Free triiodothyronine is a predictor factor of left ventricular remodeling in patients after myocardial infarction and primary reperfusion assessed by means of two-dimensional speckle tracking echocardiography

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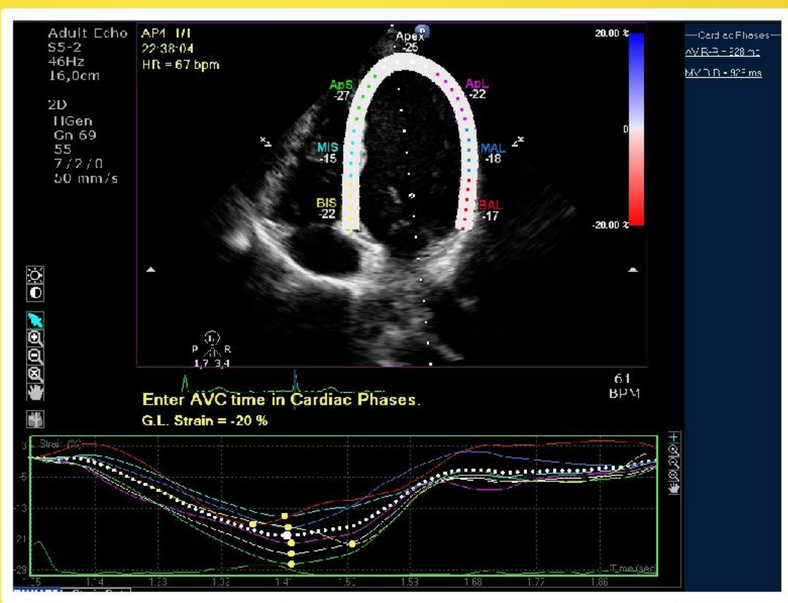
Introduction. Left ventricular remodeling (LVR) is the most important consequence of acute myocardial infarction (AMI). The aim of the study was to assess the value of free triiodothyronine (fT_3) in the prediction of LVR after AMI and primary coronary angioplasty (PCI).

Methods. Seventy patients (F/M=17/53, 61±11years old) without recognized previous thyroid dysfunction and AMI were enrolled into the prospective observational study. Conventional and global longitudinal two dimensional speckle tracking echocardiography (LSTE) were performed 2 days (baseline) and 50 days after AMI. Thyroid function serum parameters (TSH, fT_3, fT_4) were measured three times: before, 2 and 50 days after catheterization. Patients were divided into two groups according to the change of LSTE at 50 days follow up (increase - I, decrease – II).

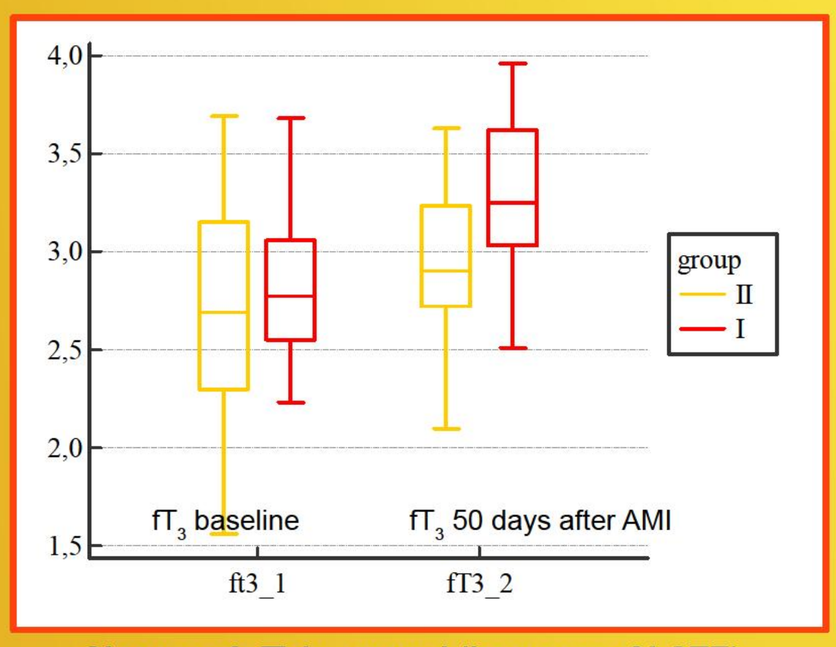
Clinical characteristics (N=70)	Mean ±SD Median (25Q-75Q)
Age, years	61±11
Male gender, n (%)	53 (76%)
BMI, kg/m^2	28.8 (26.3 - 32.1)
STEMI/NSTEMI, n (%)	27/43 (39% /61%)
LV EF% baseline	52±10
LSTE % baseline	-15.2±4.5
eGFR, ml/min	97±33
hs Troponine T, ng/ml	0.029 (0.011-0.150)



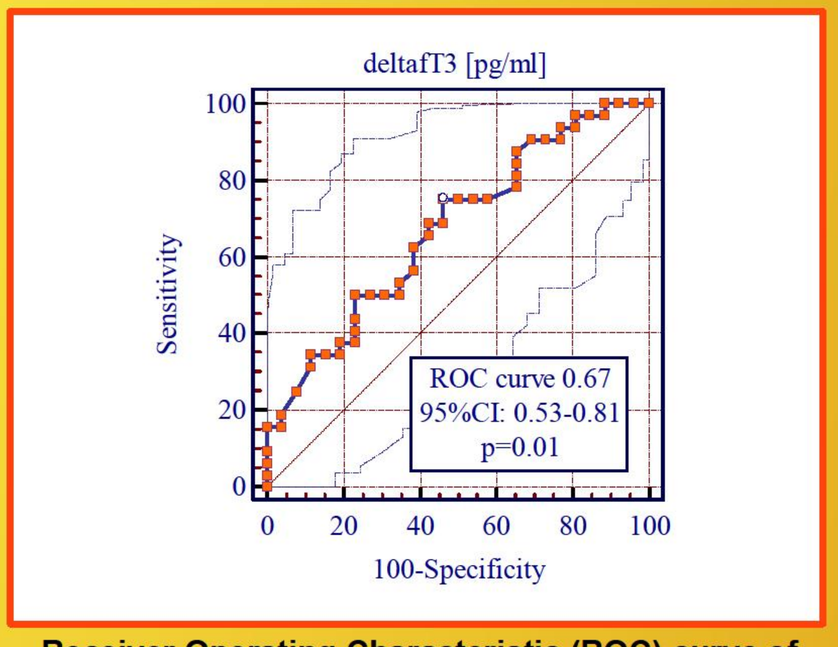
Two dimensional speckle tracking echo

Normal left coronary artery

Results. At the baseline, both groups didn't differ in terms of fT_3 concentration (mean difference 0.13 pg/ml; p=0.4), left ventricular ejection fraction (54%±9 v. 51%±10; p=0.2) and global LSTE (-17%±4 v. -15%±4; p=0.1). The difference between fT_3 level between 2 and 50 days after PCI was a significant predictor of the change of LSTE (group x time interaction p=0.015). According to the ROC analysis the increase of fT_3 upper 0.28 pg/ml (sensitivity 69%, specificity 54%) was the most powerful predictor of the increase of LSTE after AMI.



Change of fT_3 in group I (increase of LSTE) and group II (decrease of LSTE)



Receiver Operating Characteristic (ROC) curve of delta fT_3 for presence LVR

Conclusion. The change of fT_3 levels are closely associated with early LVR in patients with AMI and successful interventional treatment, hence might help to distinguish the patients endangered LVR.