

Cardiac Strain During Active Labor

Piranthini Suntharalingam MB BCh BAO.

Eunjung Choi MD, Leigh C. Hickerson MD

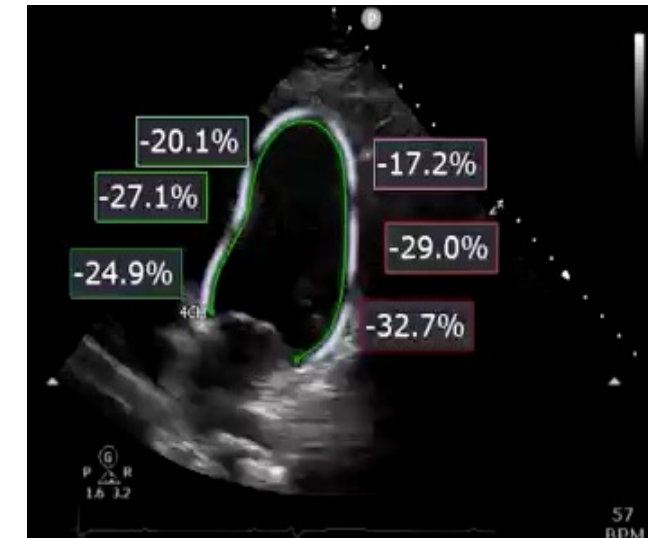
Department of Anesthesiology, Dartmouth Hitchcock Medical Center

BACKGROUND

- 25% of cardiac deaths in pregnancy occur without a prior diagnosis of cardiovascular disease (CVD)
- Strain analysis detects subclinical CVD in non-parturients.
- Echocardiography during active labor's physiologic stress may screen for subclinical CVD

METHODS

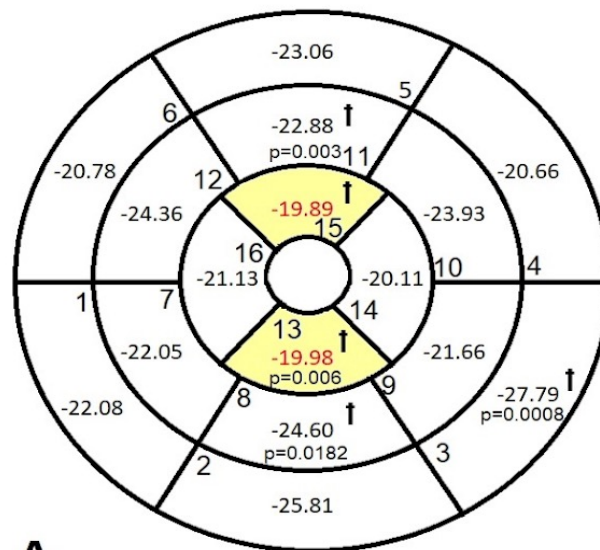
- 50 patients in active labor (≥ 6 cm cervical dilation) underwent transthoracic echocardiography with strain analysis in the apical 4Ch, 2Ch and 3Ch views.
- 60% of patients had an epidural during the examination and 40% had no epidural analgesia.
- Strain analysis was performed using Philips QLab strain analysis software. In concordance with normal values for non-parturients, a normal strain value of $< -20\%$ was chosen as a cutoff for each segment.



RESULTS

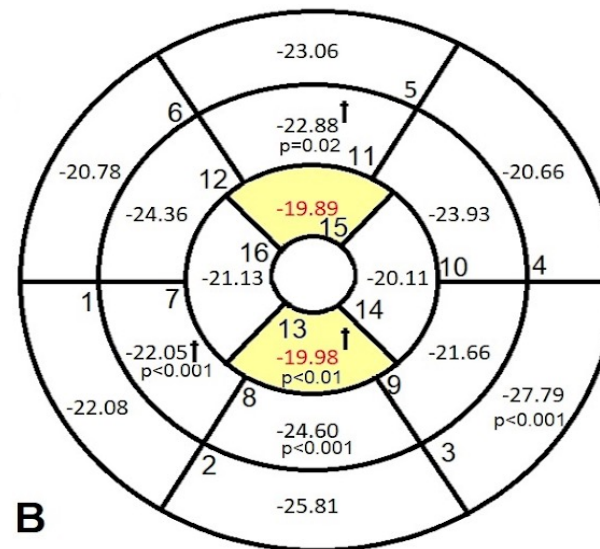
- Abnormal strain patterns became more prominent during uterine relaxation than during uterine contraction.
- This change was more prominent in patients with hypertensive disorders of pregnancy.

**Uterine Contraction
Hypertensive Disorders of Pregnancy**



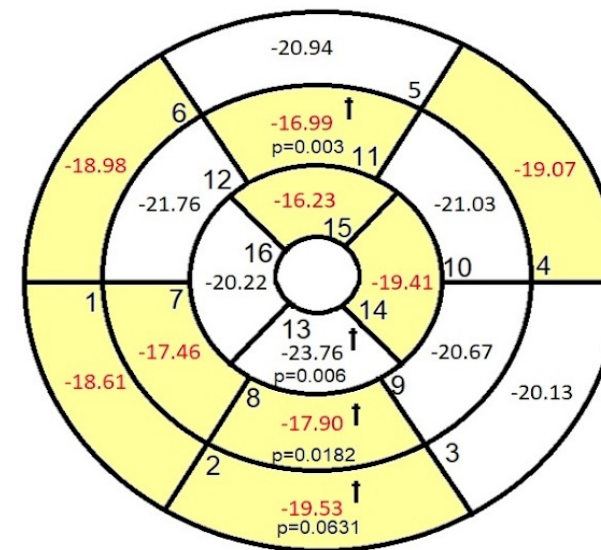
A

Uterine Contraction Non-Hypertensive

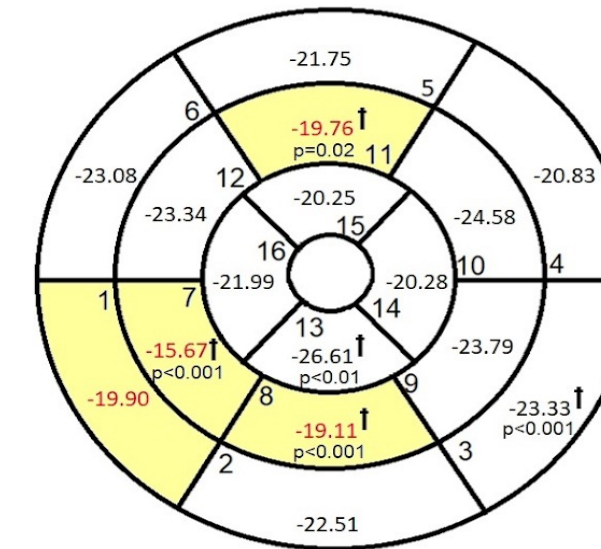


B

**Uterine Relaxation
Hypertensive Disorders of Pregnancy**



Uterine Relaxation Non-Hypertensive



1. Basal anterosseptal
2. Basal anterior
3. Basal anterolateral
4. Basal inferolateral
5. Basal inferior
6. Basal inferoseptal
7. Mid anterosseptal
8. Mid anterior
9. Mid anterolateral
10. Mid inferolateral
11. Mid inferior
12. Mid inferoseptal
13. Apical anterior
14. Apical lateral
15. Apical inferior
16. Apical septal

Figure 1: Speckle tracking segmental strain analysis during uterine contractions (Left) and relaxation (right) in patients with HDP (A) and those without significant HDP (B).



Take a picture
to access the
full abstract



CONCLUSIONS

- Strain abnormalities noted uterine relaxation > uterine contraction.
 - Possible relation to catecholamine surge during uterine contraction.
- Patients without epidurals had strain improvements with contractions, not as prominent in patients with epidurals.
- More strain abnormalities in patients with hypertensive disorders of pregnancy

TAKE AWAYS

- Strain abnormalities during labor may aid in risk stratification for CVD later in life.

FUTURE DIRECTIONS

- Developing intrapartum screening tool for chronic CVD risk using echocardiography, serum biomarker analysis and placental pathology.

REFERENCES

JAHA 2020;9:e013991

Heart 2014; 100:1673-1680

Pregnancy Hypertension 2017;10:251-255



SCAN ME



Take a picture
to access the
full abstract

