

Echo Australia 2025

Case Study Competition

Repetitive intracardiac thrombosis in a patient with cardiac amyloidosis in sinus rhythm



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(presenter)

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no financial conflicts of interest to disclose
concerning this presentation

【 80 y.o. male 】

Chief complaint

Nocturnal dyspnea

Present illness

Started one week ago, gradually worsening,
Referred to our hospital

Past medical history

Regular visit to clinic due to HT, DLP
(amlodipine 5mg sid, Fenofibrate 160mg bid)

Physical size/Vital signs

163cm, 65.6kg (BMI: 24.6)

Consciousness: clear

BT: 36.5 °C BP: 162/98 mmHg HR: 102 bpm, regular
RR: 28 /min SpO₂: 94% (O₂ 5L mask)

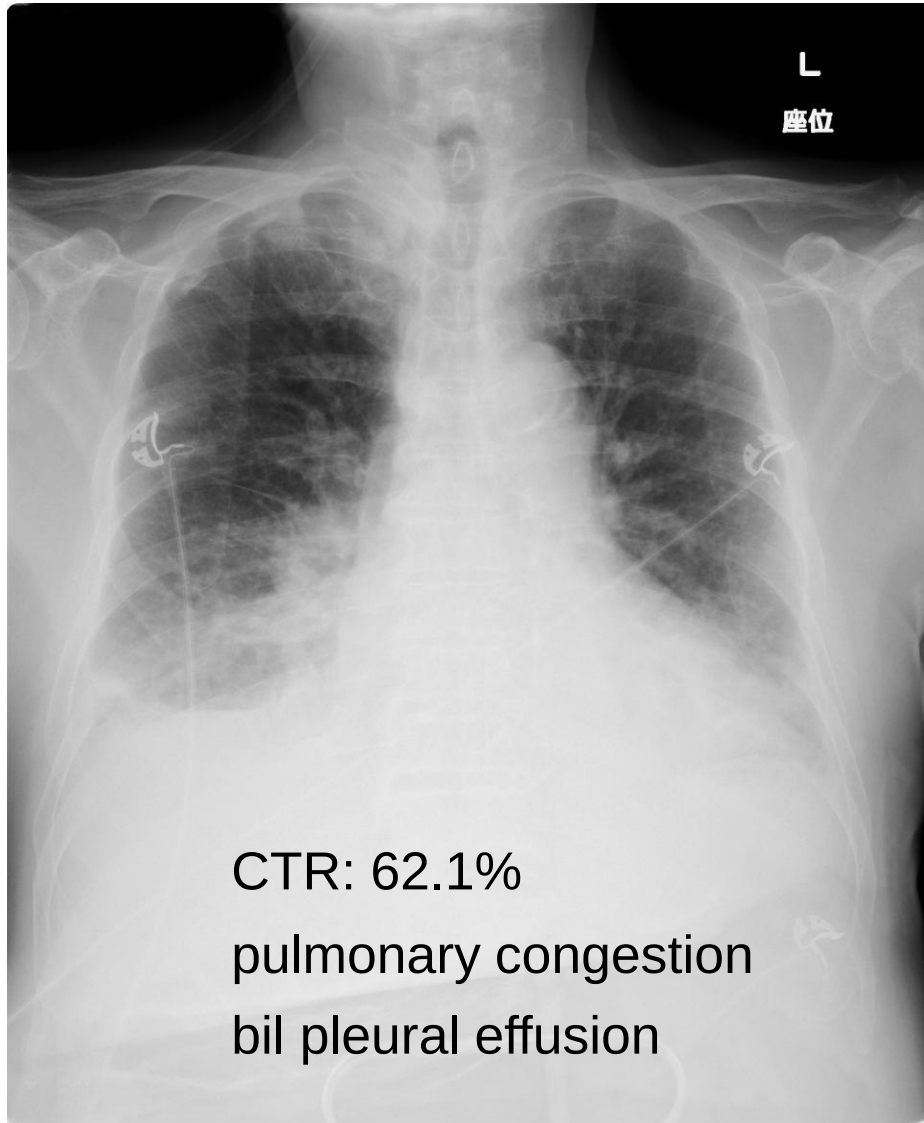
Physical examination

R/S: bil moist rale(+)

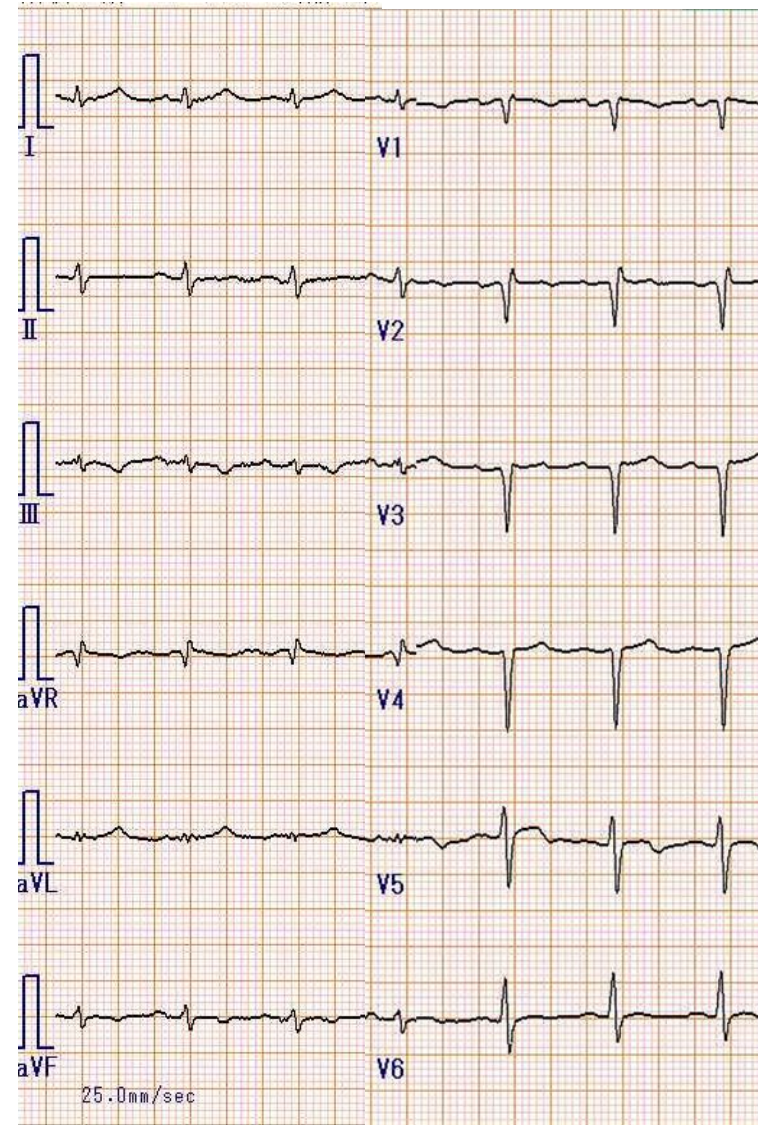
H/S: regular, no murmur

pretibial pitting edema +/+

CXR



ECG



HR 101bpm
low voltage
(limb leads)
Abnormal Q
(V1-3)

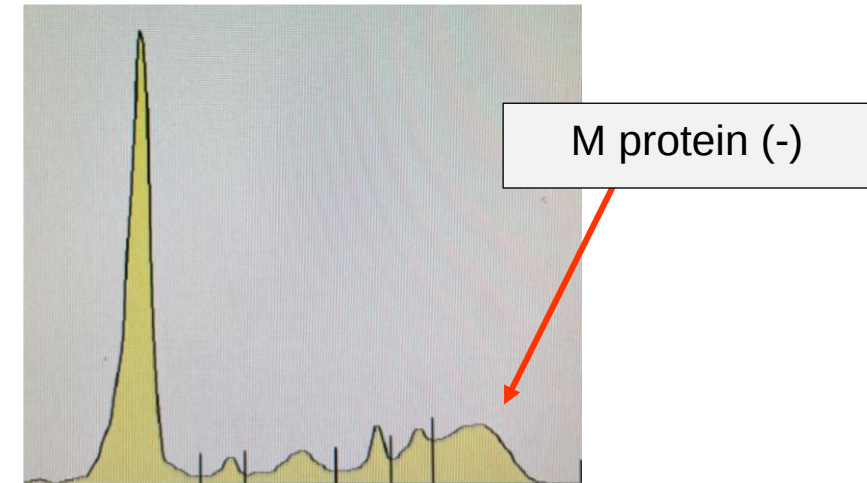
Blood test

Hgb	12.7 g/dL
TP	6.1 g/dL
ALB	3.2 g/dL
troponin I	0.151 ng/mL
NT-proBNP	6,868 pg/mL
Cr	1.36 mg/dL
eGFR	39.5 ml/min/1.73m ²

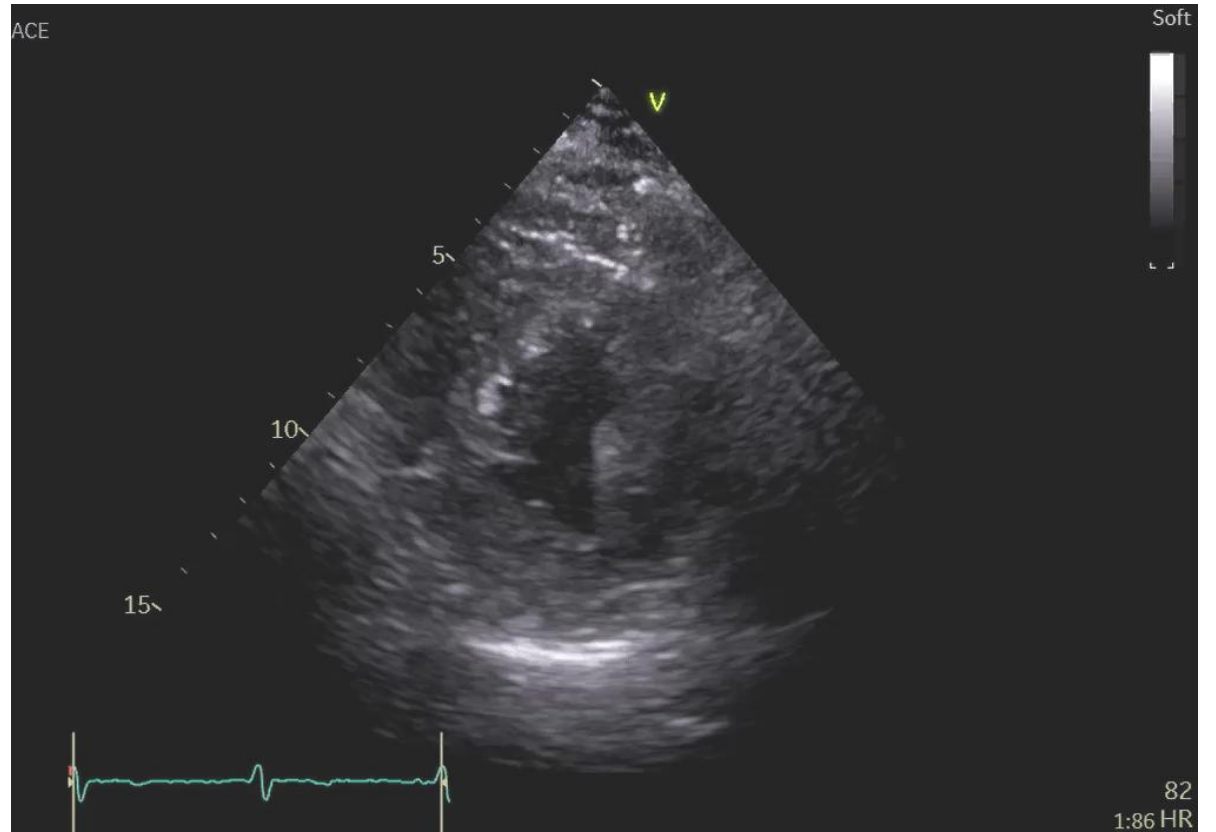
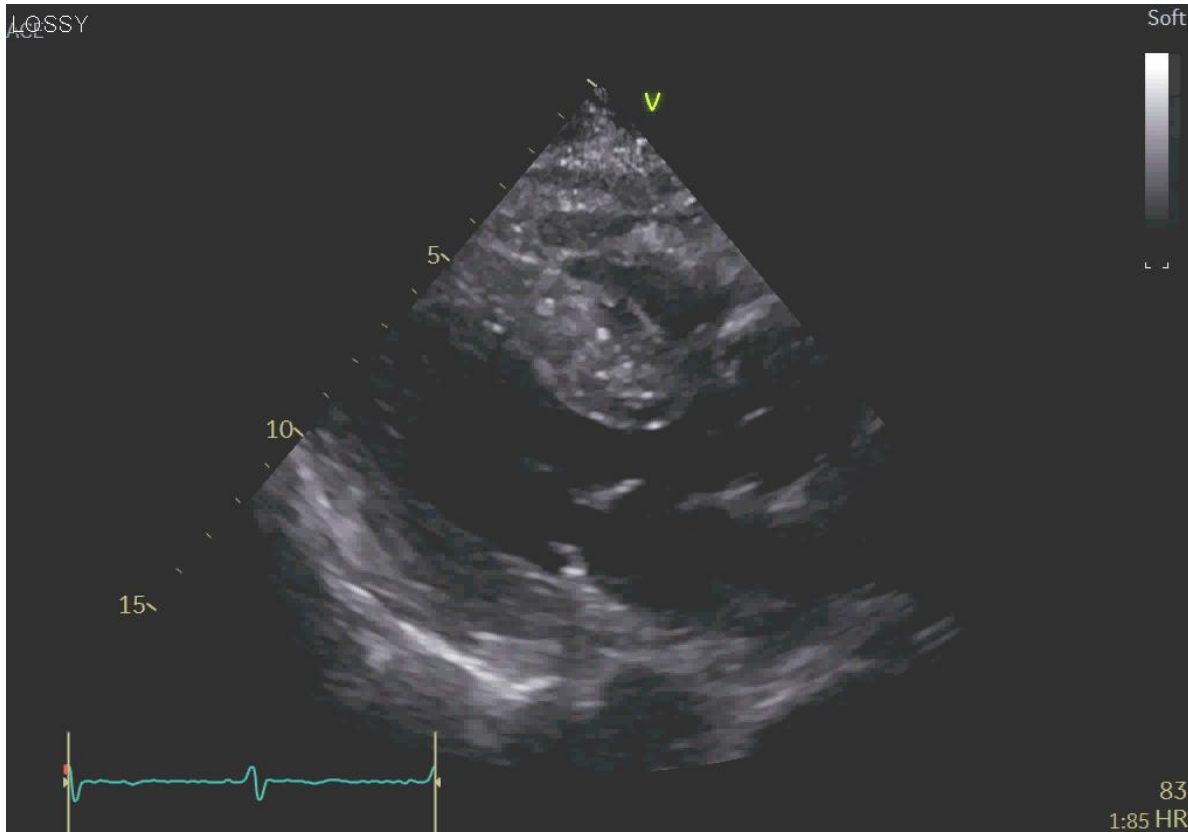
Urine test

UP (-)
BJP (-)

(Serum protein electrophoresis pattern)

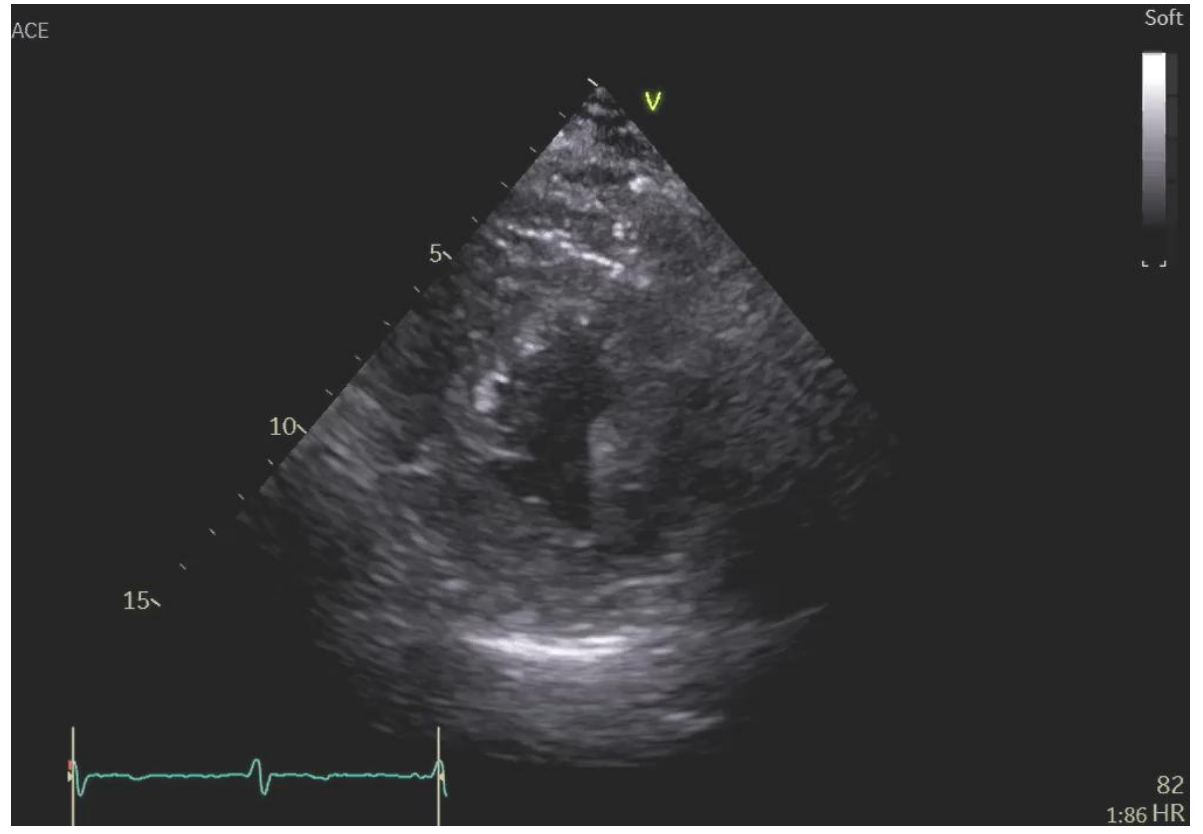
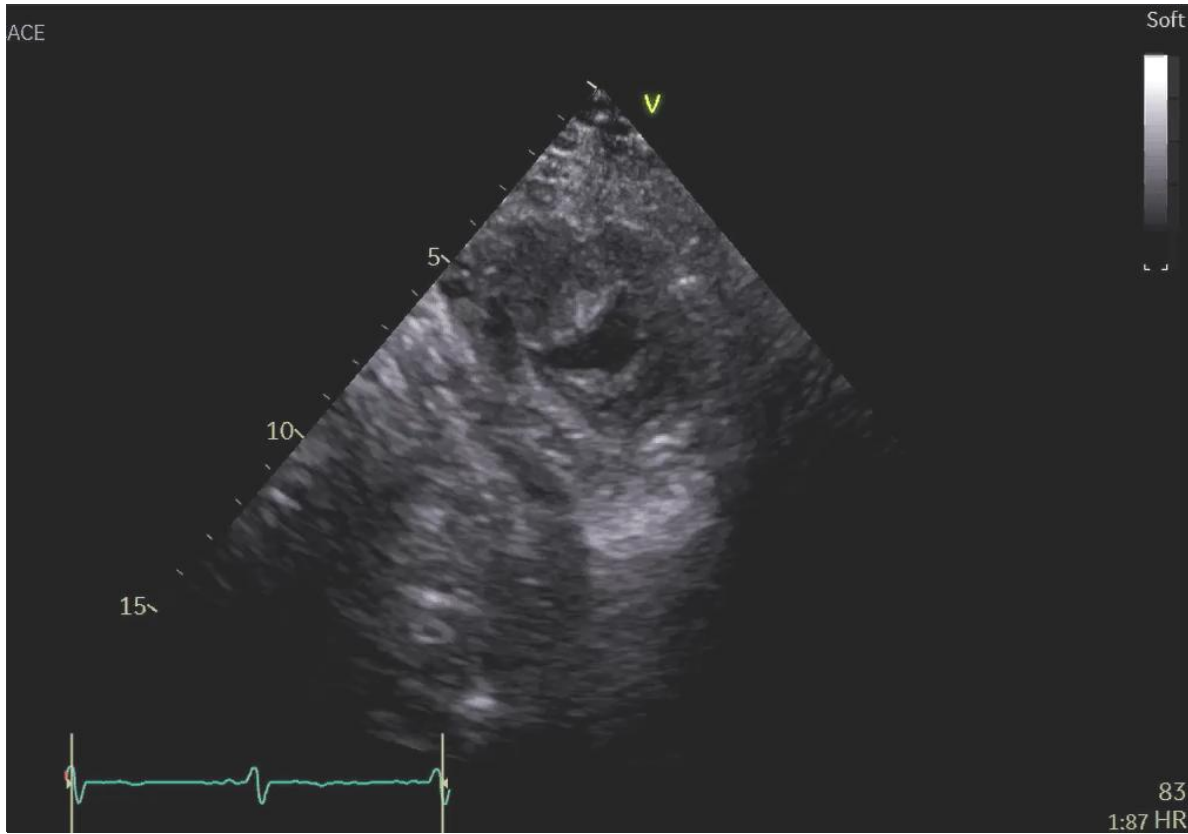


TTE (1)



- Diffusely hypertrophied LV myocardium (IVS/PW 14/14 mm)
- Mildly reduced LVEF (43%)
- Normal LA size (LAD 31 mm, LAVI 25.2 mL/m²)

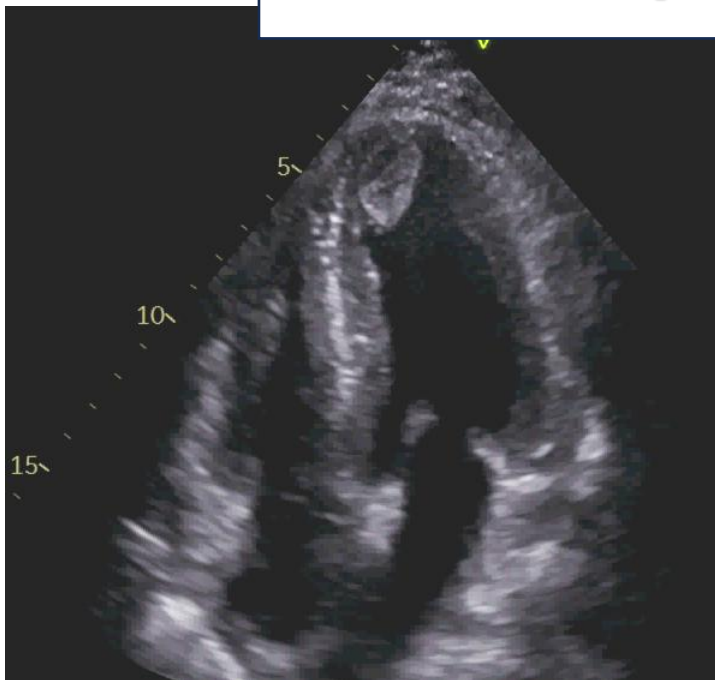
TTE (1)

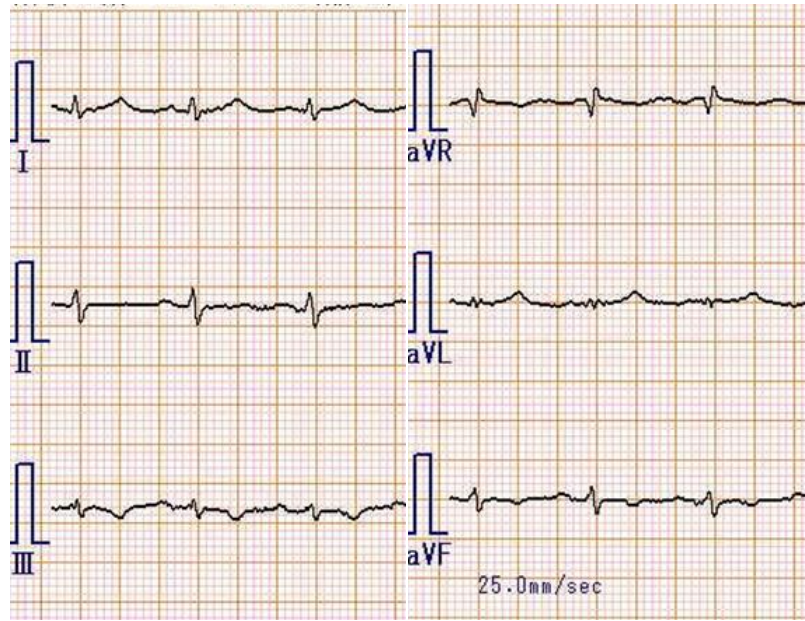


- Apical mass detected (approx. diameter: 23mm)

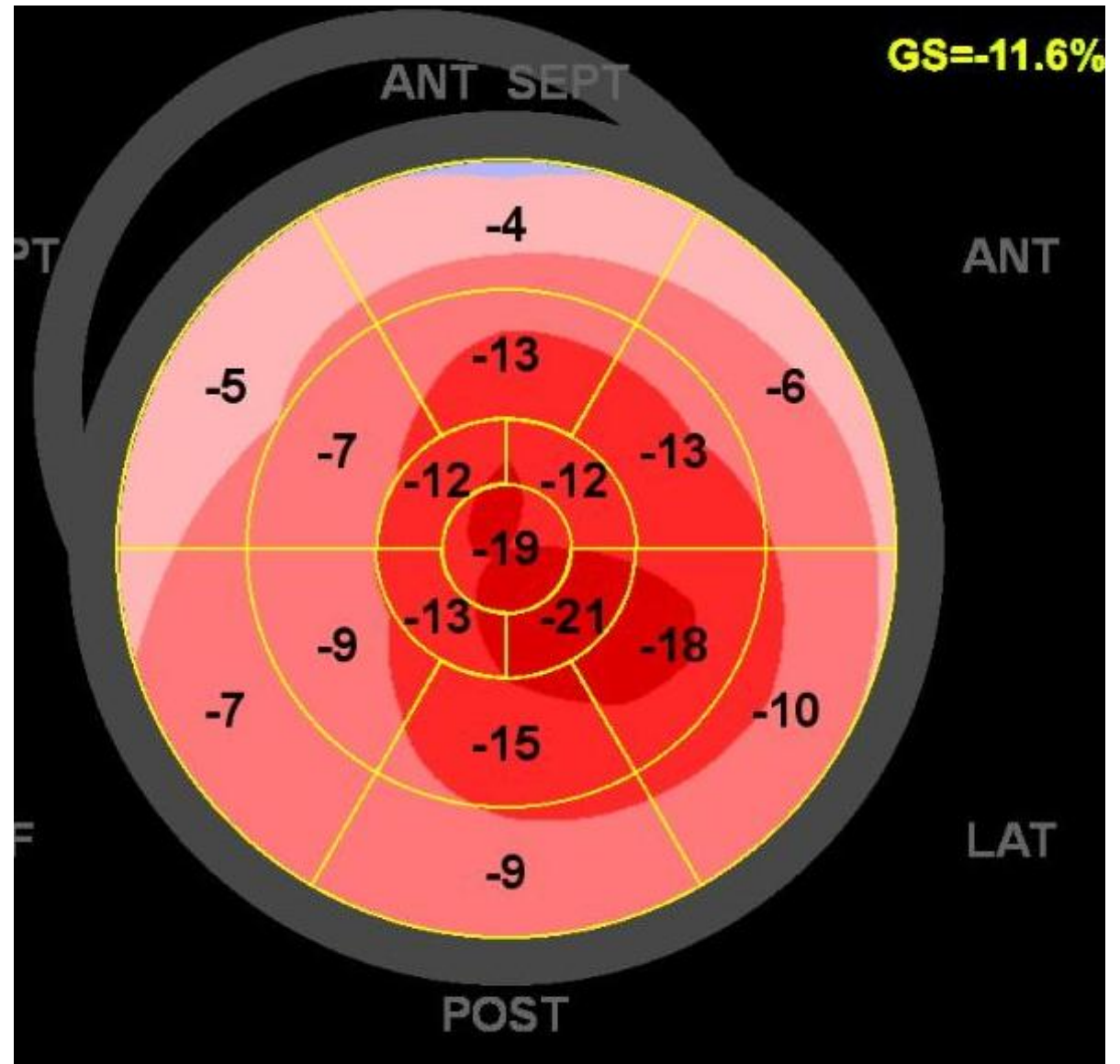


LV apical thrombus





Low voltage despite LVH



- Reduced GLS (-11.6%)
- Apical sparing pattern

CAG

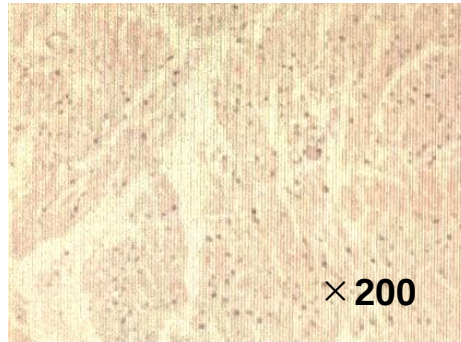


coronary stenoses(-)

Definite Diagnosis

Cardiac Amyloidosis (ATTR, wild type)

**Endomyocardial
pathology**



amyloid deposition (+)
anti-TTR antibody (+)

Genetic testing

compatible with wild type ATTR

- ✓ HF treatment (diuretics, etc), administration of tafamidis
- ✓ Anticoagulation therapy with warfarin
(target therapeutic PT-INR range: 1.6-2.6)
- ✓ Continued warfarin for 6 months with approximately optimal ranges (time in therapeutic range 71.2%)

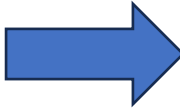
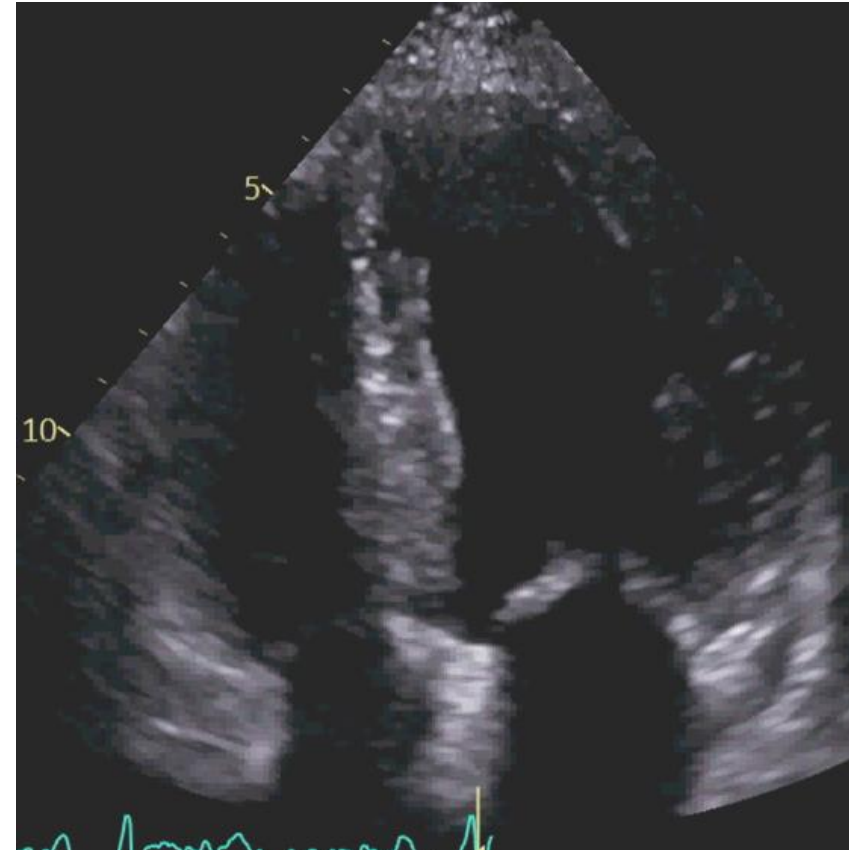
TTE (1)



*No echo contrast agents
available in Japan...*

TTE (2)

6 months after TTE (1)



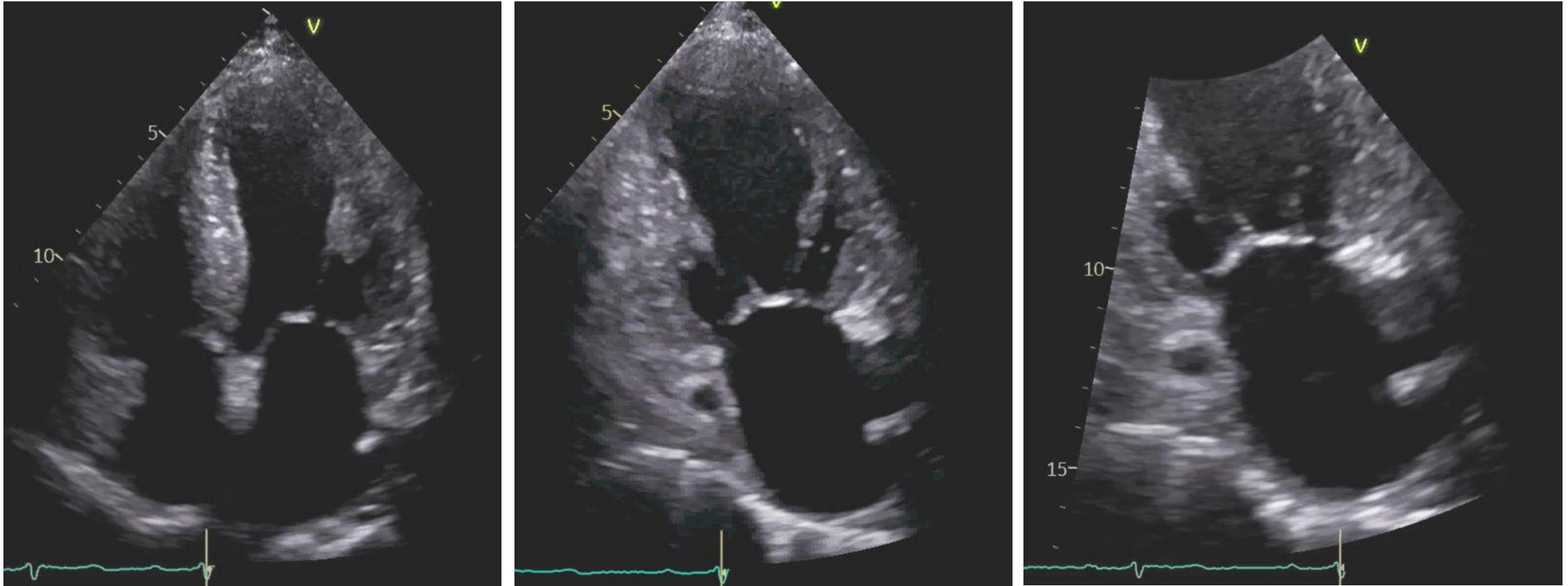
- Apical thrombus disappeared after 6 months
- LVEF improved to 55%

2 years later
(at the time of a regular checkup)

- ✓ TTE detected a new finding in LAA;
a thrombus suspected
- ✓ asymptomatic

TTE (3)

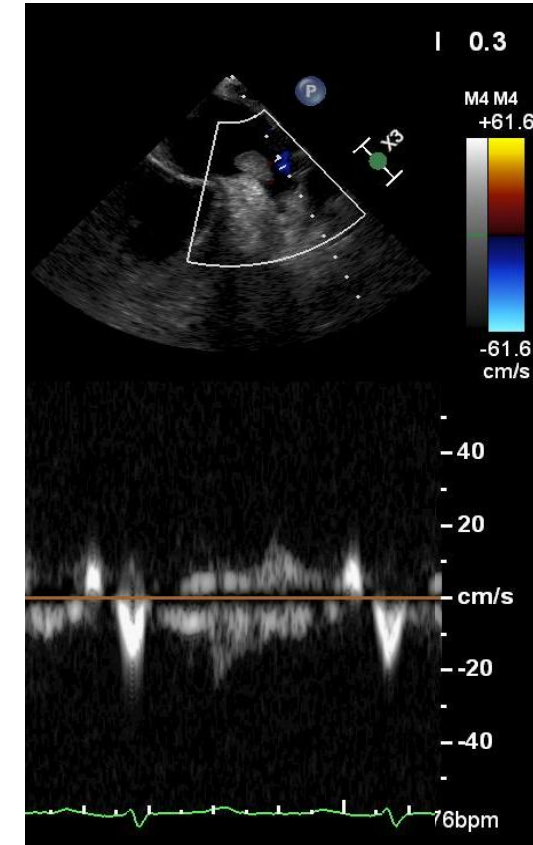
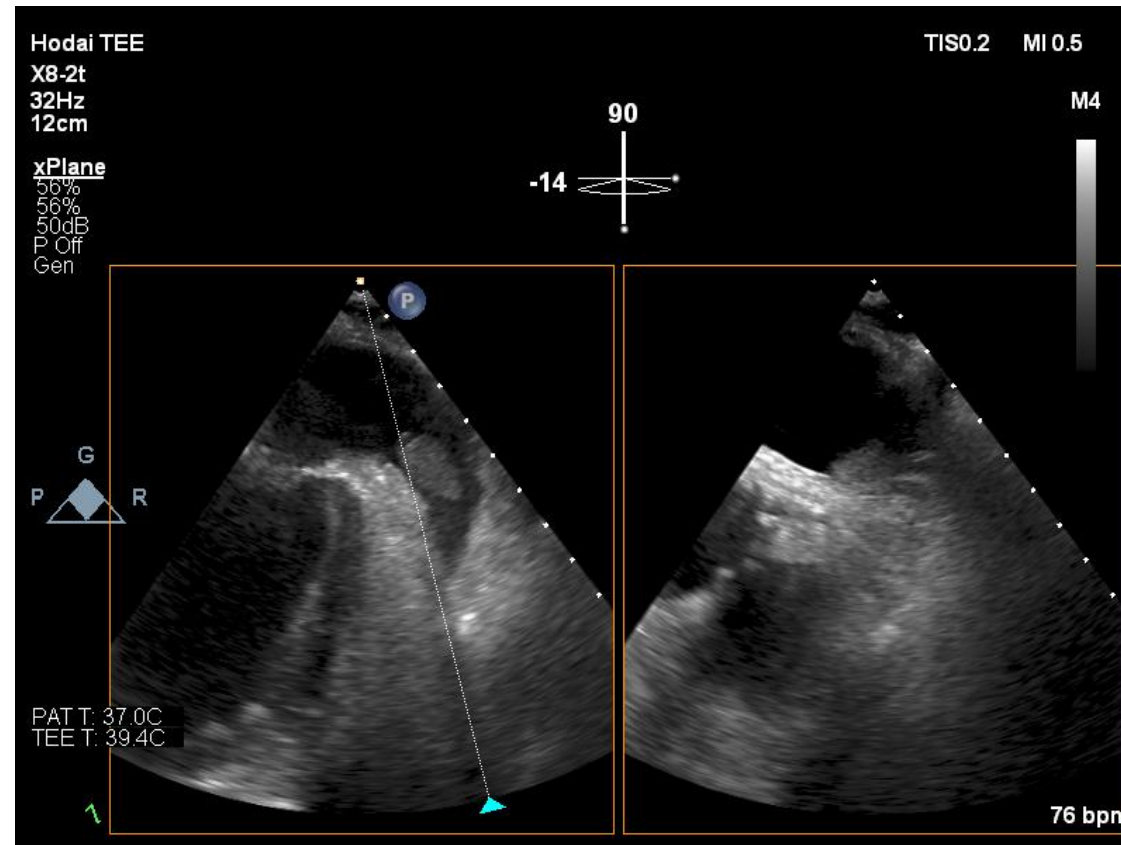
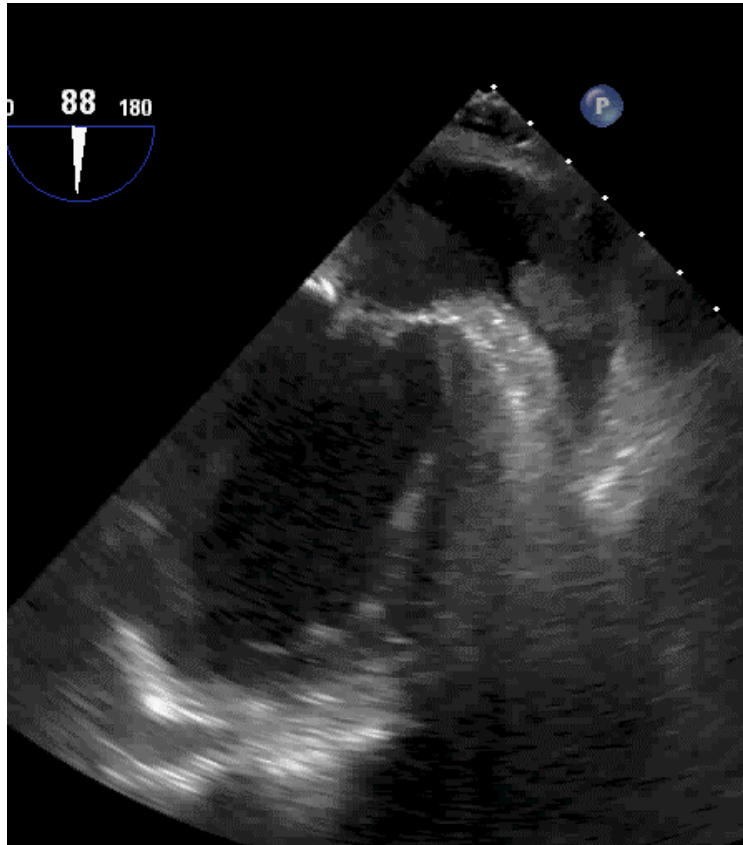
2 years after TTE (2)



- No LV apical thrombus
- LA dilatation (LAVI 37.1 mL/m²) ← *TTE (1) (2.5 years ago): LAVI 25.2 mL/m²*
- LAA thrombus, s/o

TOE (1)

2 years after TTE (2)

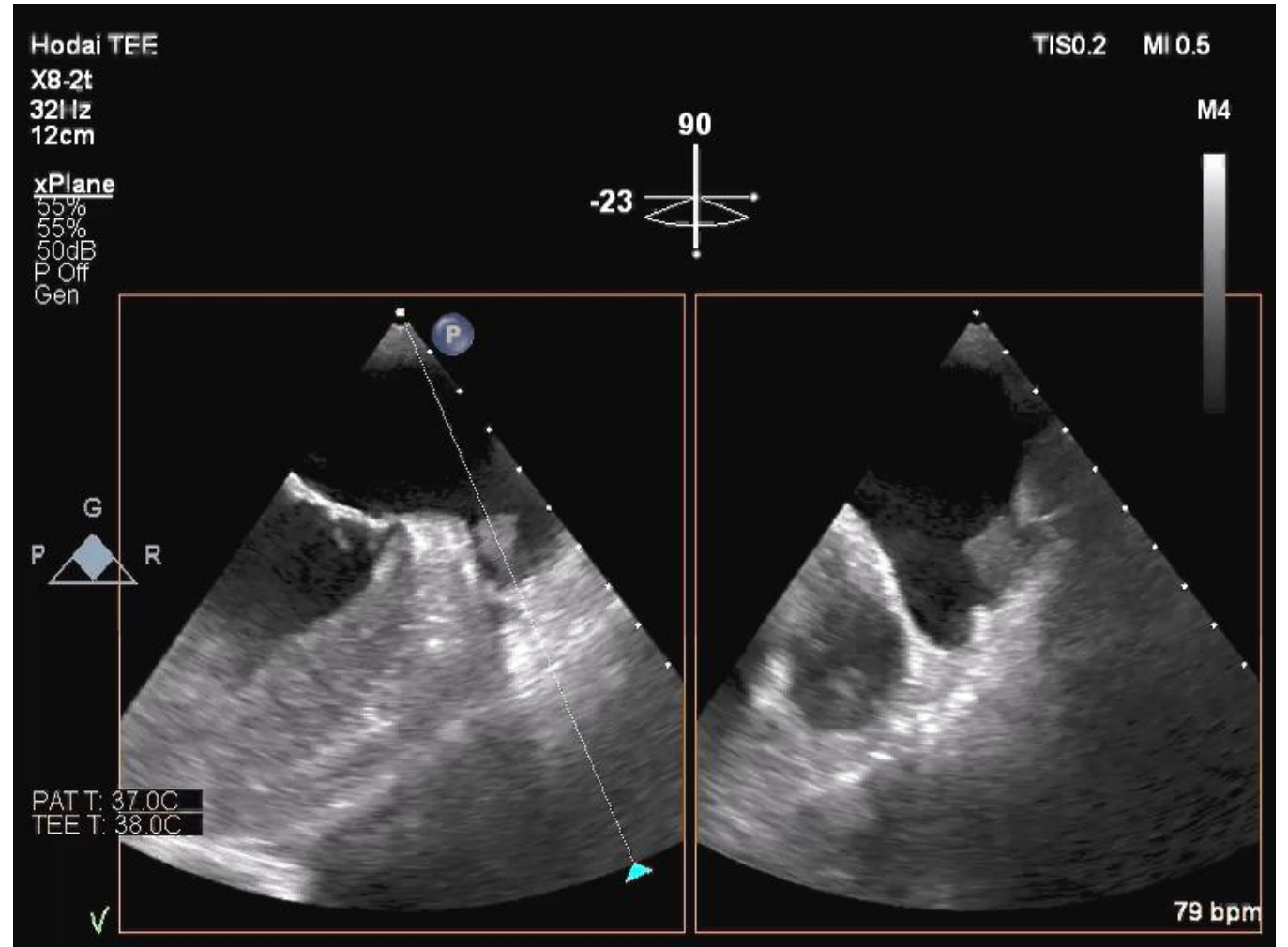
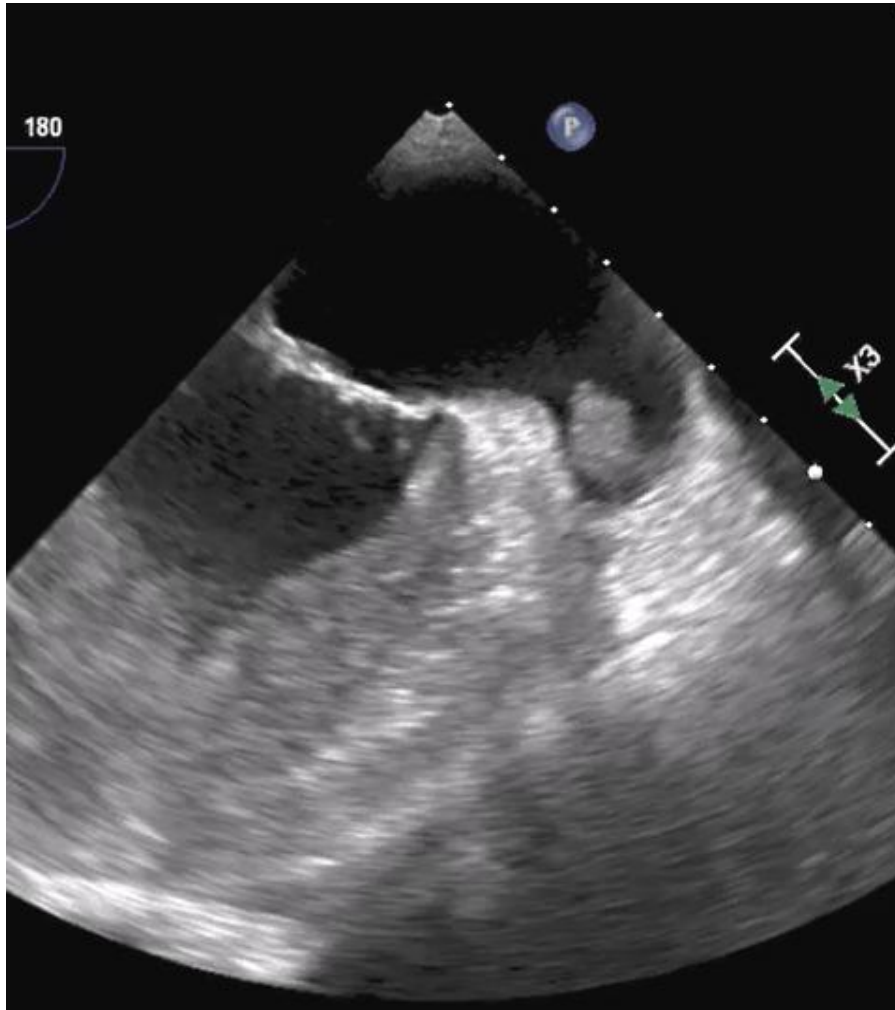


- TOE confirmed a mobile LAA thrombus
- decreased LAA flow velocity (20 cm/sec)

- ✓ Detection of LAA thrombus despite relatively well managed anticoagulant therapy
- ✓ Dilated LA, but no detection of atrial fibrillation (AF) even during 1-week Holter ECG
- ✓ Surgical removal: risky, rejected by the patient
- ✓ Intensification of anticoagulation therapy (PT-INR 2.0-3.0)

TOE (2)

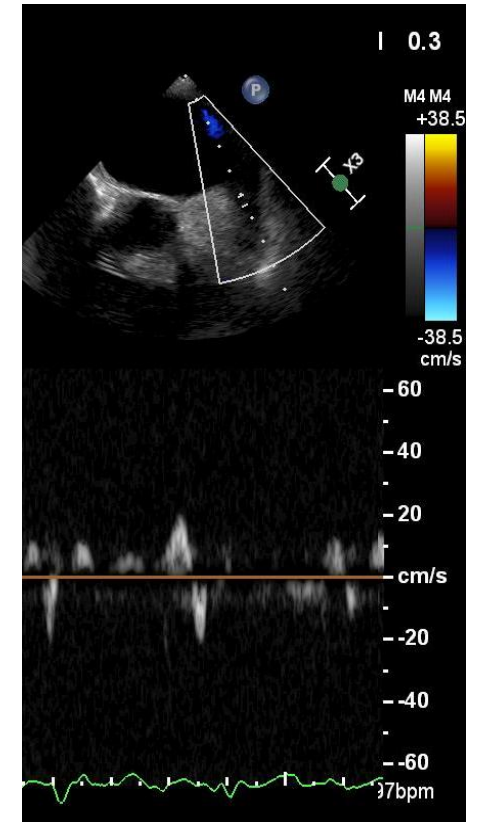
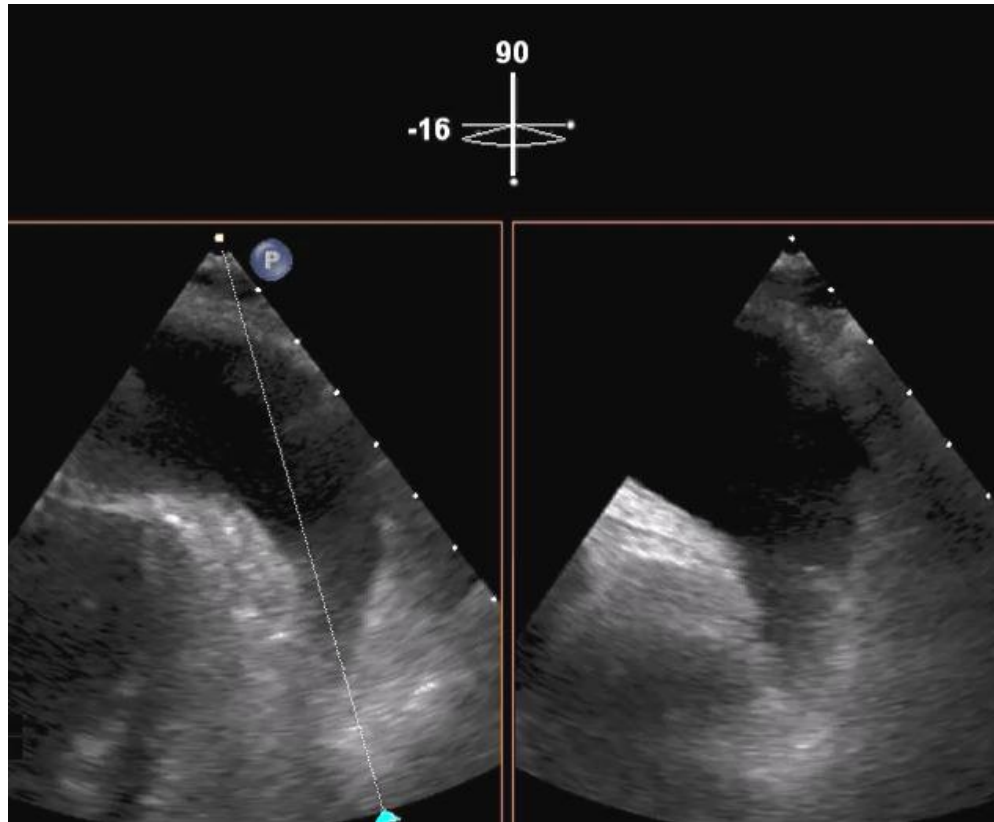
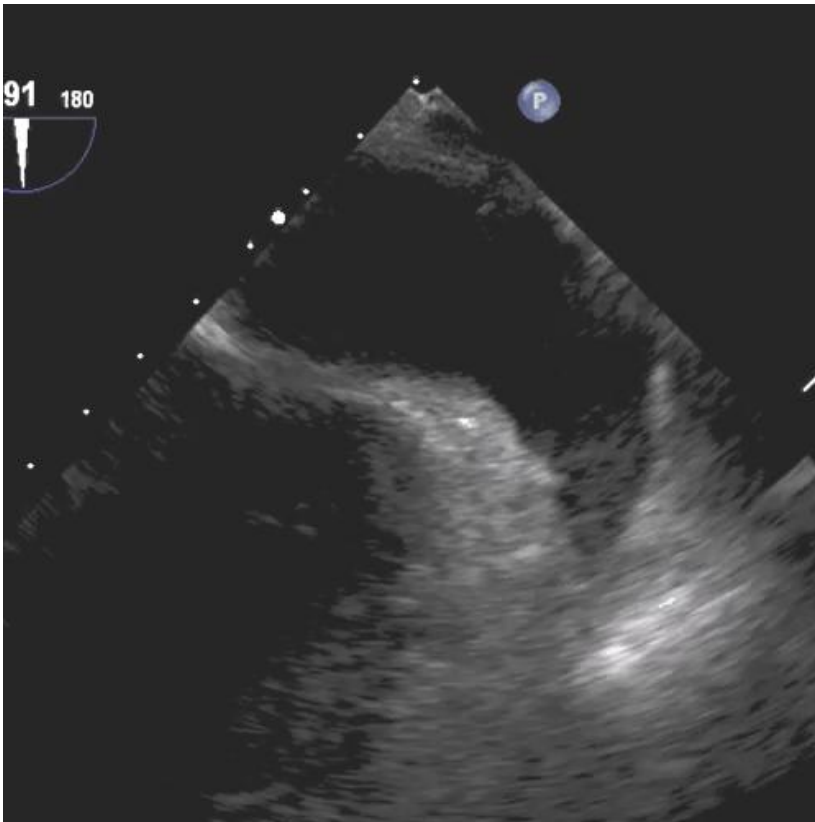
3 months after TOE (1)



- shrinking but still there

TOE (3)

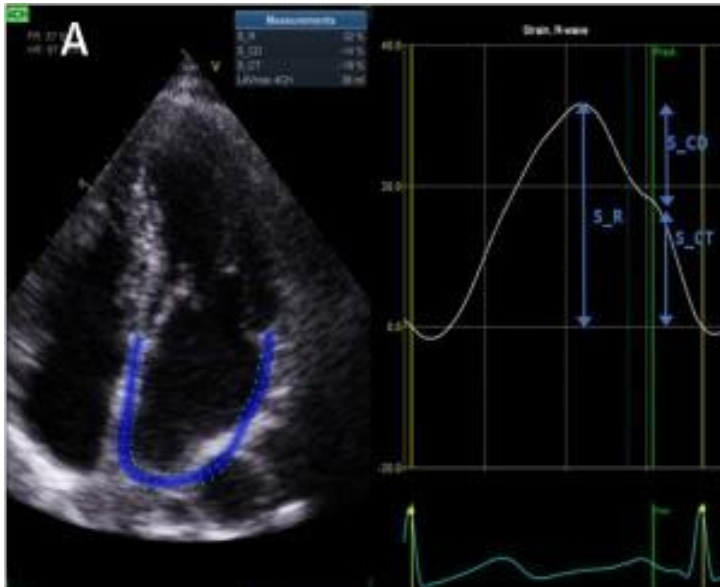
7 months after TOE (1)



- LAA thrombus disappeared
- decreased LAA flow velocity remains (20 cm/sec)

Prognostic Utility of Left Atrial Strain to Predict Thrombotic Events and Mortality in Amyloid Cardiomyopathy

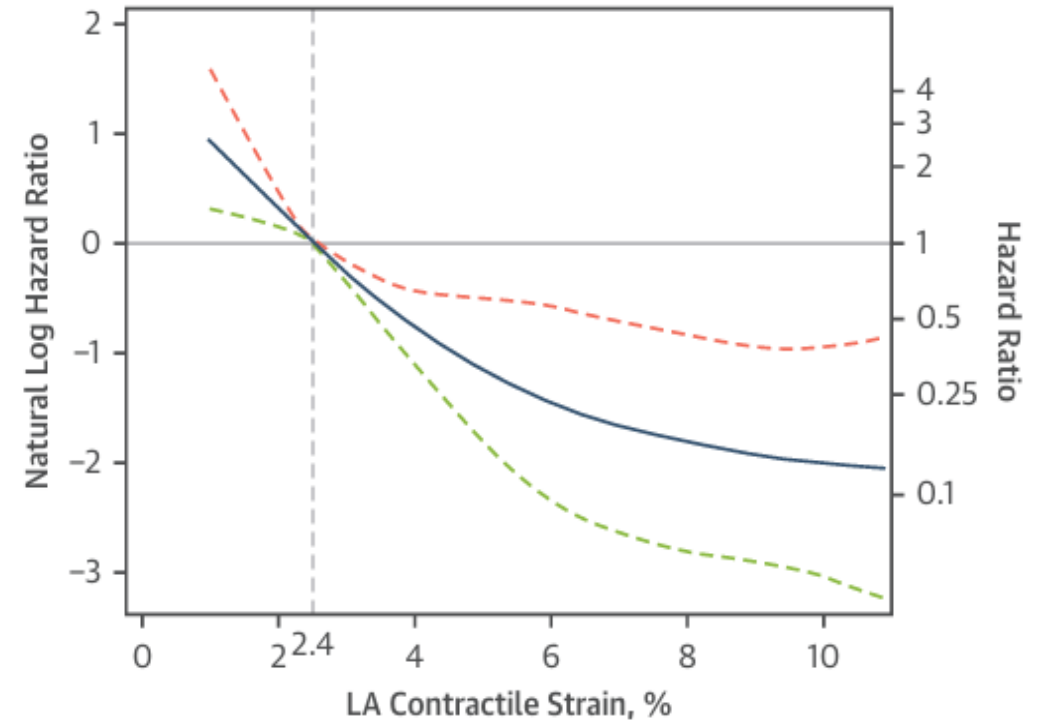
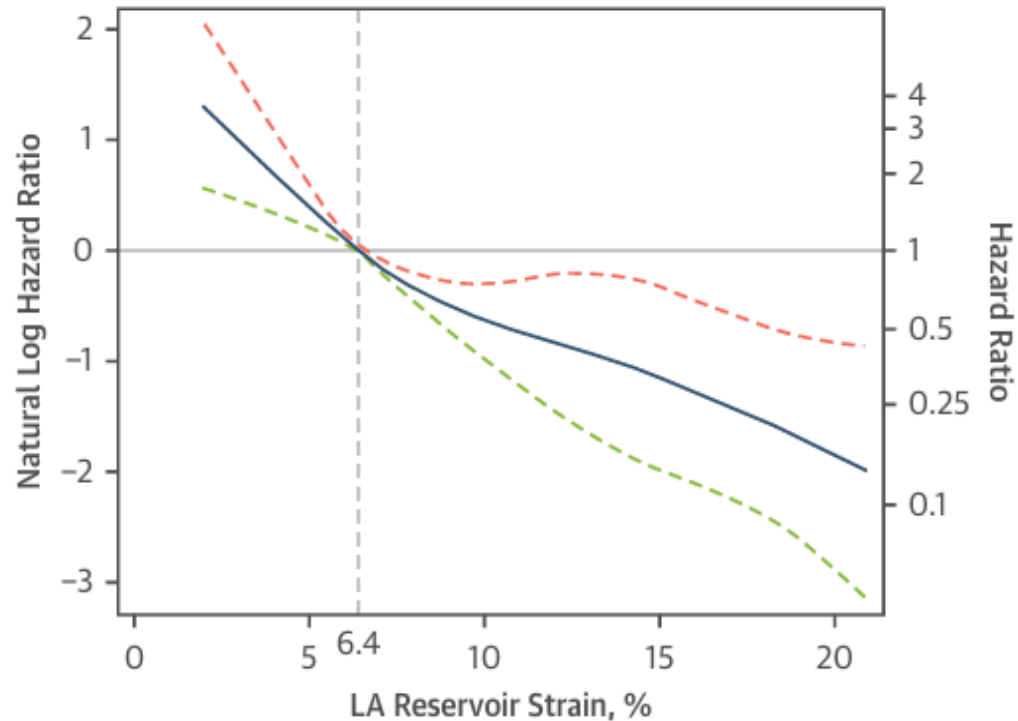
Emmanuel Akintoye, MD, MPH,^a Muhammad Majid, MD,^a Allan L. Klein, MD,^{a,*} Mazen Hanna, MD^{b,*}



- ✓ Study subjects: cardiac amyloidosis (AL, ATTR) ($n = 448$) sinus rhythm at diagnosis
- ✓ Median follow-up period: 3.8 years
- ✓ Thrombotic events (TE) occurred in 14.3% ($n = 64$)
*75% of TEs occurred without preceding AF documented

(*J Am Coll Cardiol Img* 2023;16:1371–83.)

Thrombotic events (TE)



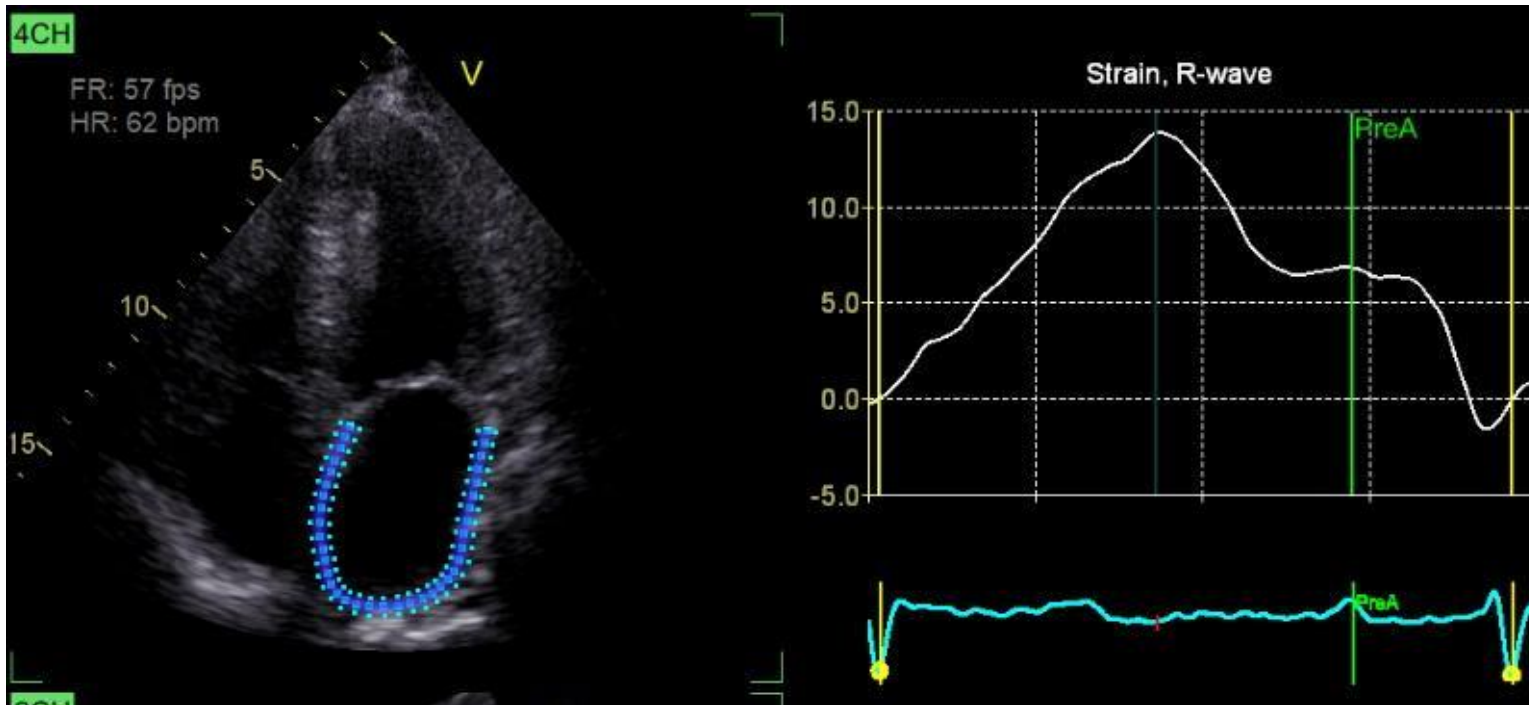
✓ LA strain: reservoir and contractile strains significant predictors of TE

(discriminatory threshold for TE) reservoir: 6.4% (sensitivity 70%, specificity 80%)

contractile: 2.4% (sensitivity 75%, specificity 83%)

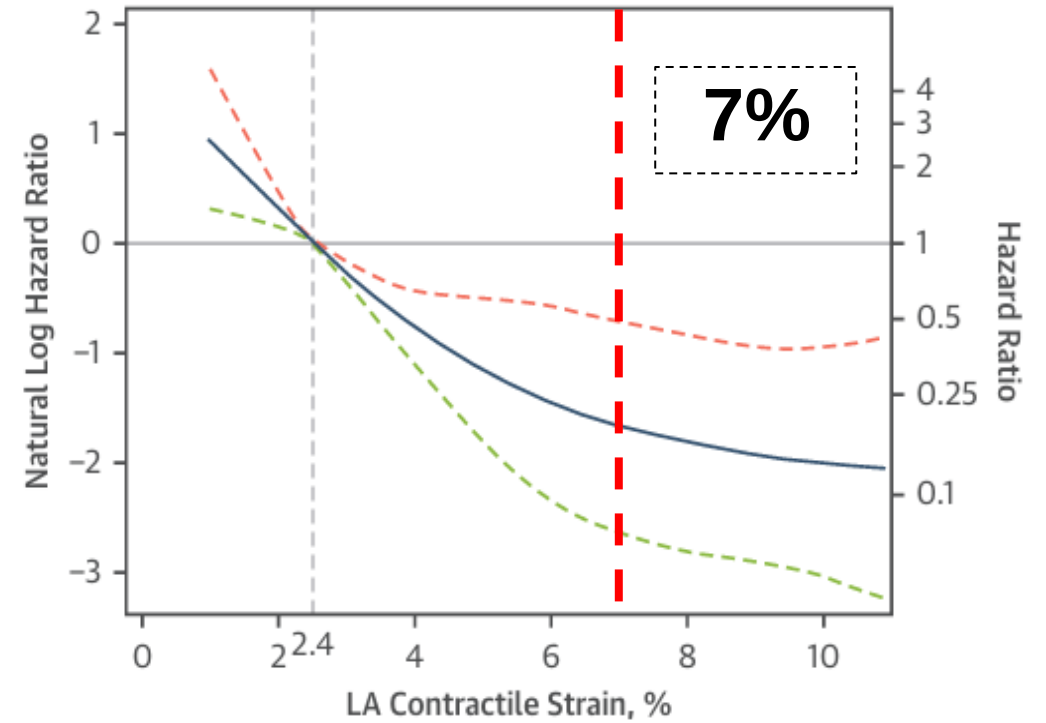
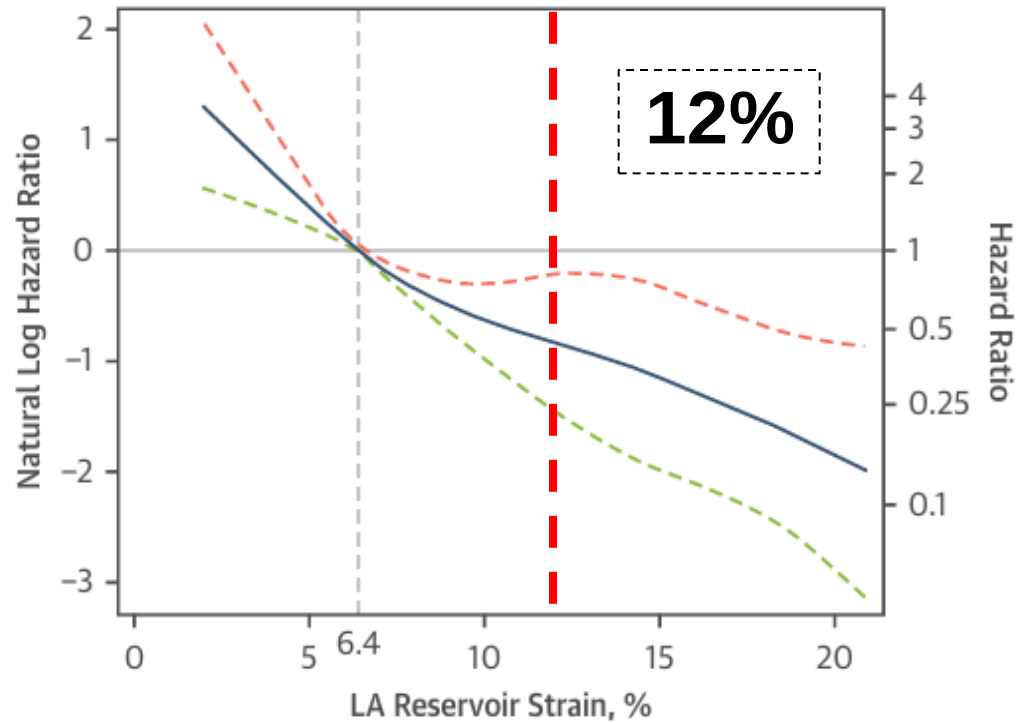
(J Am Coll Cardiol Img 2023;16:1371–83.)

LA strains in this case (TTE (2))



reservoir strain: 12%
contractile strain: 7%

Thrombotic events (TE)



- ✓ Clearly reduced LA function, but both strains higher than the reported cutoffs
- ✓ Still TE occurred!



Summary



- Repetitive intracardiac thrombosis despite decent anticoagulant therapy in a patient with cardiac amyloidosis in sinus rhythm
- Cardiac amyloidosis is a clot-prone disease independent of AF
- LA strain analysis may be helpful in those patients



Summary



SPECIAL THANKS TO
ALL THE ECHO AUSTRALIA STAFF!

independent of AF

- LA strain analysis may be helpful in those patients