Coronary Artery Diseases and Echocardiography

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Echocardiography Role in CAD

- This is very important tool to assess Cardiac Function to get maximum information in 5 min.
- In critical care this is the only evaluation to estimate overall morbidity and mortality.
- Echocardiography gives outcome in Acute coronary syndrome.
- Complications in CAD, particularly AMI purely evaluated by echo. Like EF, Valvular regurgitations, aneurysm, wall or muscle rupture and pericardial effusion.
- This is ultimate and most important diagnostic tool in cardiology.

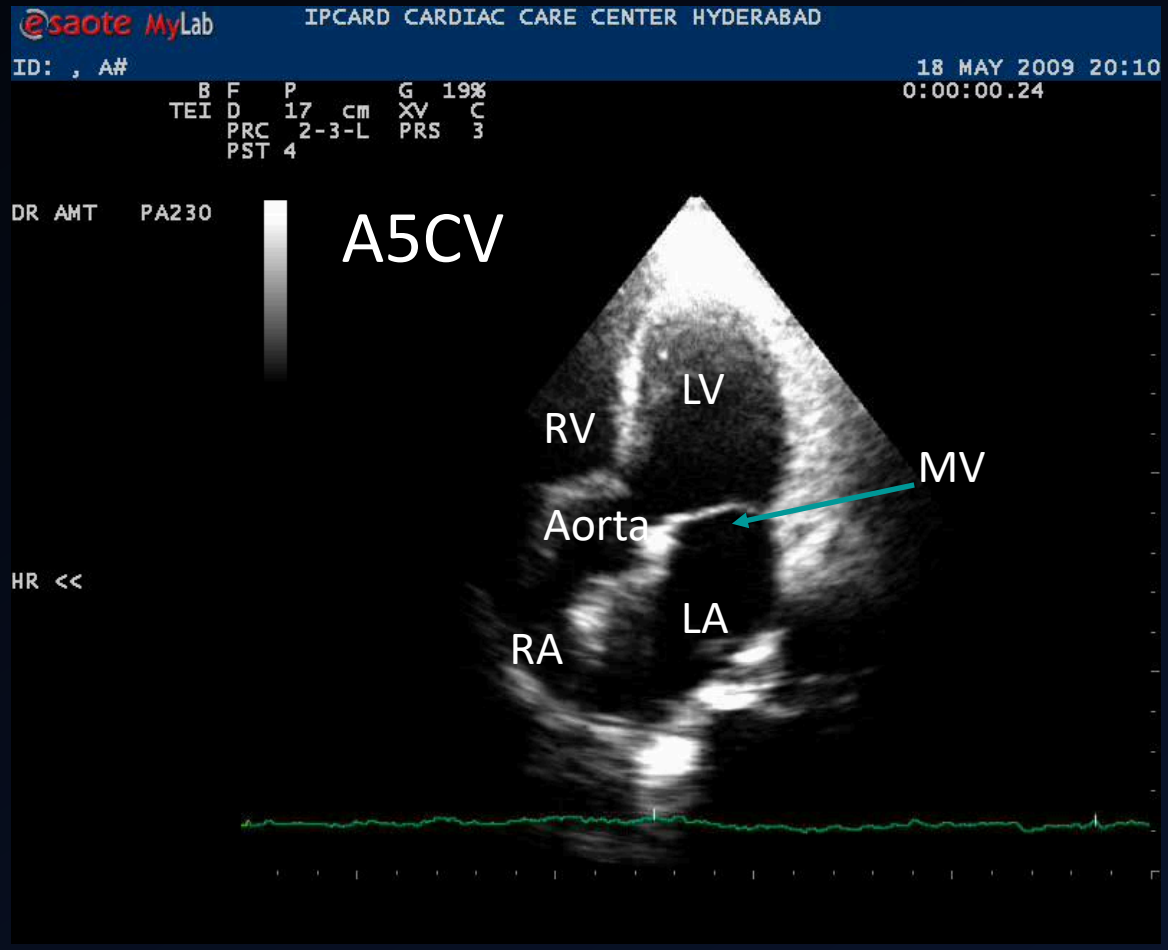
Echo assessment in CAD step by step

- Step 1, B- B mode (For anatomical evaluation)
- Step 2, C- Color mode (shunt and regurgitation)
- Step 3, D- Doppler mode(velocity and gradient)
- Step 4, M- M mode (distance and dimension)

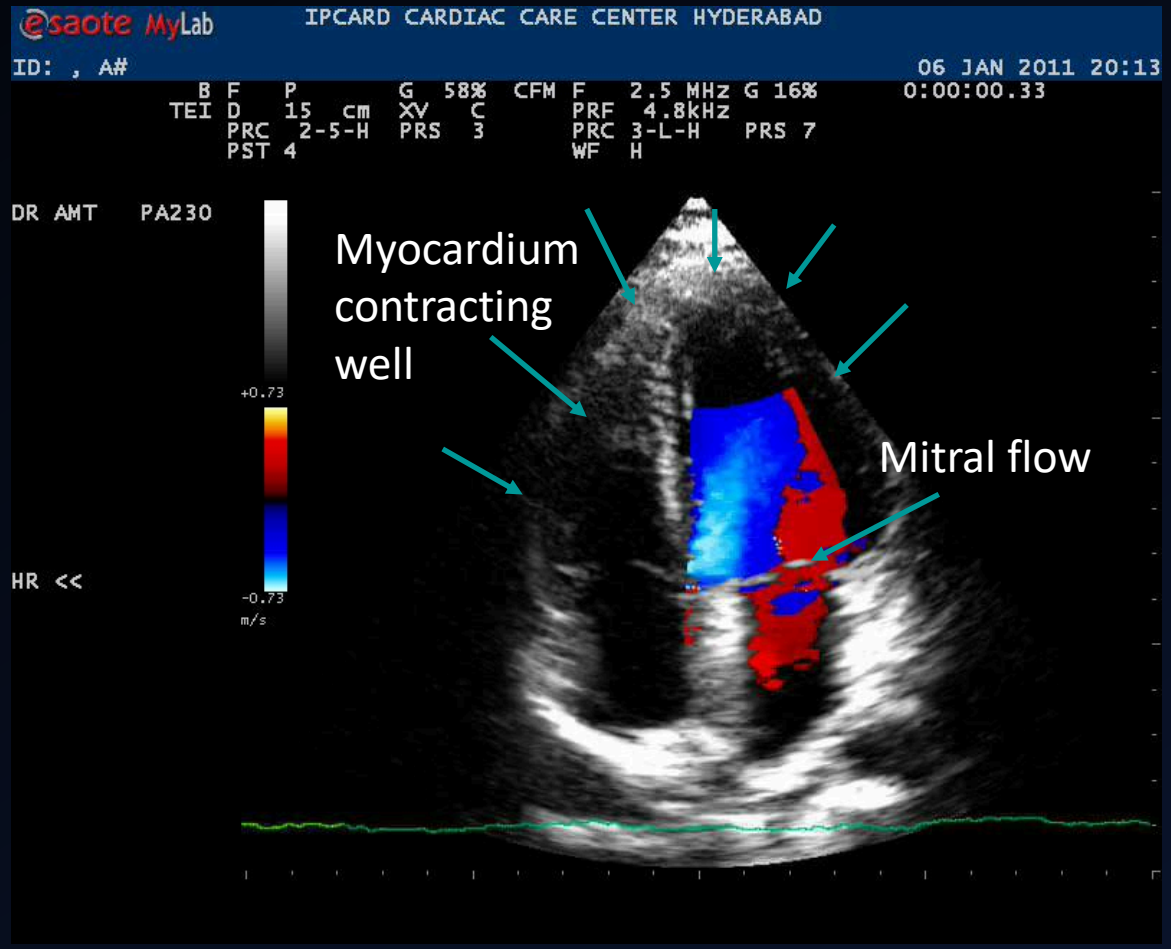
B C D M R

FOLLOW THE ABOVE STEPS ALWAYS ON DOING ECHOCARDIOGRAPHY

Normal Echocardiogram-start in B mode

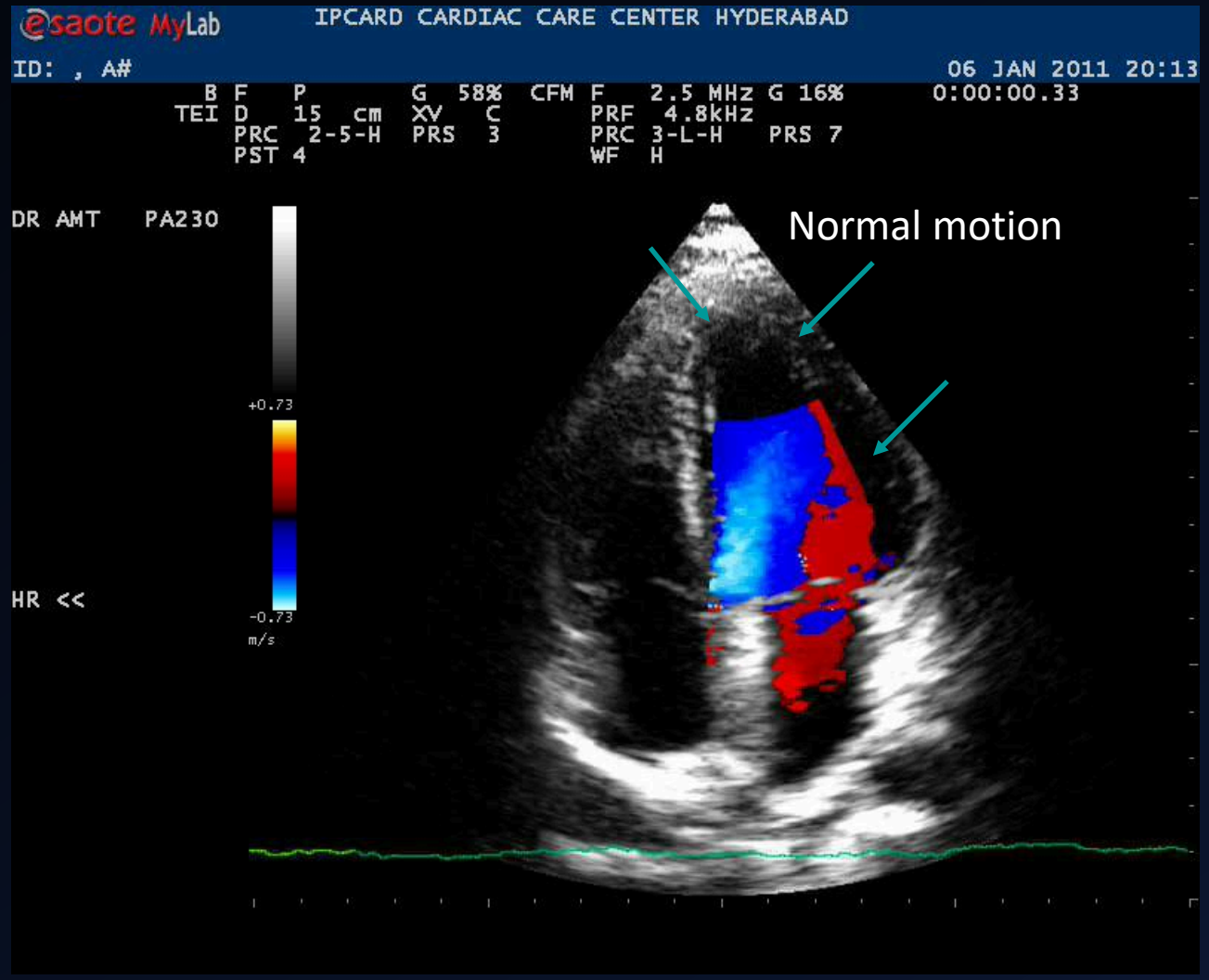


Step-2 Color Flow Mode



SINUS TACHYCARDIA

Ventricular rate- 150/min in Inappropriate sinus tachycardia



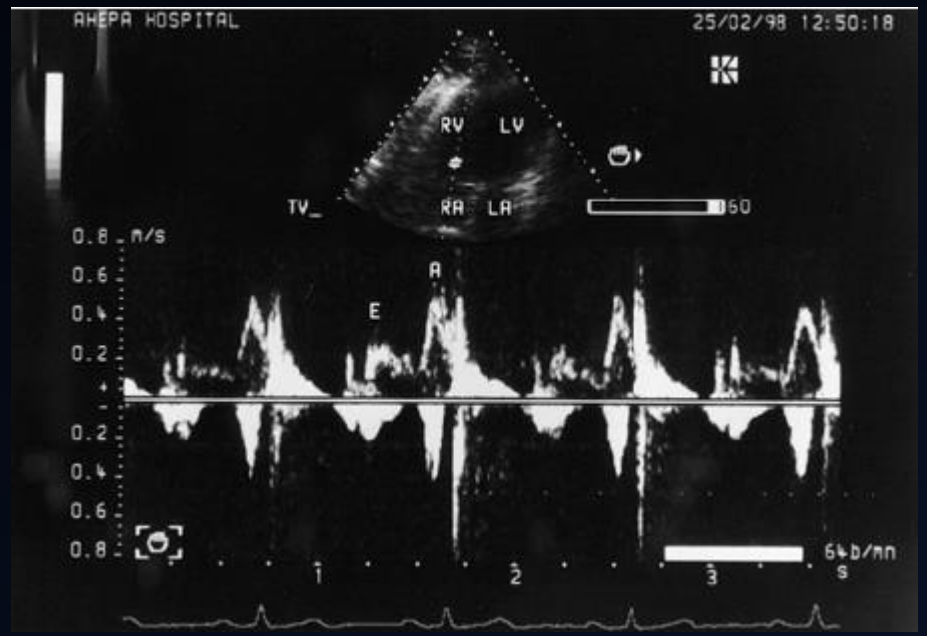
Step-3, Doppler Mode

MITRAL DOPPLER -PW

AORTIC DOPPLER-PW

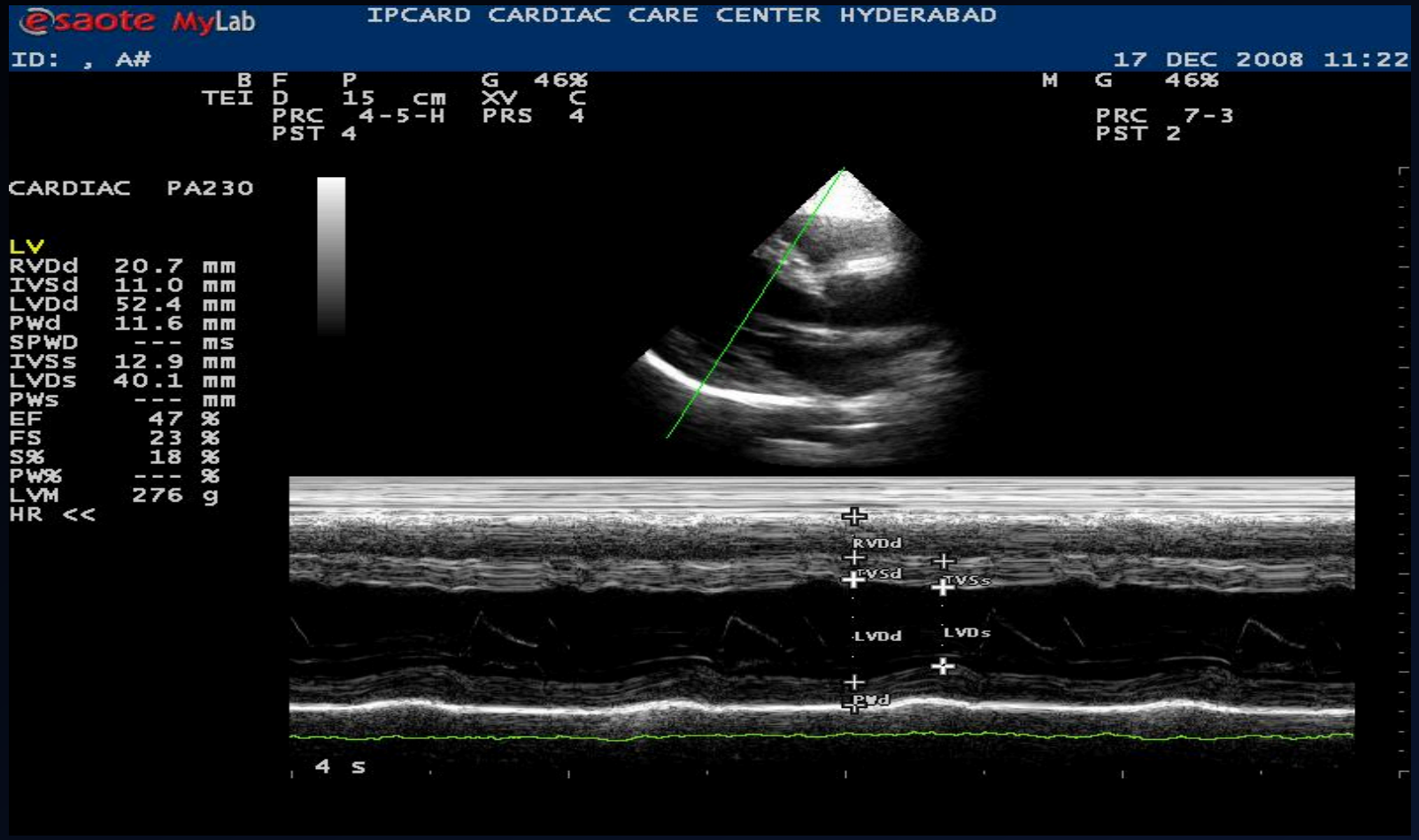
Tricuspid and Pulmonic Doppler

TRICUSPID DOPPLER-PW



PULMONIC DOPPLER-PW

Step-4, M Mode means Measurement



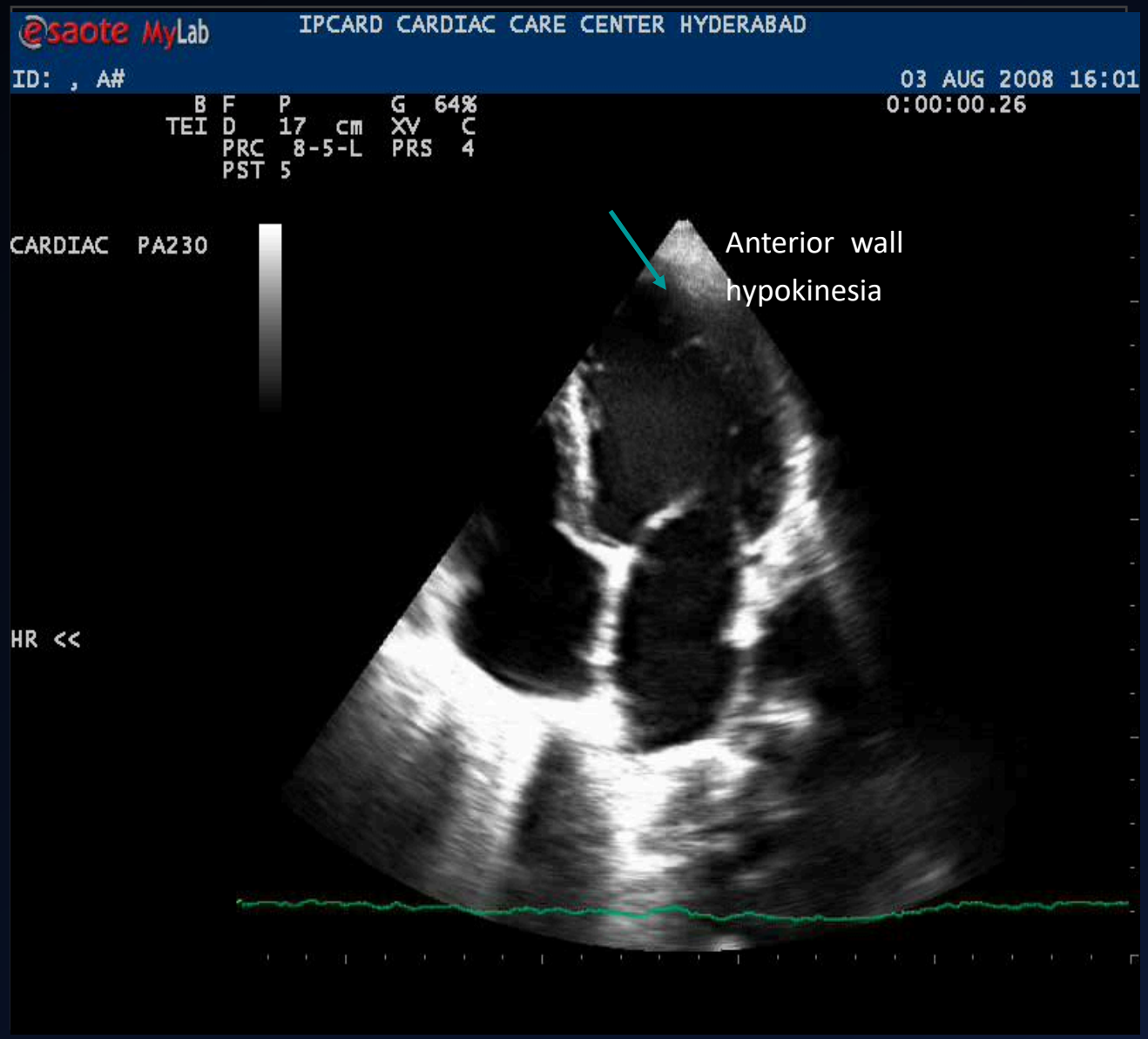
Step-5, Reporting

- General anatomy of chambers, valves, septum, arteries and veins
- Valvular lesions, shunts and abnormal confluence by color flow.
- Velocity of the vessels, valves and gradients of the stenosis.
- Dimensions of the anatomy
- Take

ACUTE AWMI

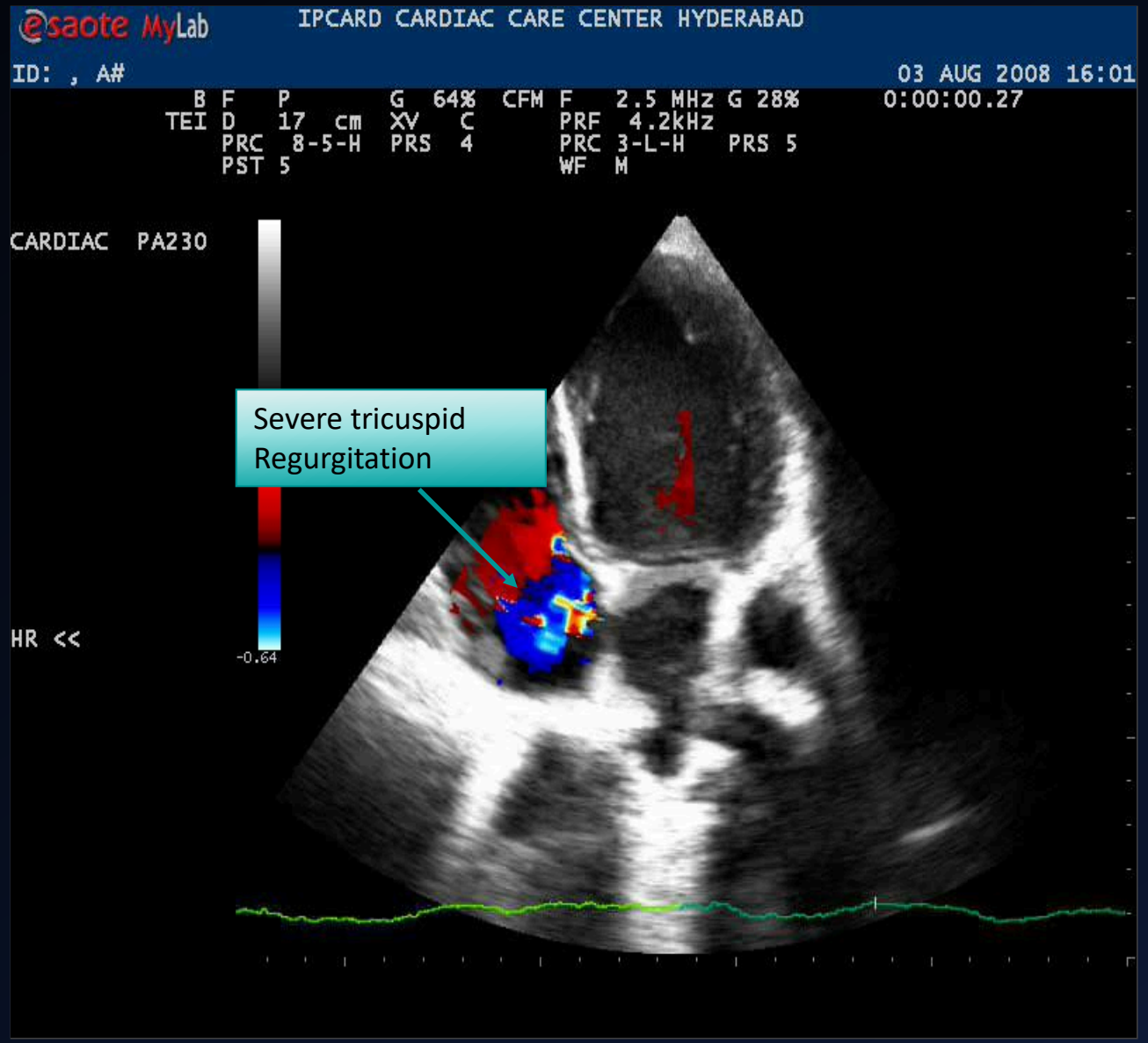
3 hours old AWMI not thrombolised

Apical Four chamber view



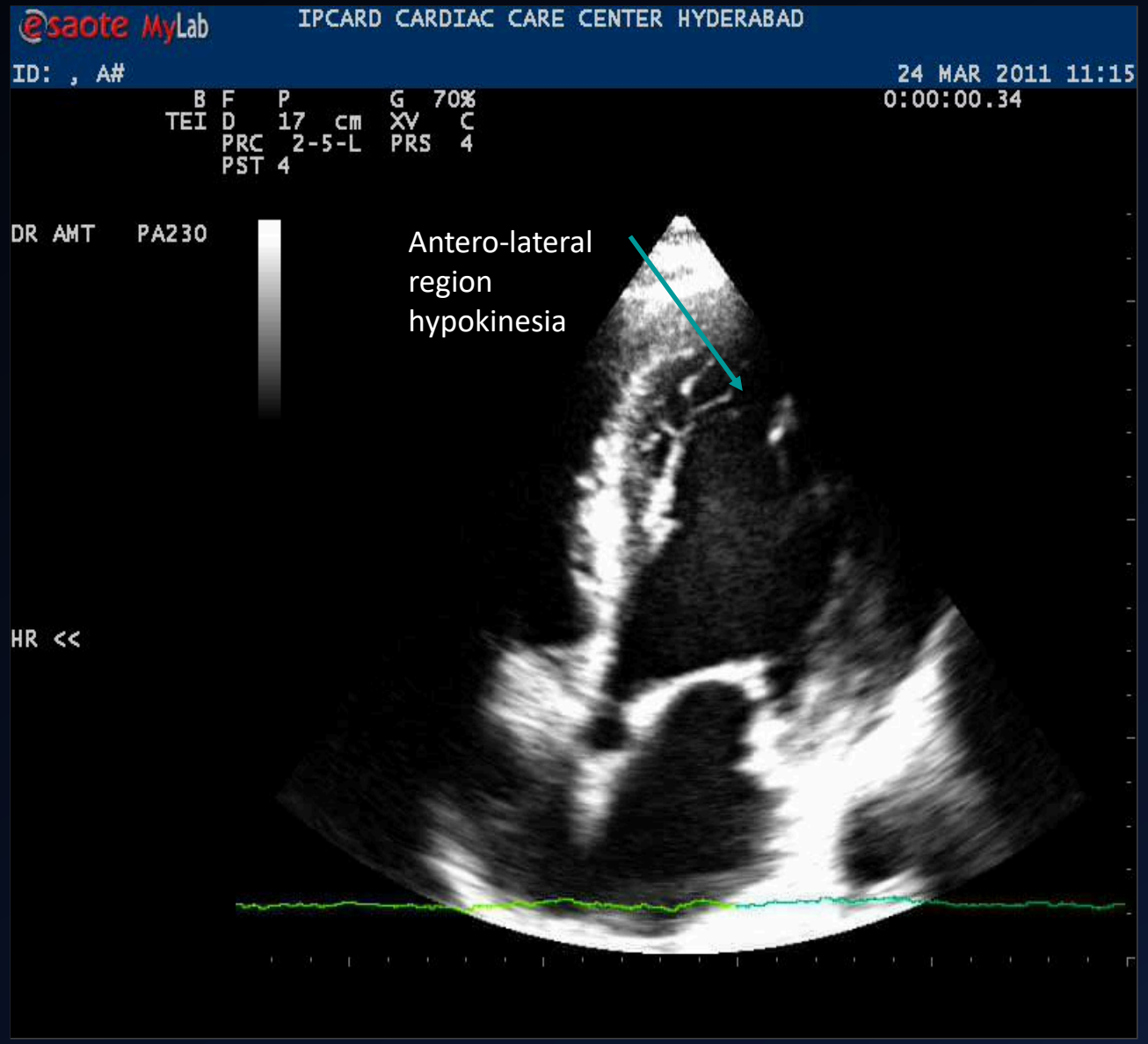
A4CV B-MODE, COLOR

Moderate to Severe Tricuspid Regurgitation but no mitral regurgitation in Acute AWMI



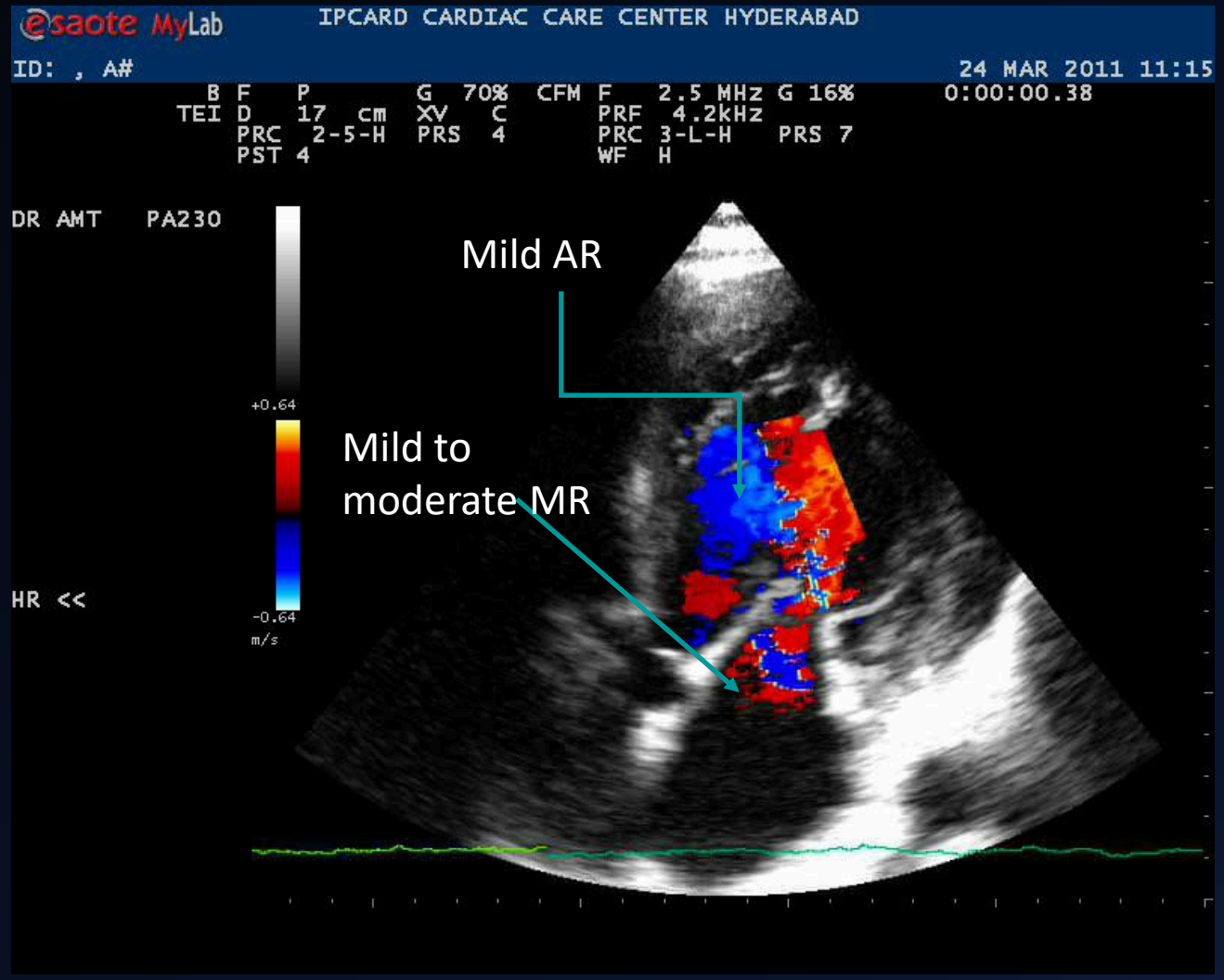
A4CV, B MODE HYPOKINESIA IN ANTERO-LATERAL REGION

Not thrombolised , window period is 6 hrs



A4CV, B-MODE, COLOR MODE

Mild to moderate mitral regurgitation and mild Aortic Regurgitation

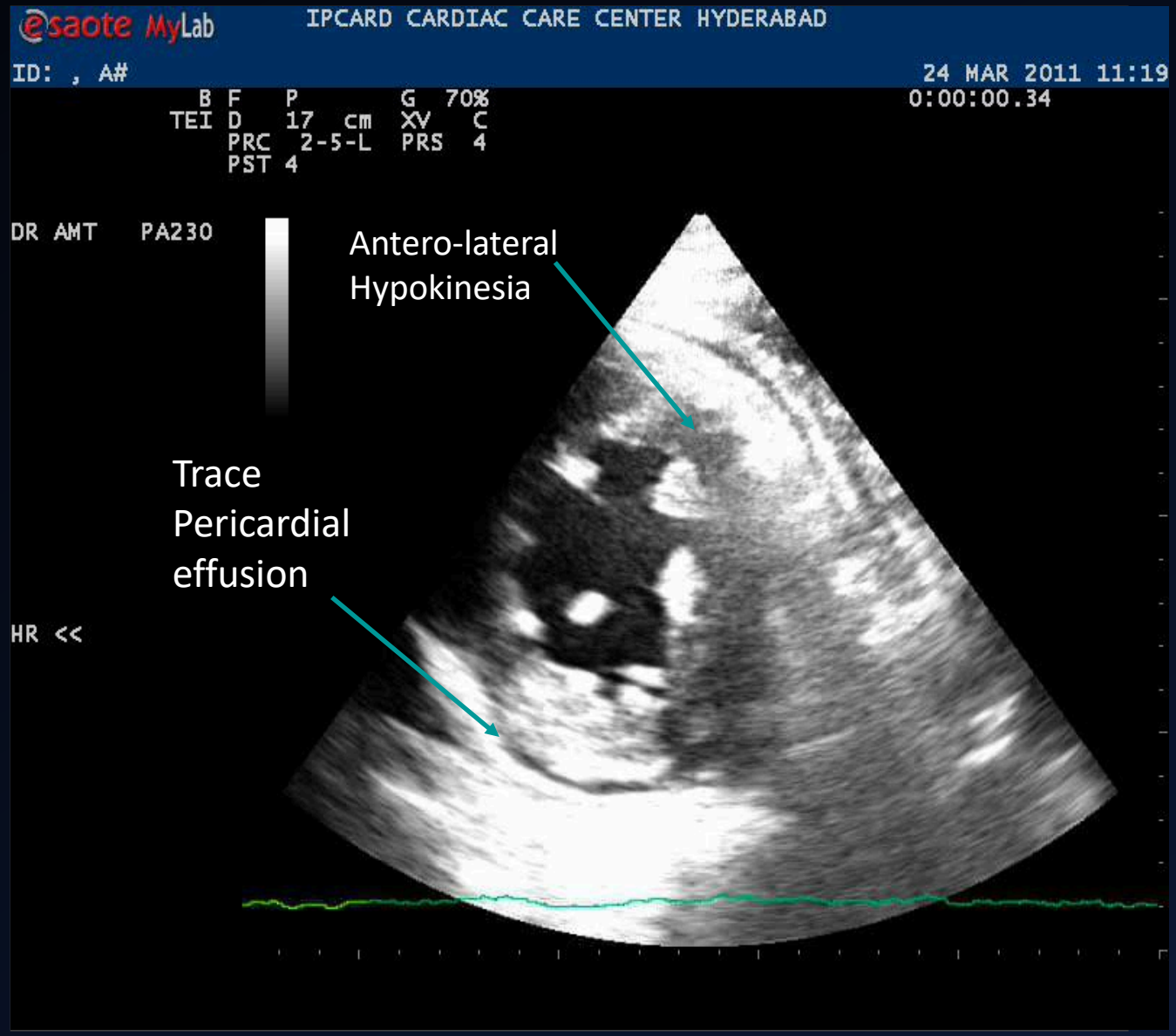


PARA STERNAL SHORT AXIS VIEW IN LV VIEW B-MODE

Hypokinesia in Antero-Lateral region

Moderate LV Dysfunction.

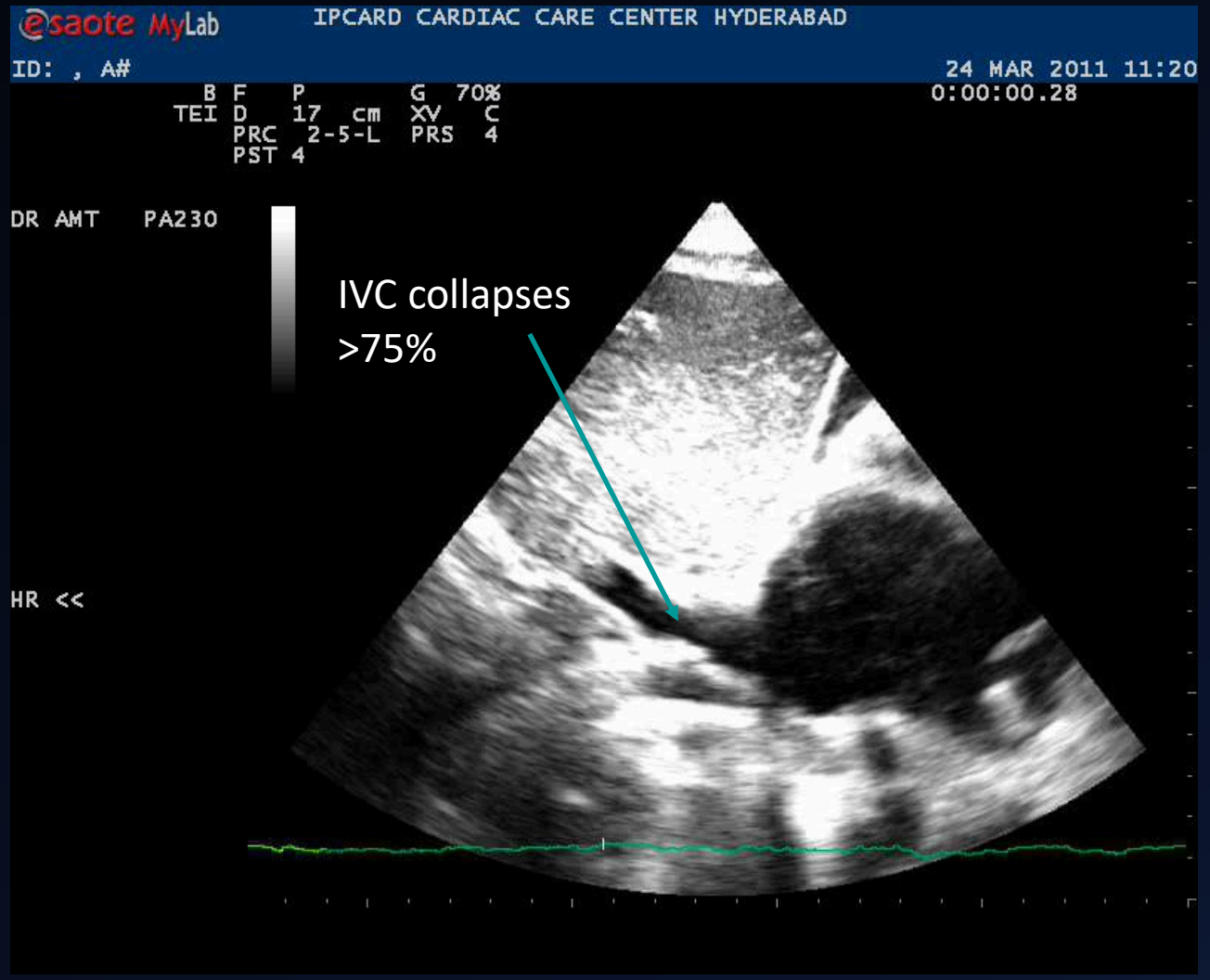
EF-45% and Trace Pericardial Effusion



SUBCOSTAL SHORT AXIS VIEW IN B- MODE

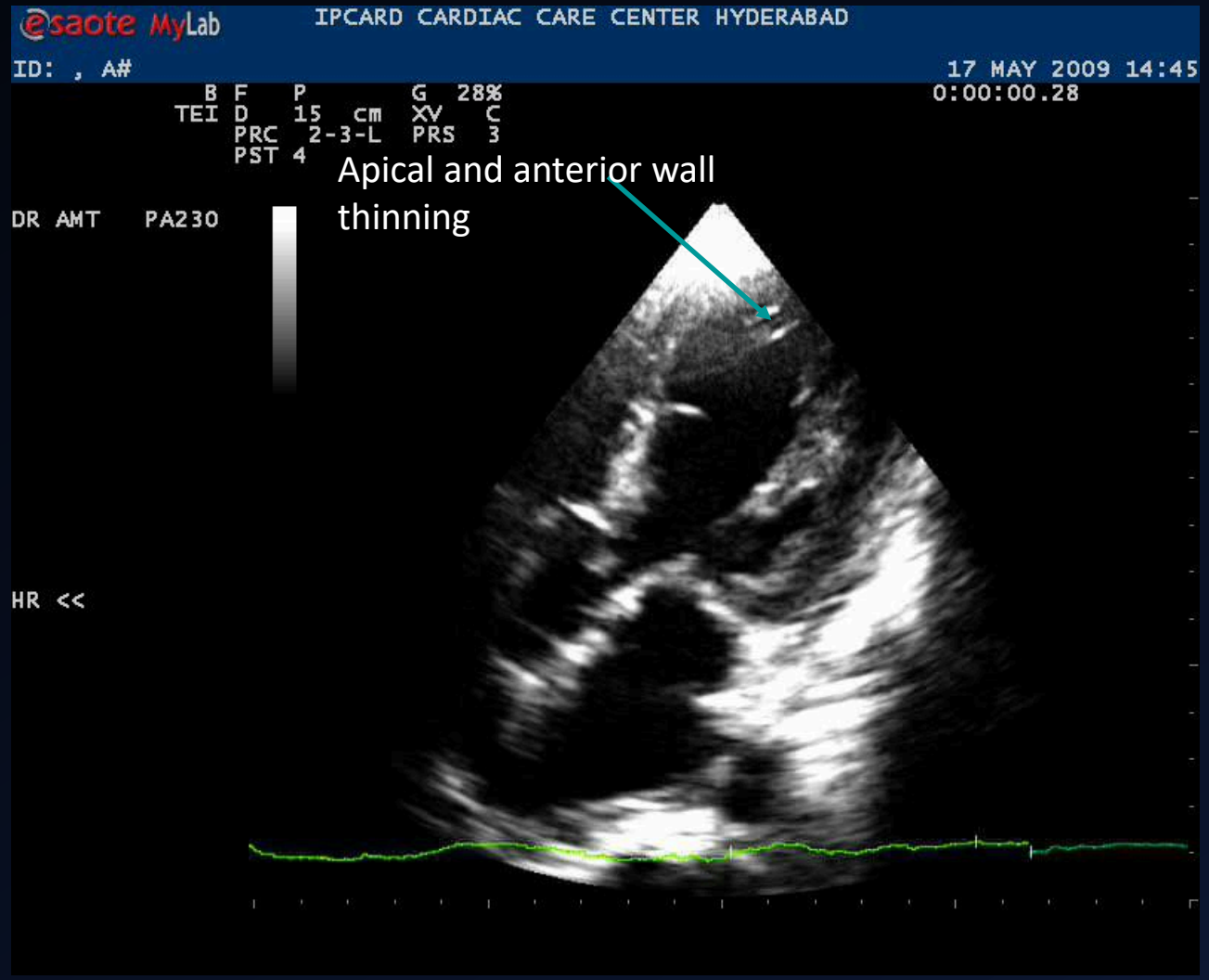
IVS collapses more than 75%.

IVC pressure=5 to 10 mmHg



APICAL SEPTUM AND ANTERIOR WALL THINNING

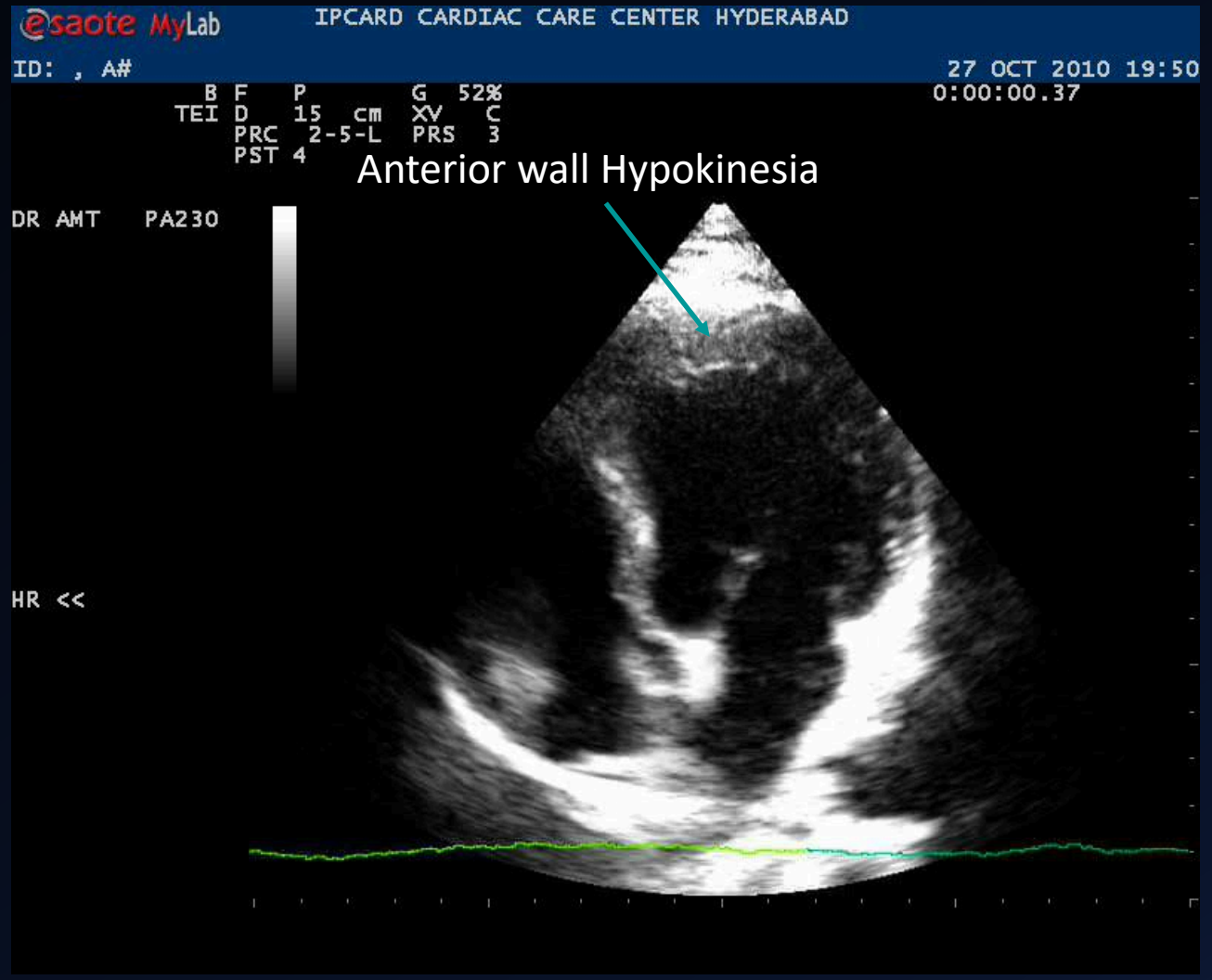
15 days old myocardial infarction, thrombolised. Sent for reevaluation and management.



AWMI A4CV, B-MODE

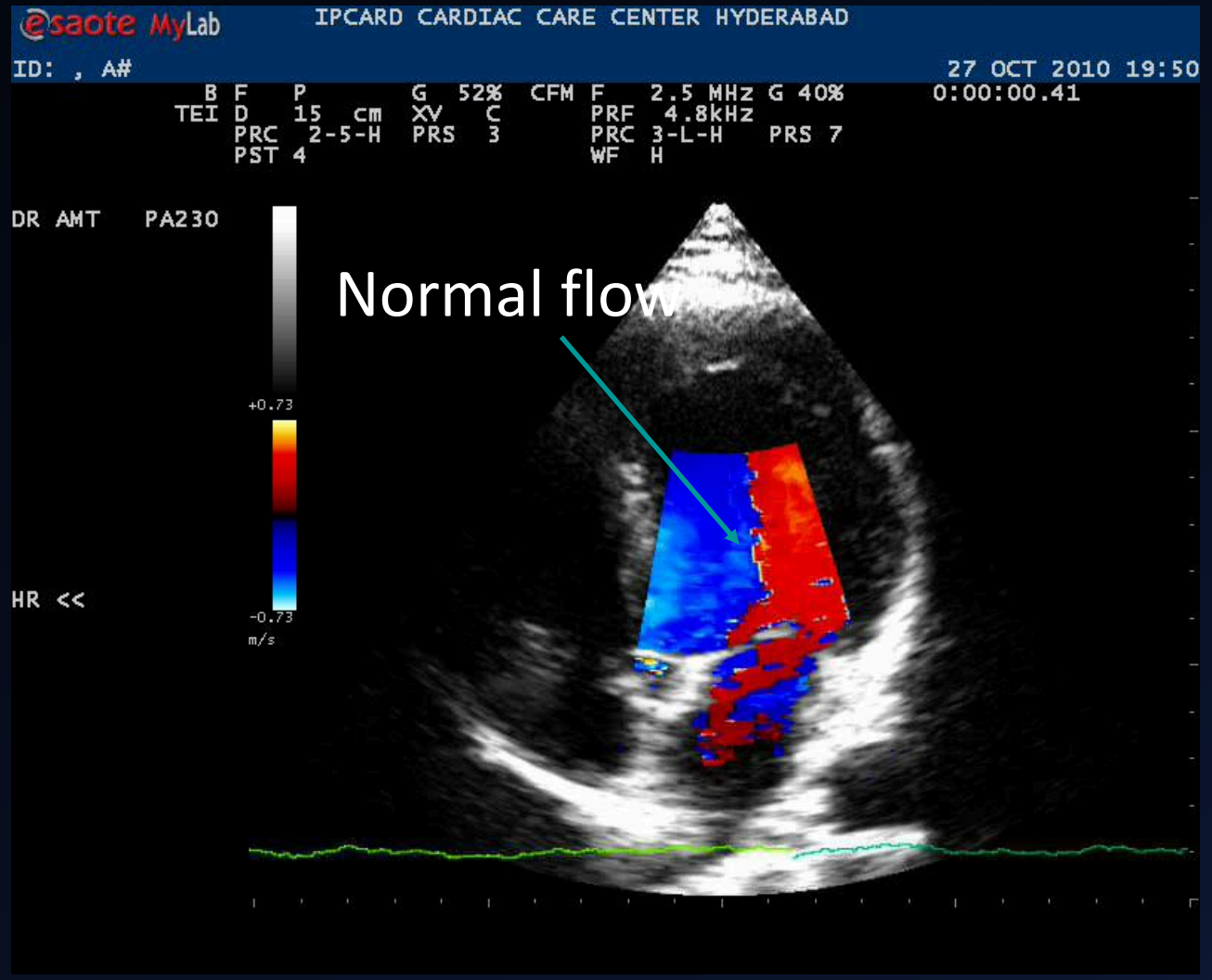
Anterior wall Myocardial infarction

One hour old.



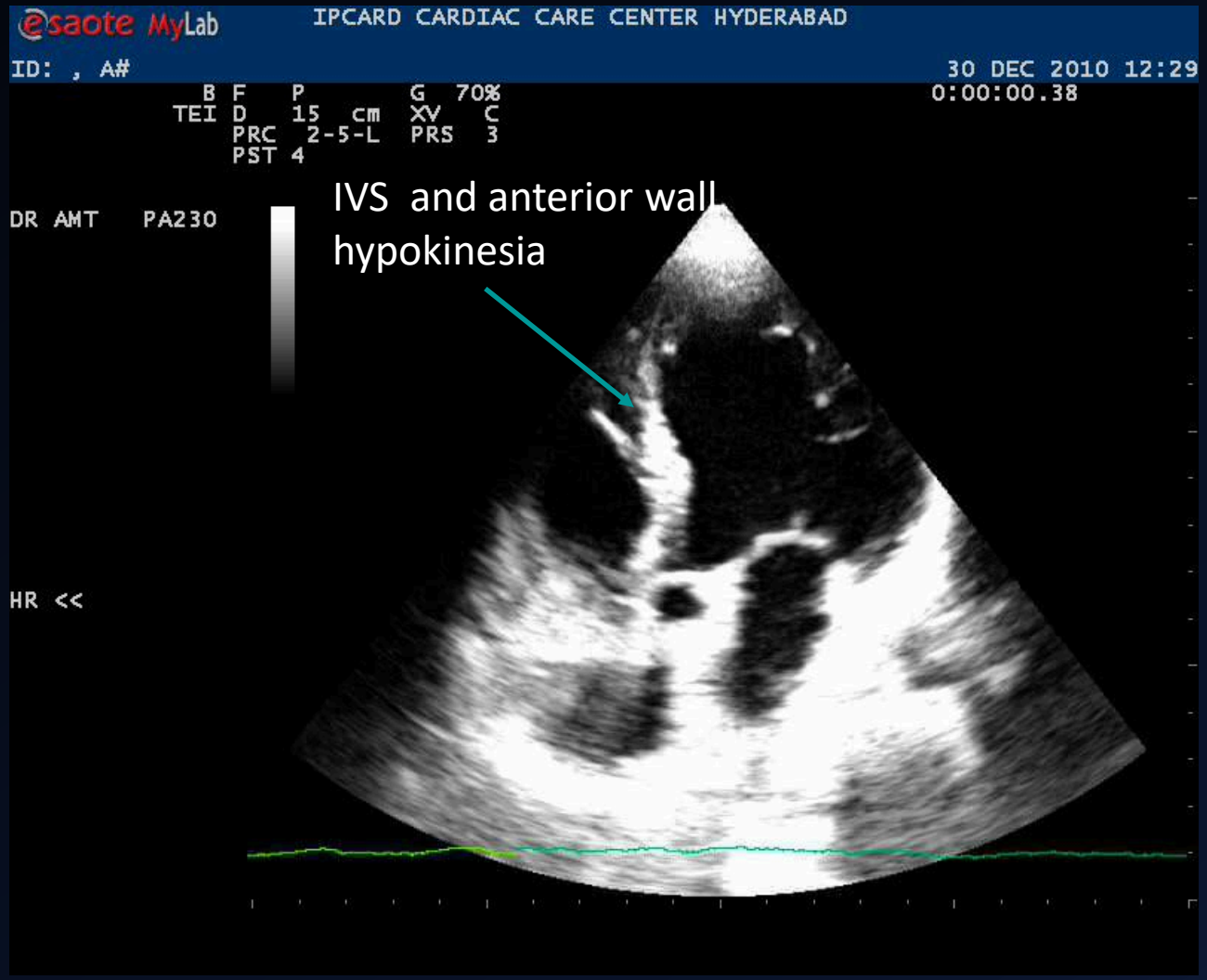
COLOR FLOW MODE

There is no Valvular regurgitation because one hour of MI



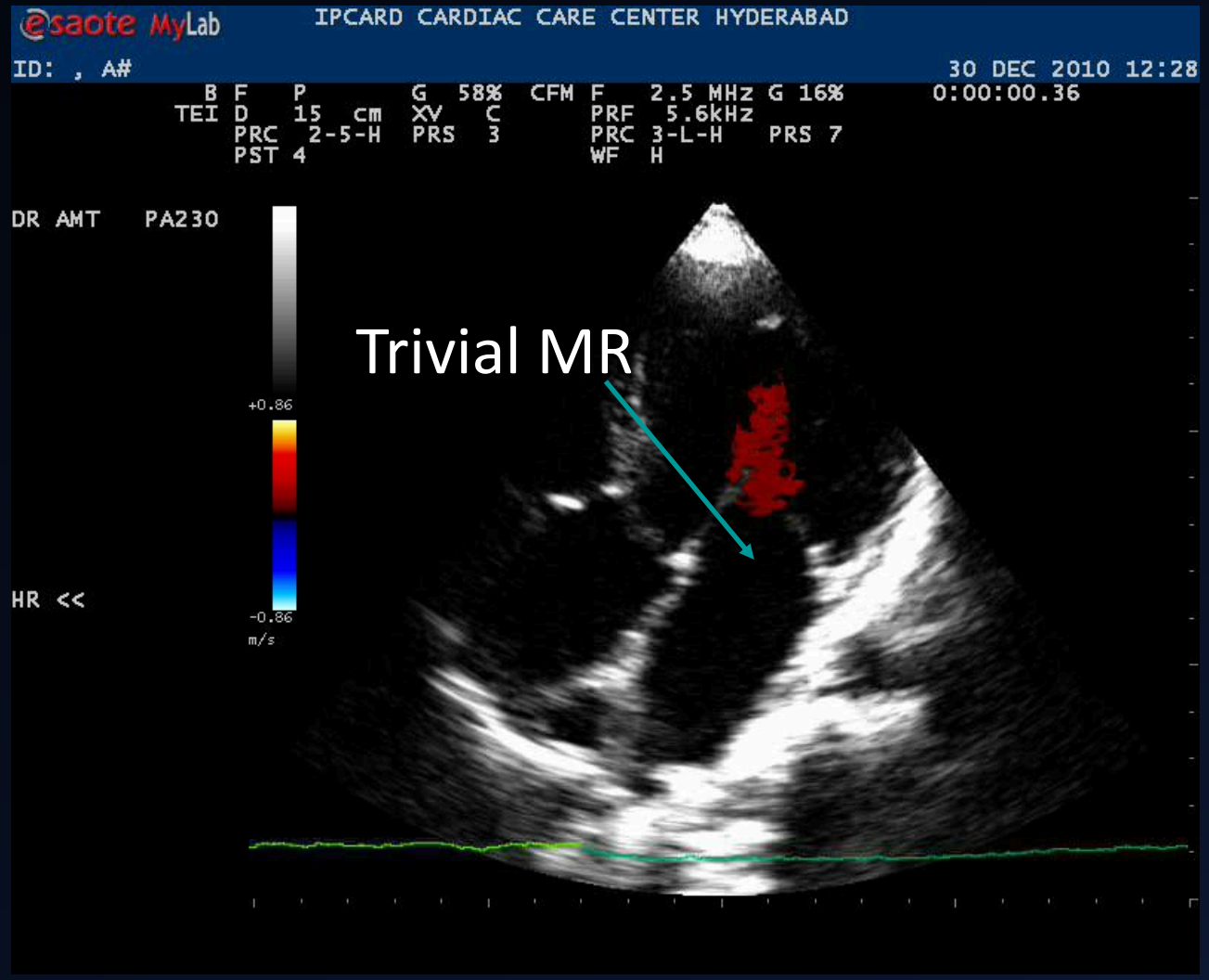
A4CV, ANTERO-SEPTAL MYOCARDIAL INFARCTION 36HOURS

complete Septal hypokinesia and anterior wall involvement



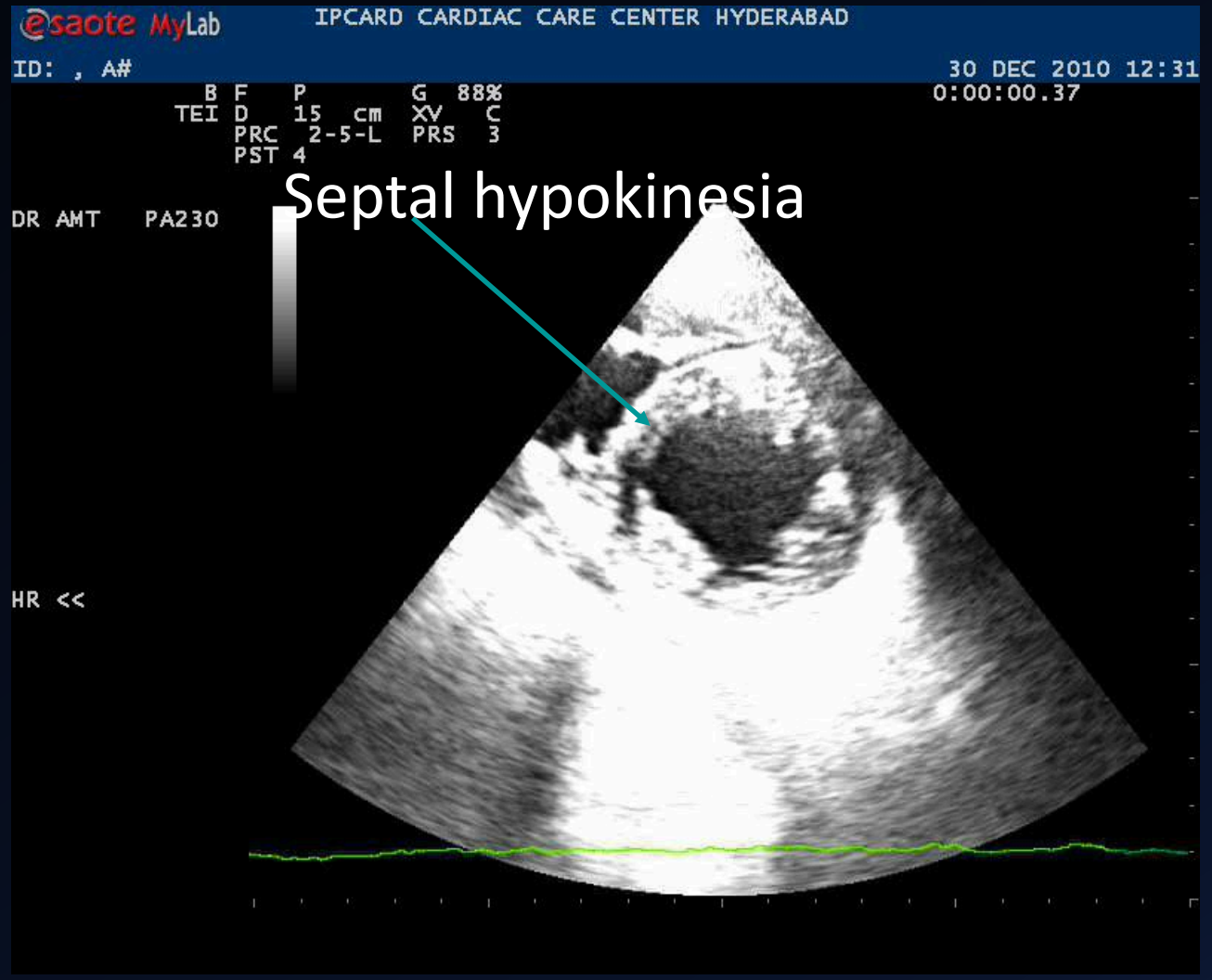
COLOR FLOW MODE-

There is trivial mitral regurgitation



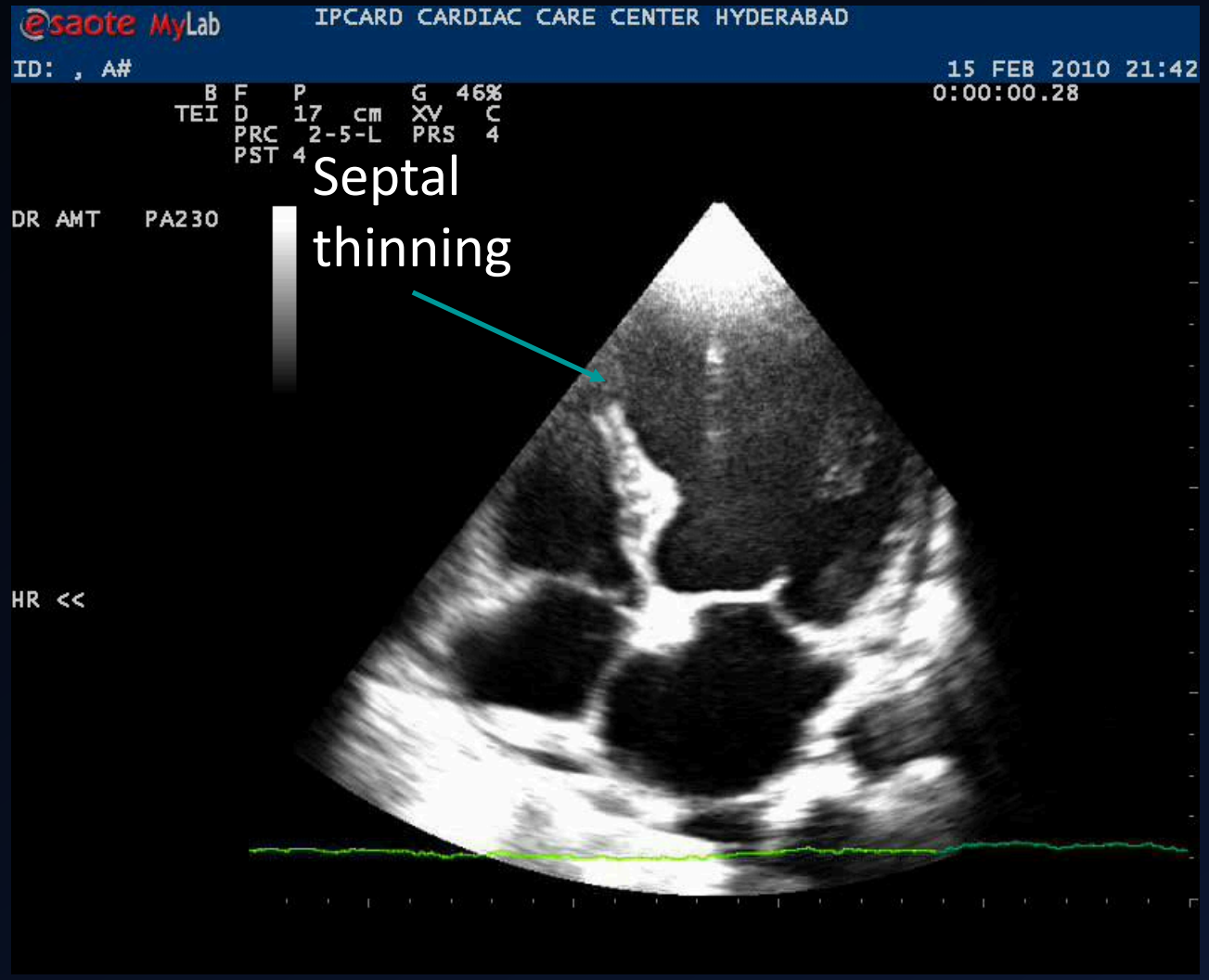
PARASTERNAL SHORT AXIS VIEW

Complete septal hypokinesia



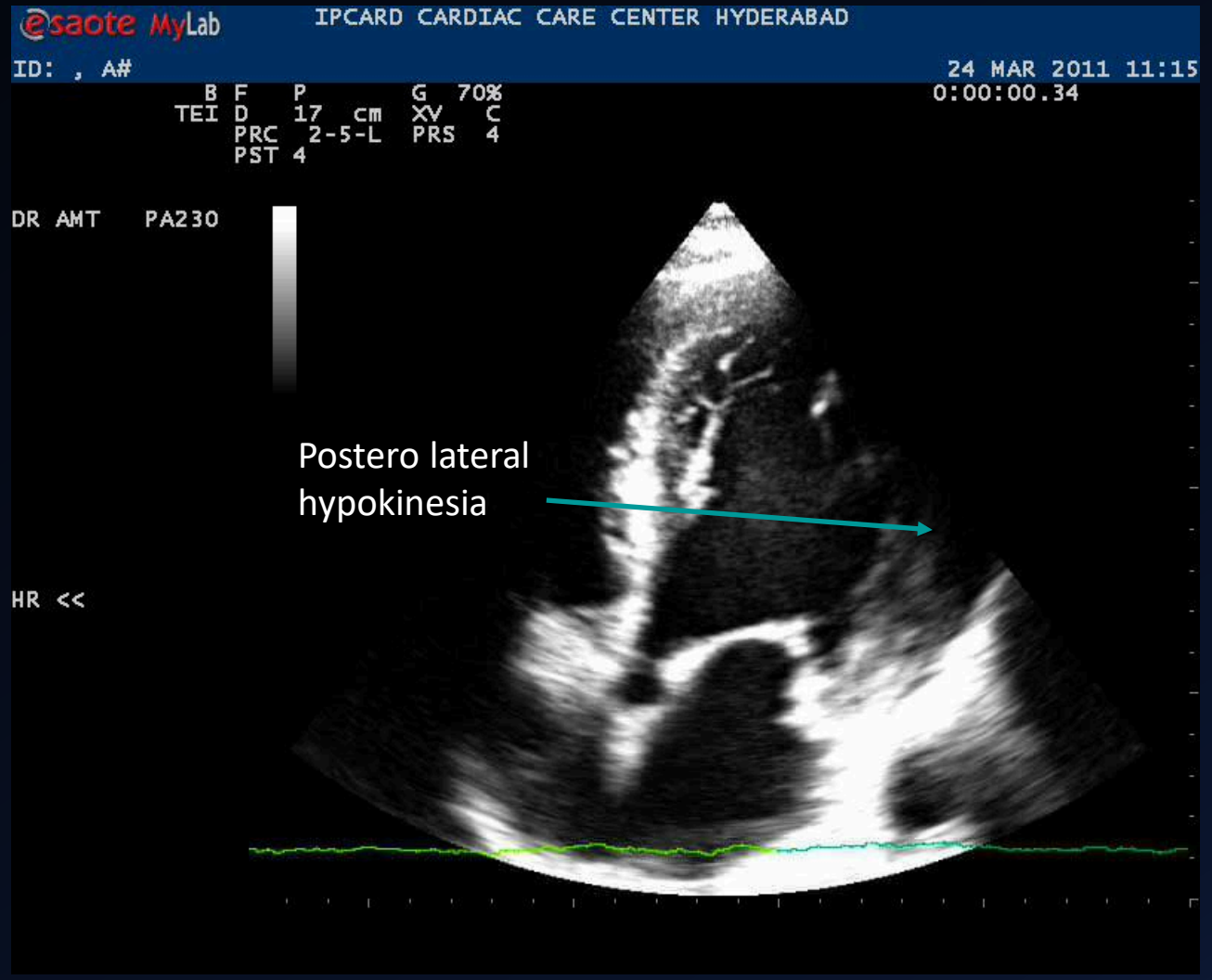
A4CV, SEPTAL THINNING

Septal thinning in mid and apical septal region



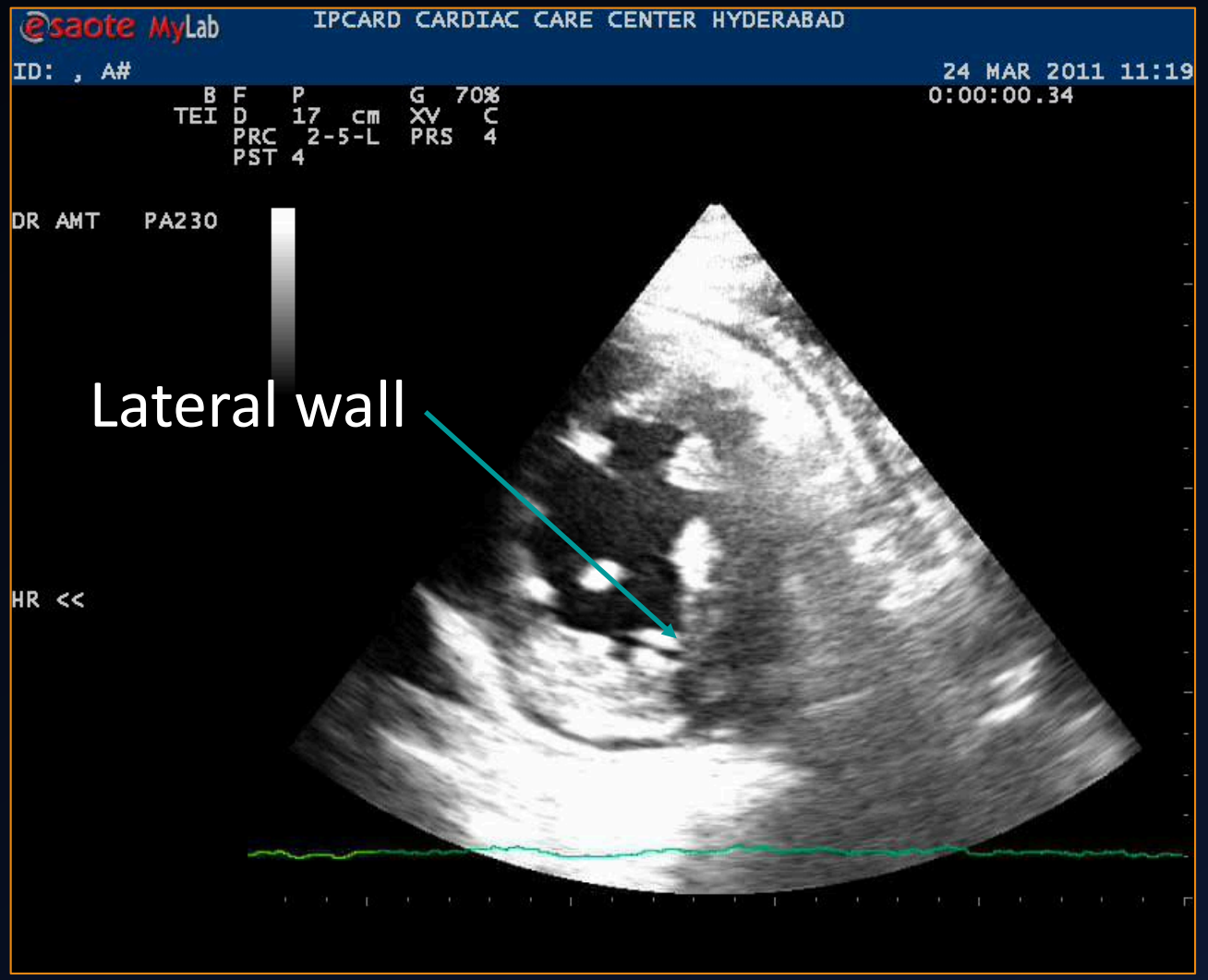
POSTERO-LATERAL MYOCARDIAL ISCHEMIA

Non ST elevation myocardial infarction in Postero-lateral region



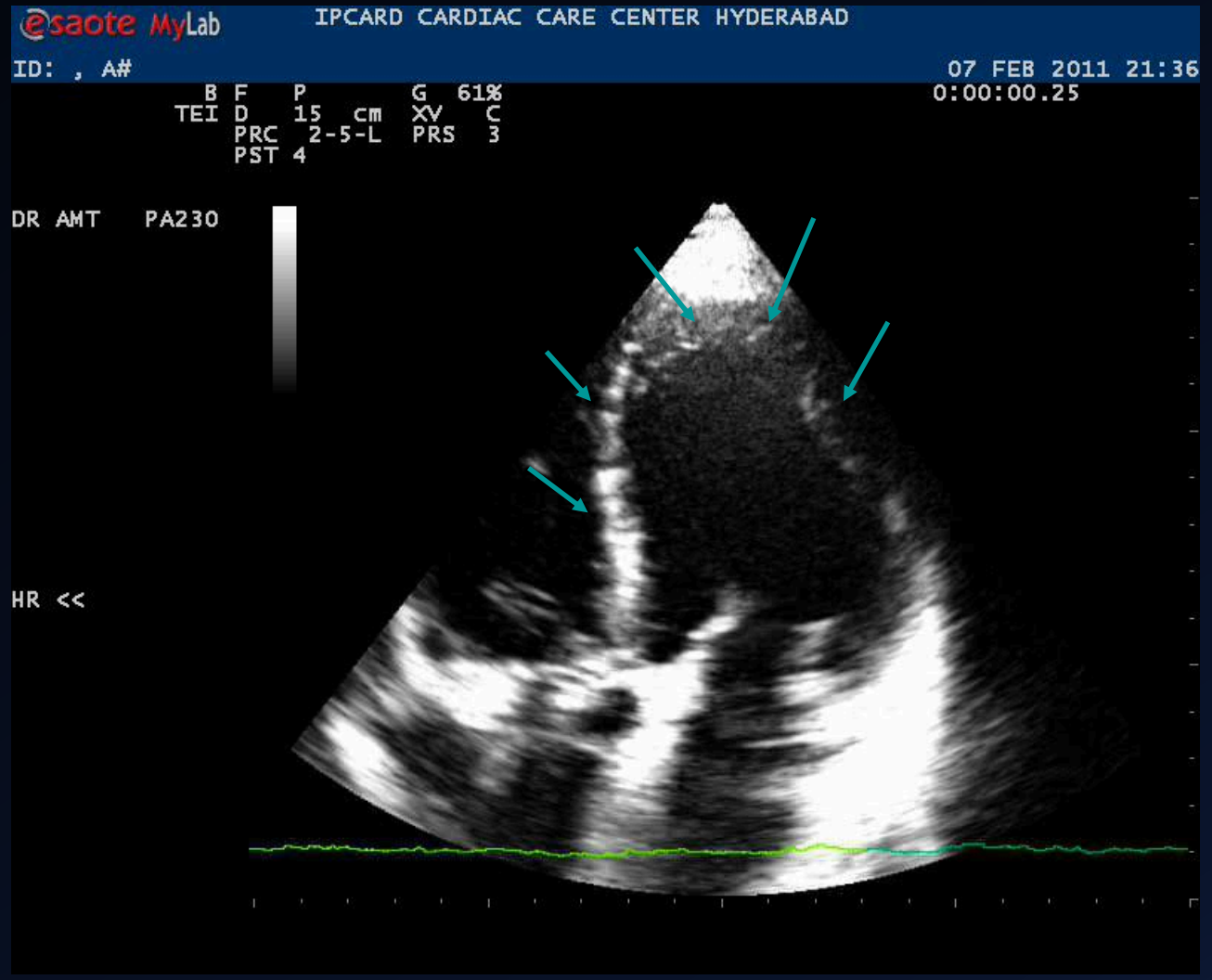
PSAX- LV VIEW

Infero Lateral, Postero Lateral hypokinesia



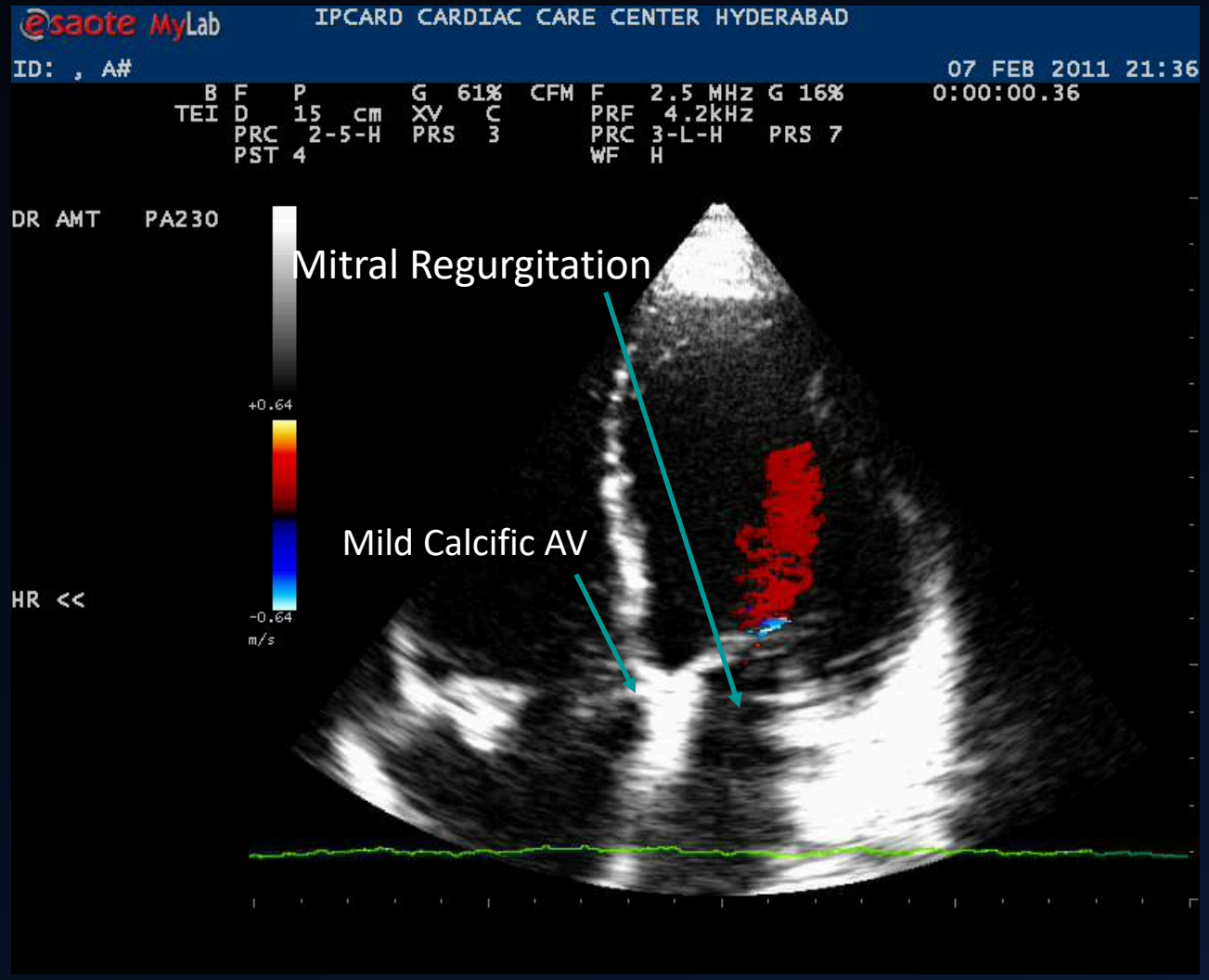
A4CV- B MODE

Hypokinesia of IVS, anterior and Lateral wall



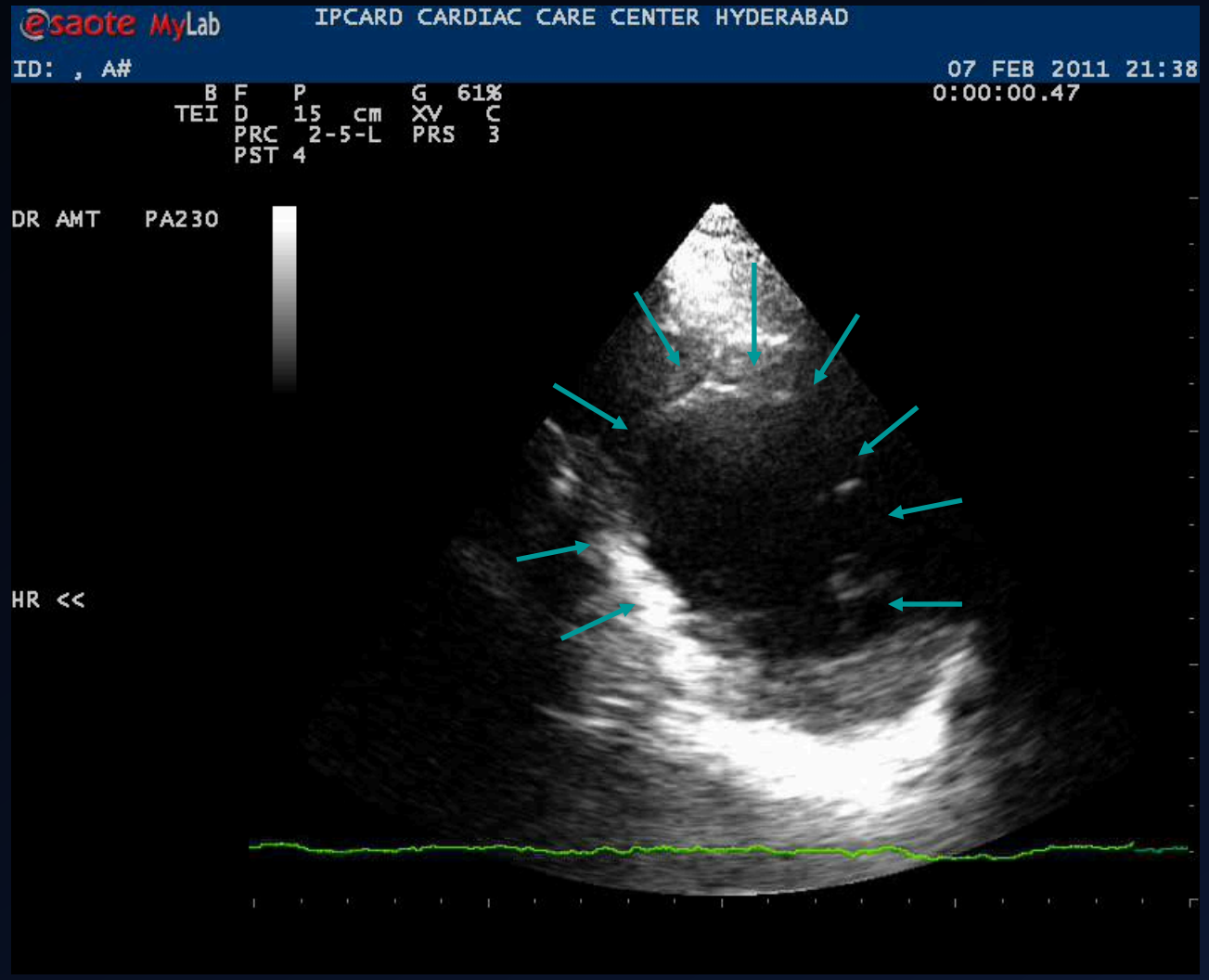
A4CV- COLOR MODE

Mild to moderate Mitral Regurgitation and mild calcific aortic stenosis



B-MODE PSAX

Global hypokinesia and Severe LV dysfunction

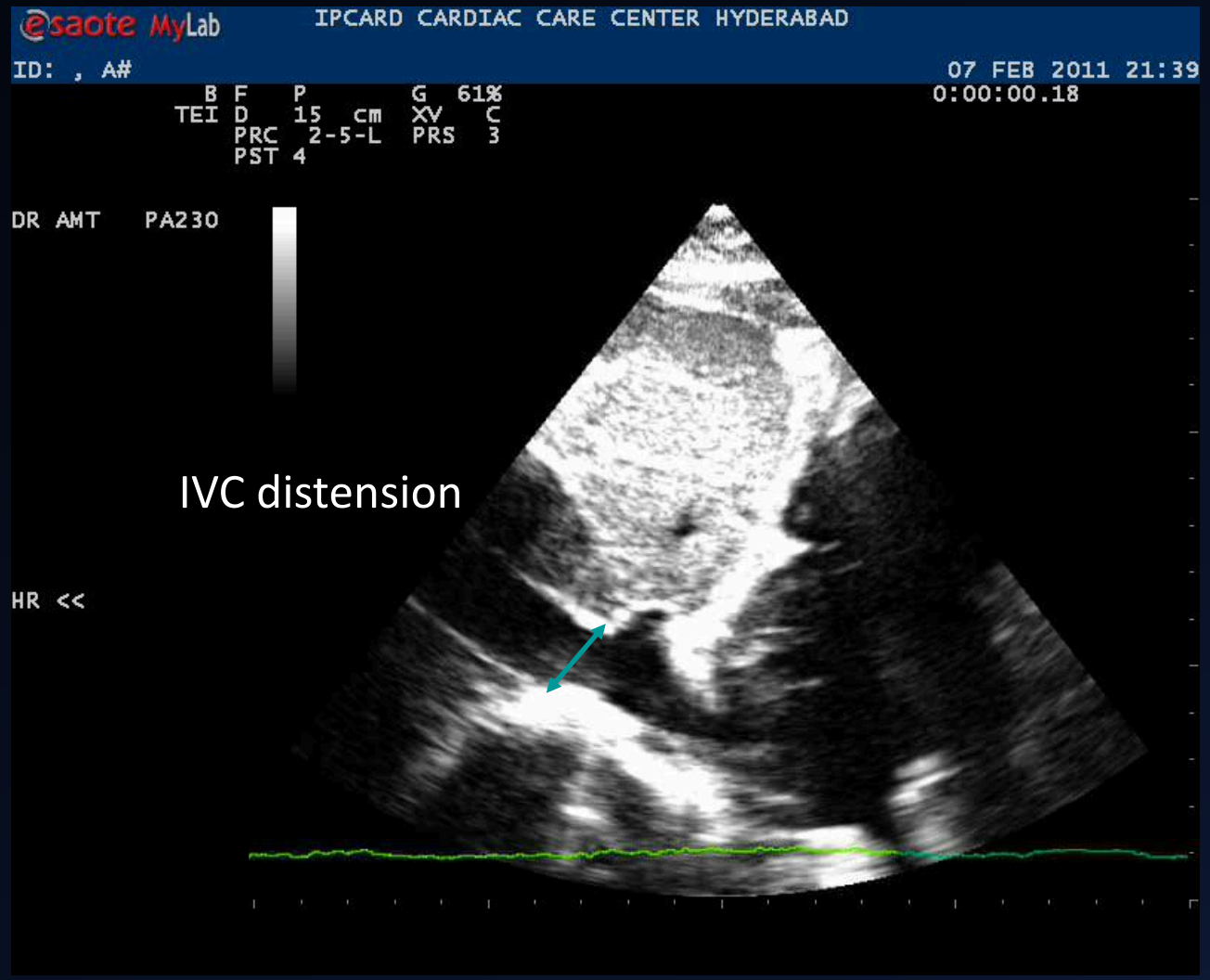


SUBCOSTAL VIEW IVC

Less than 25% IVC collapse

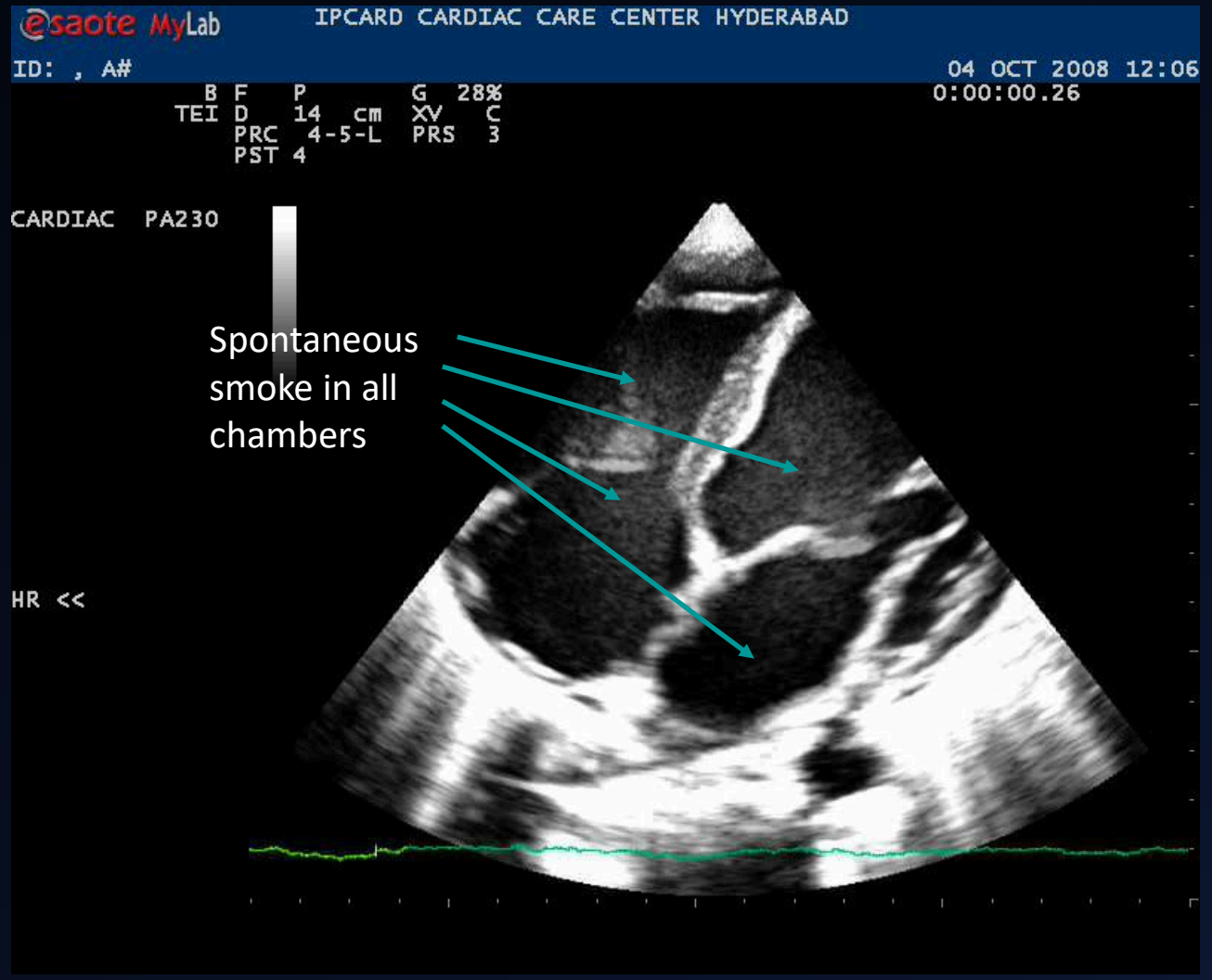
IVC pressure 15mmHg

In CHF with severe LV dysfunction



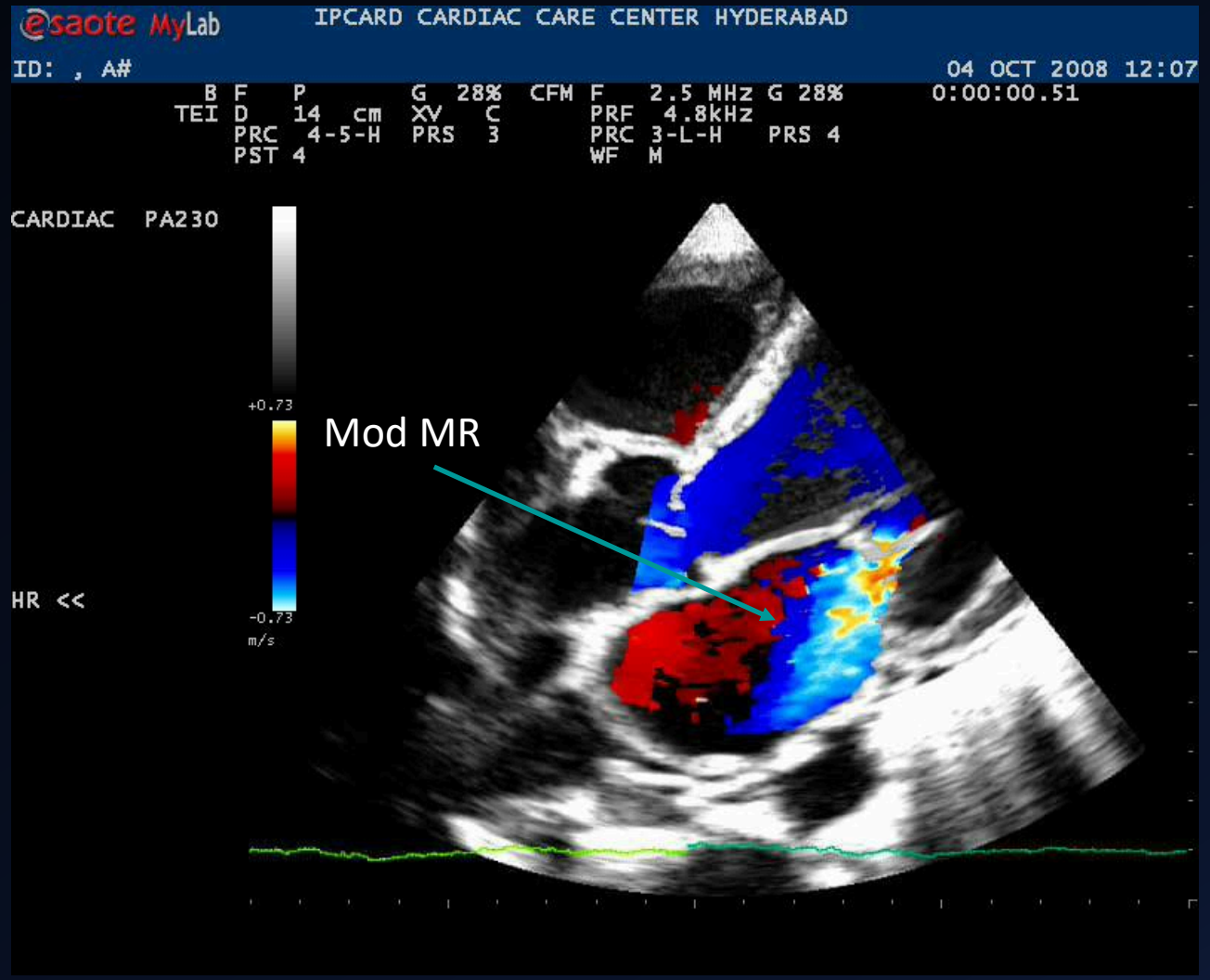
A4CV- CHF

Global smoke in all chambers in CHF



A5CV- COLOR

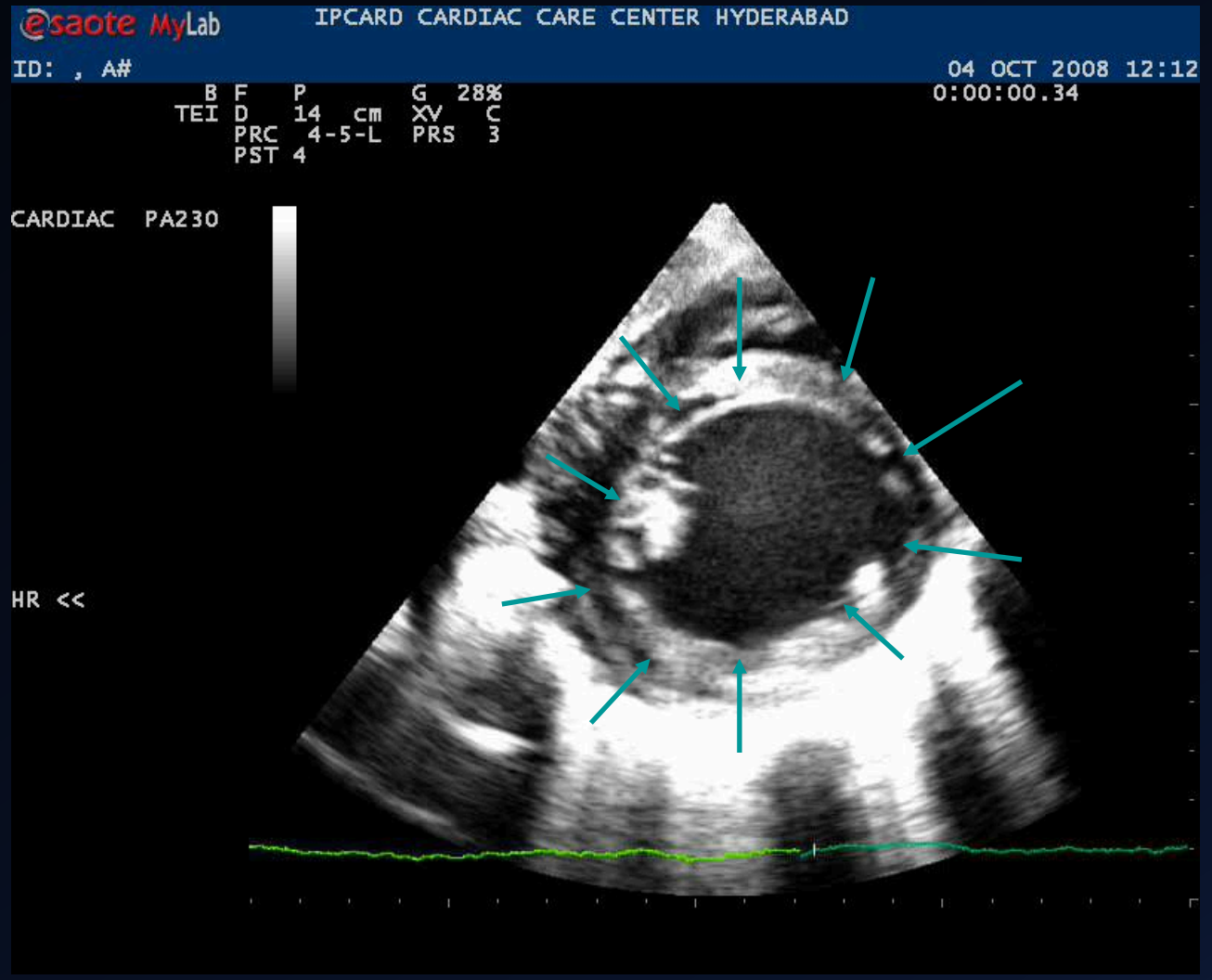
Moderate Mitral regurgitation



PSAX VIEW- B MODE

Global Hypokinesia

Severe LV dysfunction

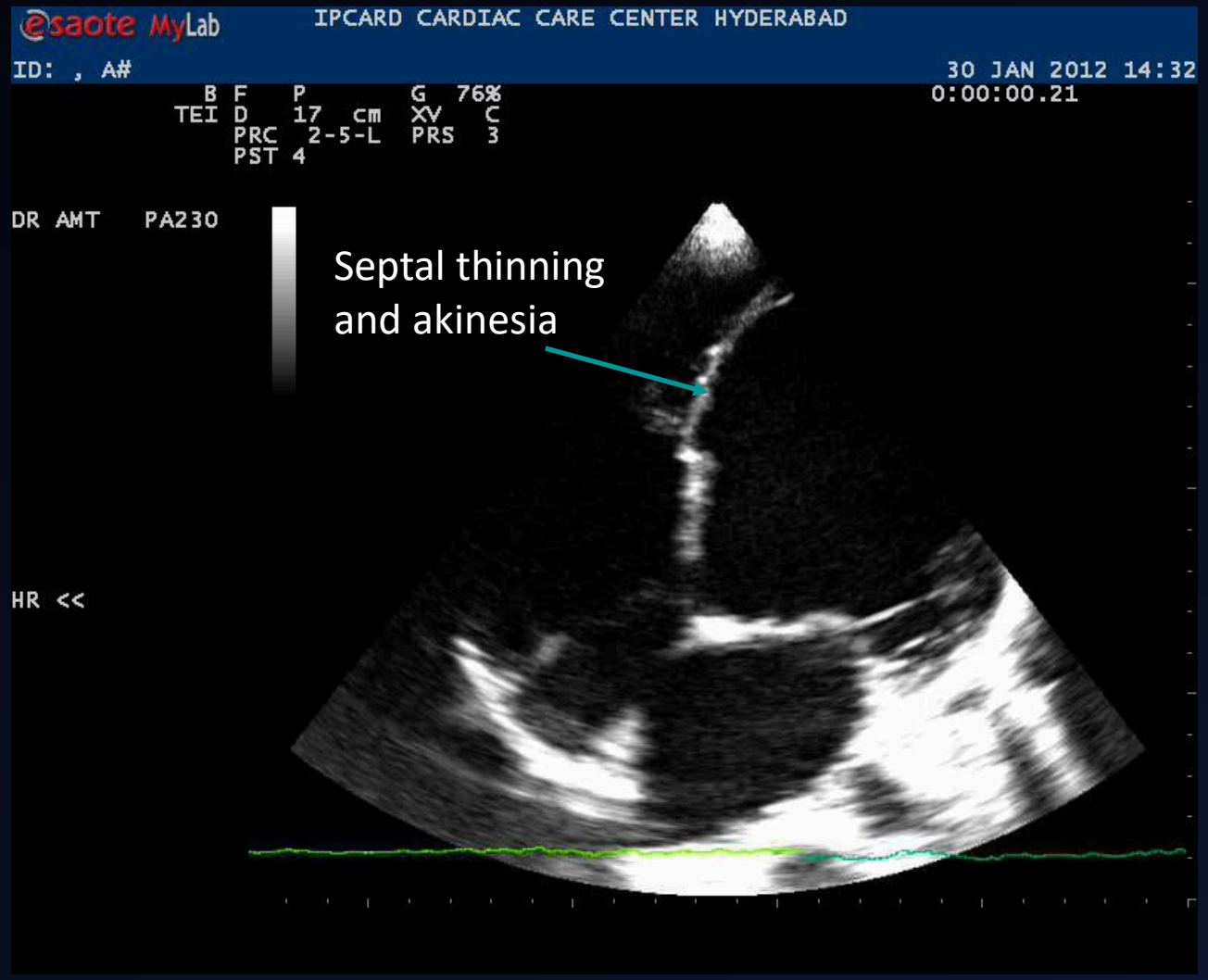


A4CV- B MODE

Interventricular Septal Akinesia and thinning

Severe LV dysfunction

Old Extensive AWMI



PSAX- B MODE

Septal thinning and akinesia

Severe LV dysfunction