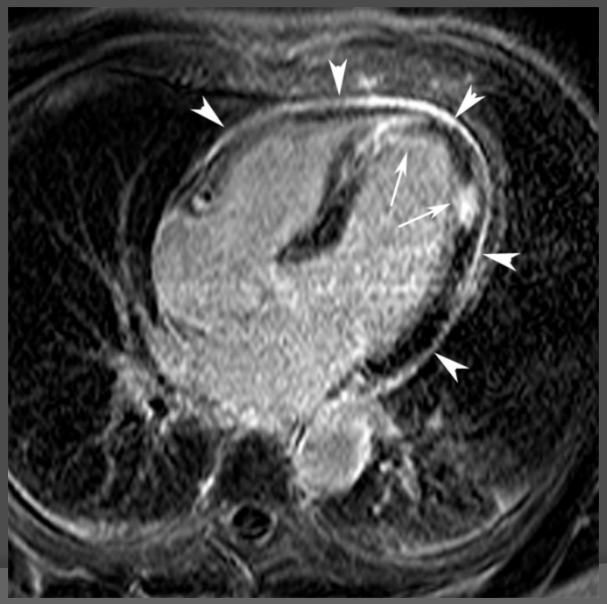
- Colchicine is quickly absorbed at small intestine level
  - individual variation (enterocyte CYP3A4) : bio availability 45%
- Peak concentration 0.5-2h
- 2nd peak (enterohepatic recycling)
- Elimination half-life: 16h
- Plasma Concentration /Leucocyte : 1/16 (anti inflammatory effect ++)
- Prescription : Twice daily

Imazio M Spodick D Adler Y Eur Heart J 2009;30:532

From Acute to Constrictive Pericarditis ....



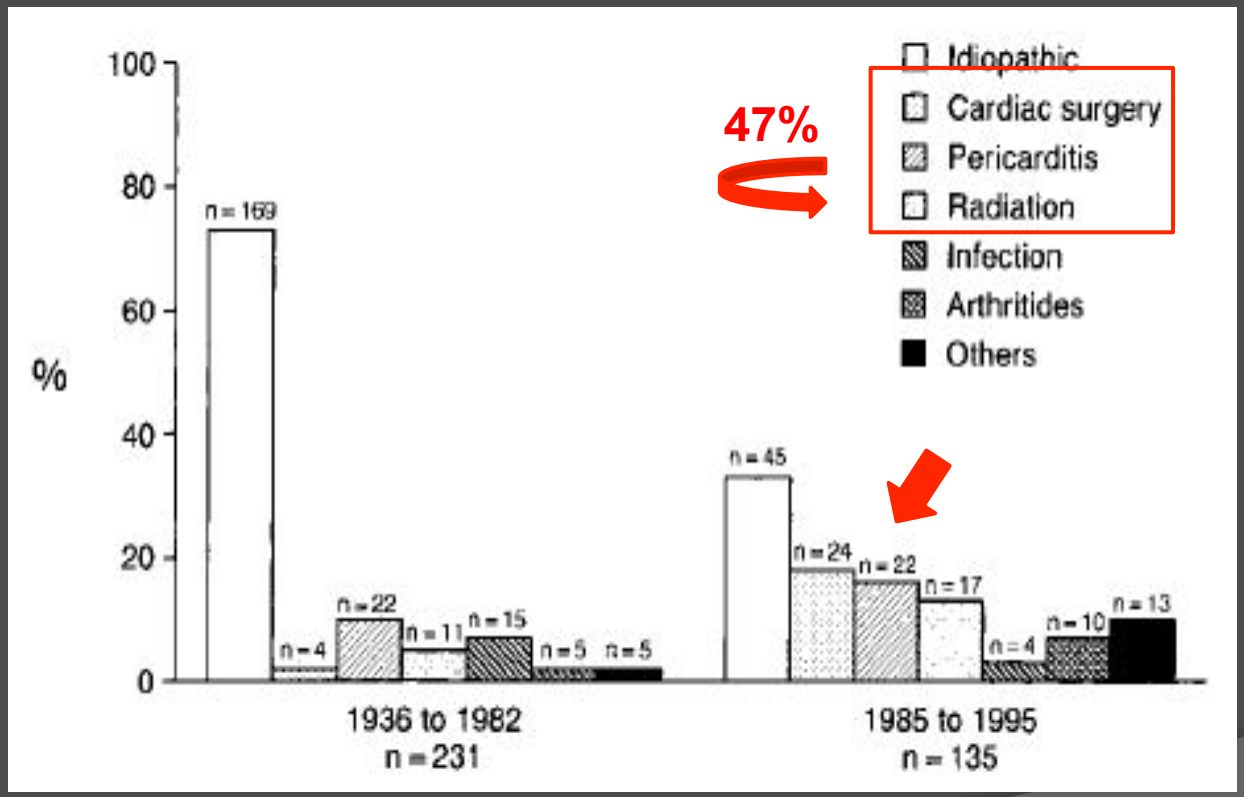




Ling L H Circulation 1999;100:1380-1386

Constrictive Pericarditis
Historic series from the Mayo Clinic

Unspecified aetiology :
73% (late) vs **33%** (recent) cohort

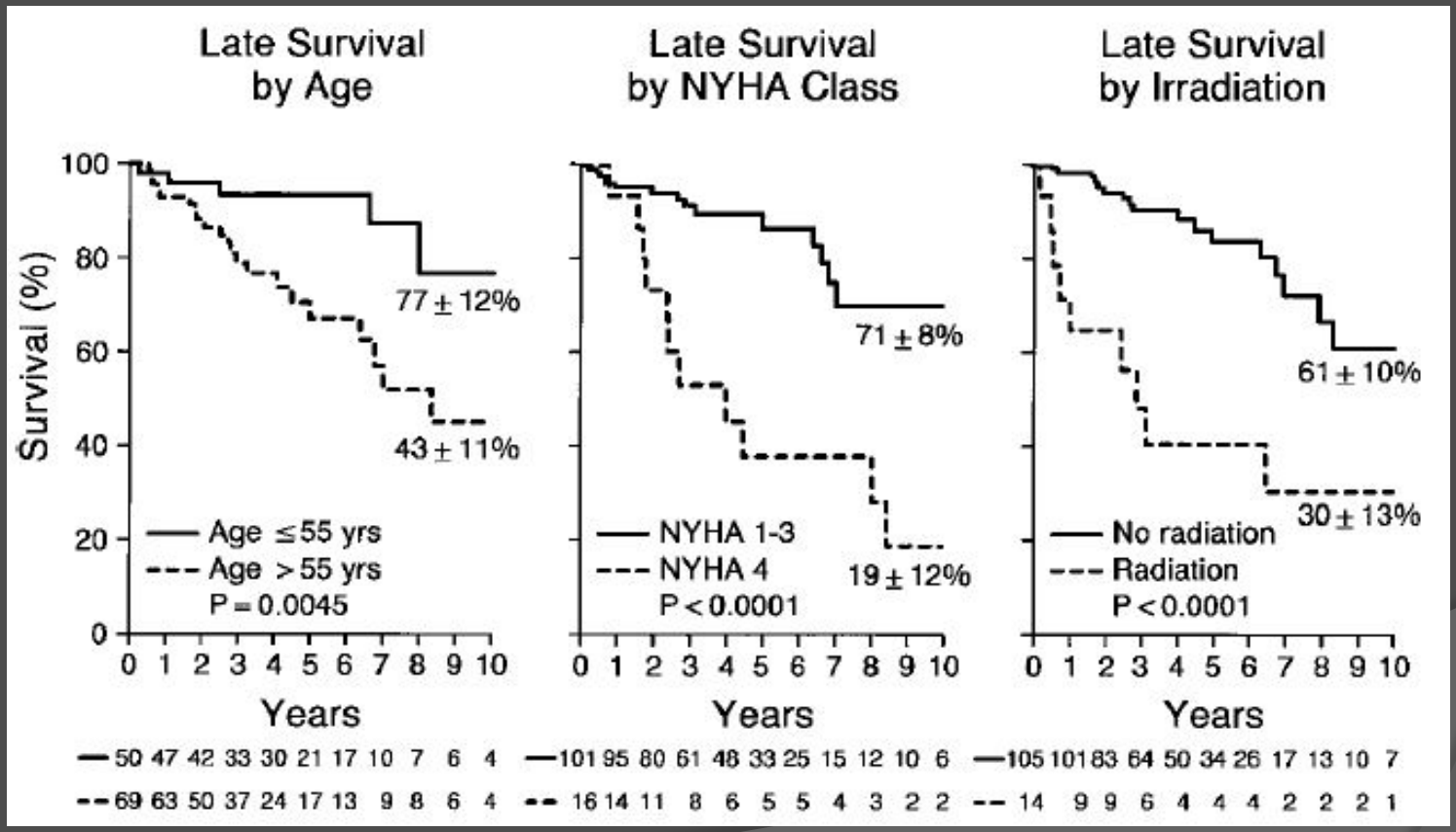


Calcified constrictive pericarditis and tubular flattening of the RV

Ling L H Circulation 1999;100:1380-1386

Constrictive Pericarditis
Outcome after pericardectomy

Late survival stratified by age (55 years), NYHA (I-III vs IV) & Radiation therapy



Ling L H Circulation 1999;100:1380-1386

Conclusions

- Aetiology of Pericardial diseases is manifold, but most cases remain idiopathic,
- Empiric anti-inflammatory therapy should be considered as a first-line therapy with the adjunct of colchicine in the setting of inflammatory pericardial diseases
  - Acute pericarditis
  - Recurrent pericarditis and
  - Post pericardiotomy syndromes
- Although COLCHICINE therapy still appears puzzling.. It remains effective and very cheap !

Conclusions

- The prognosis of pericardial diseases is predominantly determined by the aetiology.
- The most feared complication is constriction,
  - Highest risk, in bacterial forms,
  - Intermediate, for post pericardiotomy syndromes and systemic inflammatory diseases,
  - Low, for viral and idiopathic cases.
- Chronic constriction has a definite surgical therapy. However transient cases should be recognized and may be reversible with empirical anti-inflammatory therapy.