Association between Serum C-reactive Protein on Admission and Early Left Ventricular Thrombus Formation Following First Anterior Wall Acute Myocardial Infarction

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conflict of interest

None

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LVT (Left Ventricular Thrombus) in AMI

- A serious complication of Acute MI
- The most important risk factors:
  - Anterior location
  - Dyskinetic apex
  - Poor LV function

LVT (Left Ventricular Thrombus) in AMI

- Previous study*
  - 429 anterior STEMI patients PPCI treated
  - 18 (4%) demonstrated early LVT (within 1 week)
  - 11/18 already within 48 hours
- Independent risk factors included
  - EF (ejection fraction) $\leq$ 40
  - Symptom duration and
  - TIMI flow $\leq$ 1

* Shacham et al, AJC 2013

Objectives

To evaluate whether admission inflammatory biomarkers levels in AMI may predict early LVT

Methods

Study population

- Included
  - 207 pts. from our previous cohort
  - All had admission CRP & fibrinogen
- Excluded
  - Other reasons for elevated inflammatory biomarkers
  - Missing data

Methods

- Serum CRP and fibrinogen levels were taken prior to PPCI.
- Cardiac echocardiography on days 1-2 and on days 5-7 of hospitalization

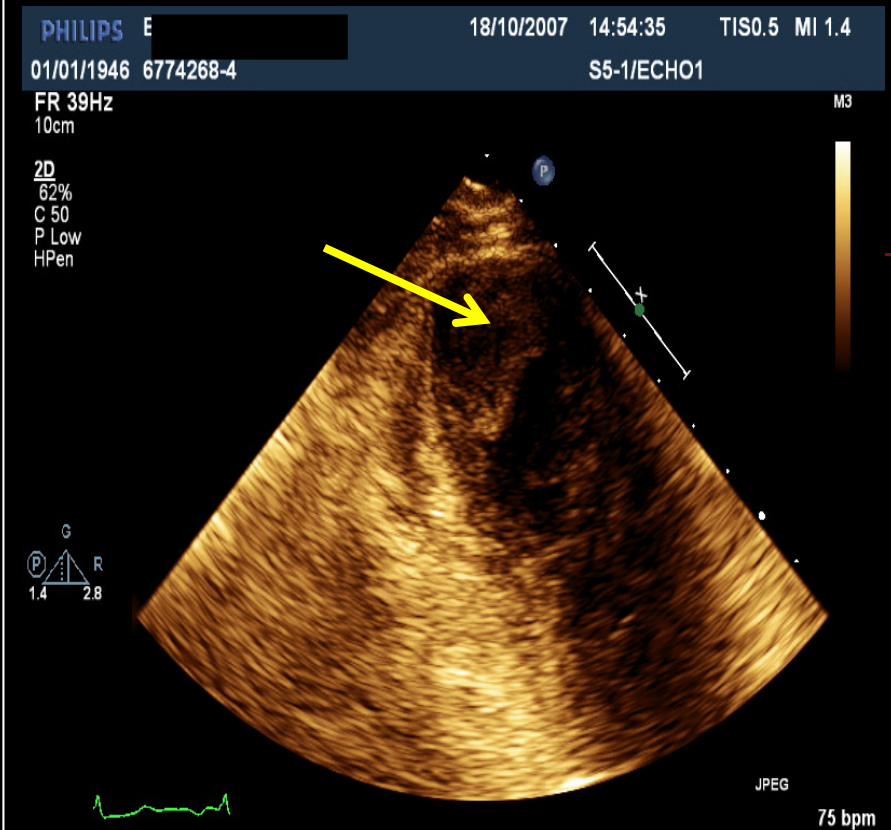
Results

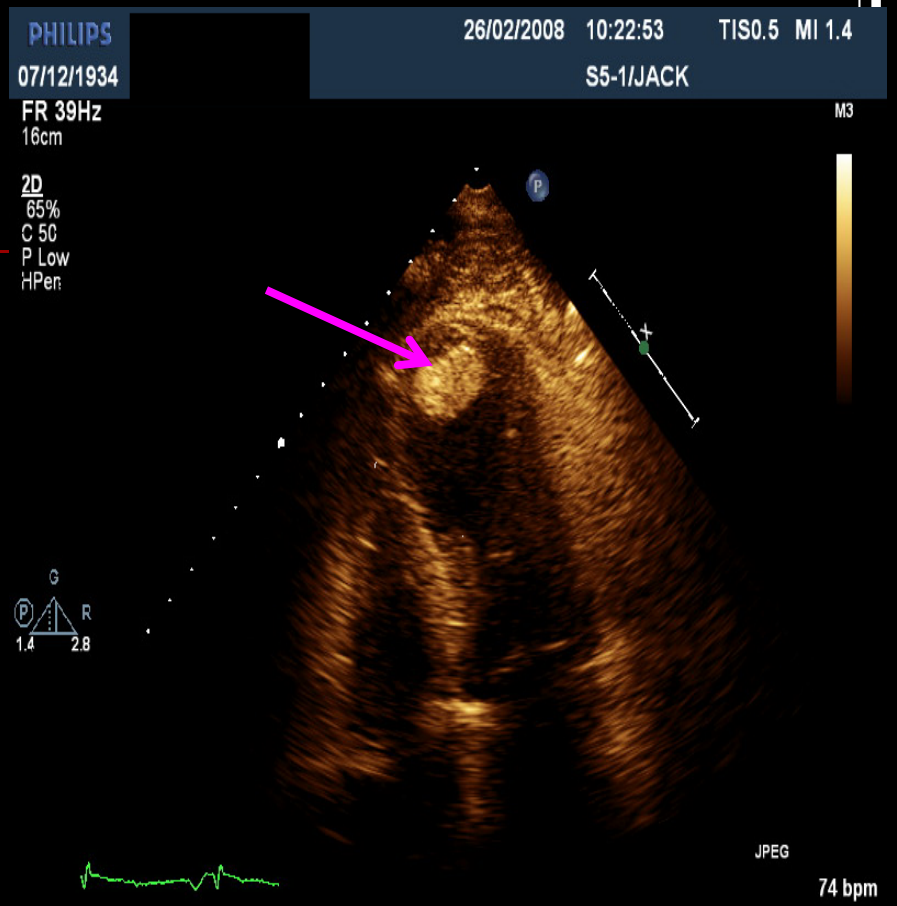
- Early LVT was detected in 11/207 pts. (5%)
- 6/11 displayed LVT on their first echo.

Results (con.)

	Thrombus ***n*** **= 11**	**No thrombus** ***n***= 196	*p* value
Ejection fraction (mean ± 1 SD)	**40 ± 4**	**44 ± 8**	**0.007**
TIMI Flow ≤ 1	**10 (91%)**	**120 (62%)**	**0.047**
Fibrinogen, mg/dL (mean ± 1 SD)	398 ± 135	312 ± 82	0.063
CRP, mg/L (mean ± 1 SD)	48 ± 68	8.4 ± 21	0.001

NS-Age, gender, HTN, DM, smoking, family Hx, HPL, CAD extent, WBC, PLT, Hb, Cr, Troponin





66 ± 35 mg/L

28 ± 15mg/L

Results (cont.)

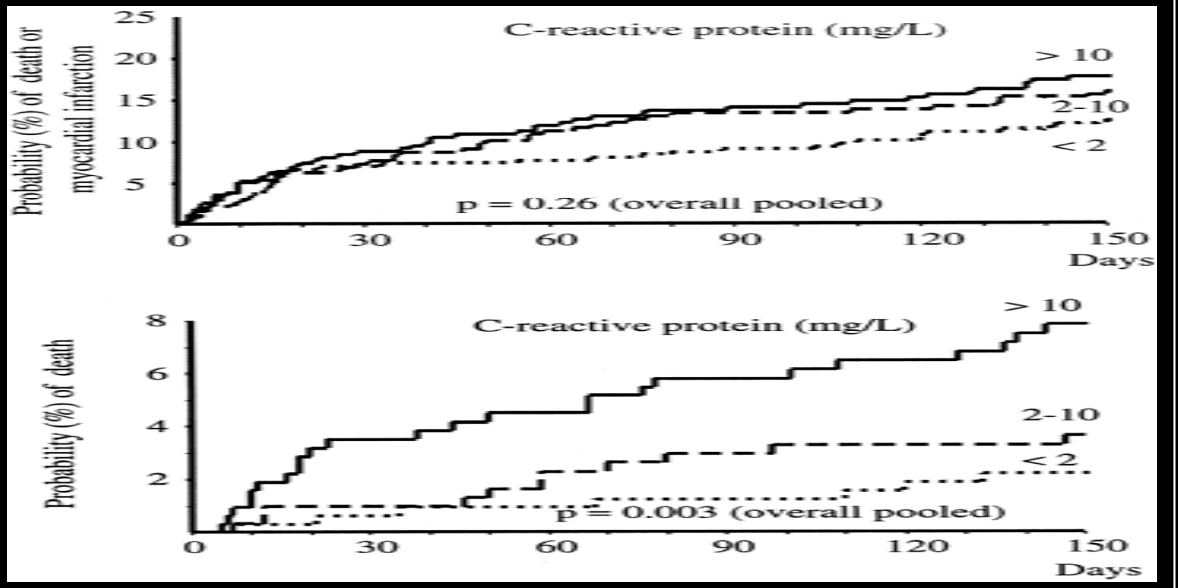
- Binary logistic regression analysis for LVT :
  - EF
  - Gender
  - CAD extent
  - TIMI flow
  - lesion location
- Serum CRP (R^2 4.36, *P=0.004*)
- Fibrinogen (R^2 1.006, *P*=0.033)

Conclusion:

Admission serum CRP and fibrinogen levels are independent predictors for early LVT complicating anterior wall STEMI

Comments

- CRP levels in AMI are associated with adverse long-term outcomes



- Peak CRP associated with LVT

Anzai et al, chest 2005

Comments (cont.)
Ischemia, Myocardial damage & CRP levels

- CRP in AMI :
  - Deposited within the necrotic area[1]
  - Activation of complement system[2]
  - Increase MI size
- CRP in AMI pts. may directly contribute to local inflammation and thrombus formation

1-Lagrand et al, circ 1997
2-Nijmeijer et al, AJP 2003

Clinical implications

- Admission CRP level
  - Higher risk for early LVT
  - Contrast Echo assessment
  - Continuation of anticoagulant therapy