

# Mechanisms of Left Ventricular Thrombus Formation in Heart Failure with Reduced Ejection Fraction (HFrEF): Insights from 2-D Speckle Tracking Echocardiography (2D-STE)

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## BACKGROUND

HFrEF increases risk for LV thrombus formation

## OBJECTIVE

To determine the role of 2D-STE associated with LV thrombus

## METHODS

- Retrospectively identified patients with LVEF ≤ 35%
  - LV thrombus (n=12)
  - No LV thrombus (n=36), matched (demographics and LVEF)
- Longitudinal strain: global and regional (18-segment model)

## RESULTS

71% males of average age 62.7 ± 15.0 year

Table 1. Echocardiography and strain results. *p* < 0.05 are in bold.

		LV Thrombus	Control
LV ejection fraction (%)		22.7 ± 6.5	25.6 ± 6.8
LV end diastolic diameter (cm)		<b>6.2 ± 1.1</b>	<b>5.5 ± 0.65</b>
Regional strain			
	Anterior	-4.4 ± 4.6	-6.6 ± 3.3
	<b>Inferior</b>	<b>-5.3 ± 3.9</b>	<b>-8.3 ± 4.1</b>
	Anterolateral	-7.1 ± 2.9	-7.3 ± 3.3
	Inferolateral	-5.9 ± 5.1	-6.0 ± 3.6
	Anteroseptal	-4.8 ± 4.0	-6.3 ± 4.8
	Inferoseptal	-6.8 ± 2.3	-8.2 ± 3.3
	<b>Apex</b>	<b>-5.3 ± 4.4</b>	<b>-8.9 ± 4.0</b>
	Basal	-6.3 ± 4.0	-6.4 ± 4.0
	Mid	-5.9 ± 2.8	-6.1 ± 3.1
	<b>LAD</b>	<b>-5.3 ± 3.4</b>	<b>-7.8 ± 3.4</b>
	LCx	-7.1 ± 3.1	-5.9 ± 3.7
	RCA	-5.7 ± 4.0	-6.8 ± 3.5
Global longitudinal strain		-5.8 ± 2.7	-7.2 ± 2.7

Figure 1. Apical 2C view showing laminated LV thrombus (\*) and 2D-STE strain abnormalities involving apex and inferior walls.

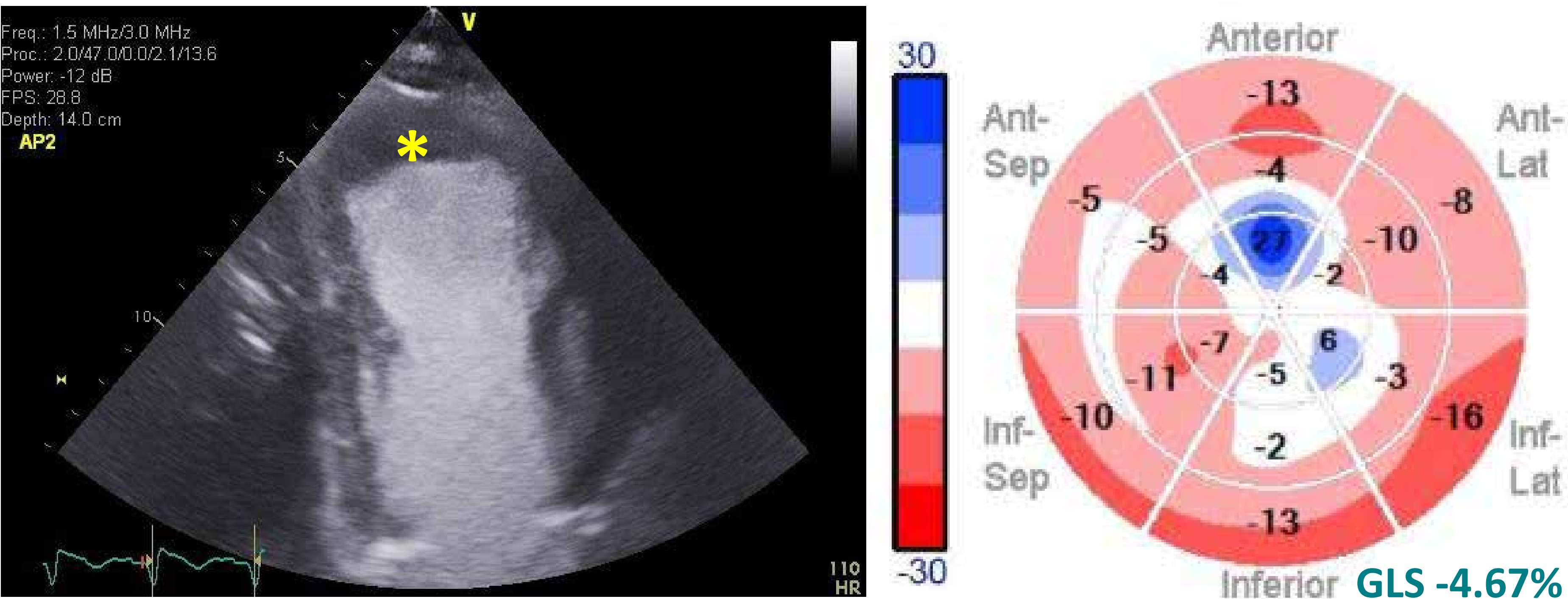
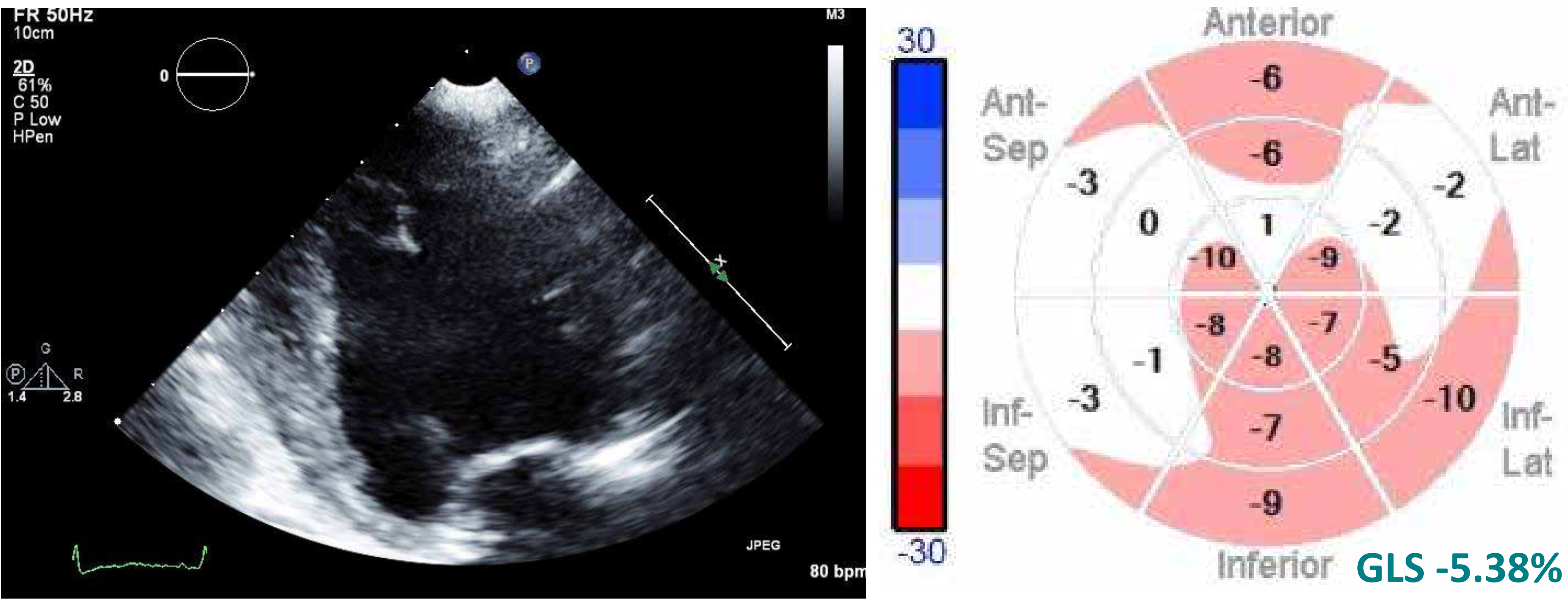


Figure 2. Apical 2C view showing no LV thrombus and 2D-STE strain showing sparing of apex and inferior walls.



## CONCLUSIONS

Among patients with HFrEF, LV thrombus is associated with reduced longitudinal strain abnormalities in inferior and apical regions and in the left anterior descending territory.