Is Doppler echocardiography a reliable way to diagnose pulmonary hypertension in pregnancy?

Sloane McGraw, MD, Ashley Patel, MS3, Catherine Wu, MD and Joan Briller, MD, FACC, FASE, FAHA

February 23, 2018

Correspondance to Briller@uic.edu

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Background

- **Pulmonary hypertension associated with significant morbidity and mortality during pregnancy**

- **Transthoracic echocardiography with Doppler estimated PASP is the usual screening modality**

- **Validity of estimated PASP using TTE has only been rarely assessed**

Methods

- **Meta-analysis of pregnant patients undergoing both TTE and RHC including 3 UIC patients and 49 measurements from 46 patients in the 3 previous published studies with primary data**

- **We compared accuracy using two different cut-off points:**
  - **any degree of elevated PASP ≥ 30 mmHg**
  - **PASP ≥ 40 mmHg which correlates with World Health Organization definition pHTN of mean PASP of >25 mmHg.**

Methods continued

- **PASP estimated via the modified Bernoulli equation: tricuspid regurgitant velocity ($4V^2$ plus estimated RA pressure)**

- **Classification of pulmonary pressure:**
  - **Normal PASP: <30 mm Hg**
  - **Mild pHTN 30-44 mm Hg**
 - **Moderate pHTN 45-59 mm Hg**
  - **Severe pHTN ≥ 60 mm Hg**

Findings

- **Mean Age 28.7**

Etiology	**N**	**(Percentage)**
Congenital	20	(41%)
Cardiomyopathy	9	(18%)
Collagen Vascular Disease	6	(12%)
Rheumatic HD	5	(10%)
Primary Pulmonary Hypertension	3	(6%)
Hypertrophic/Hypertensive	2	(4%)
NonRheumatic Valvular	1	(2%)
Thromboembolic	1	(2%)
Sickle cell disease	1	(2%)
Multiple categories	1	(2%)

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Findings: Percentage of patients in each class by echo and RHC
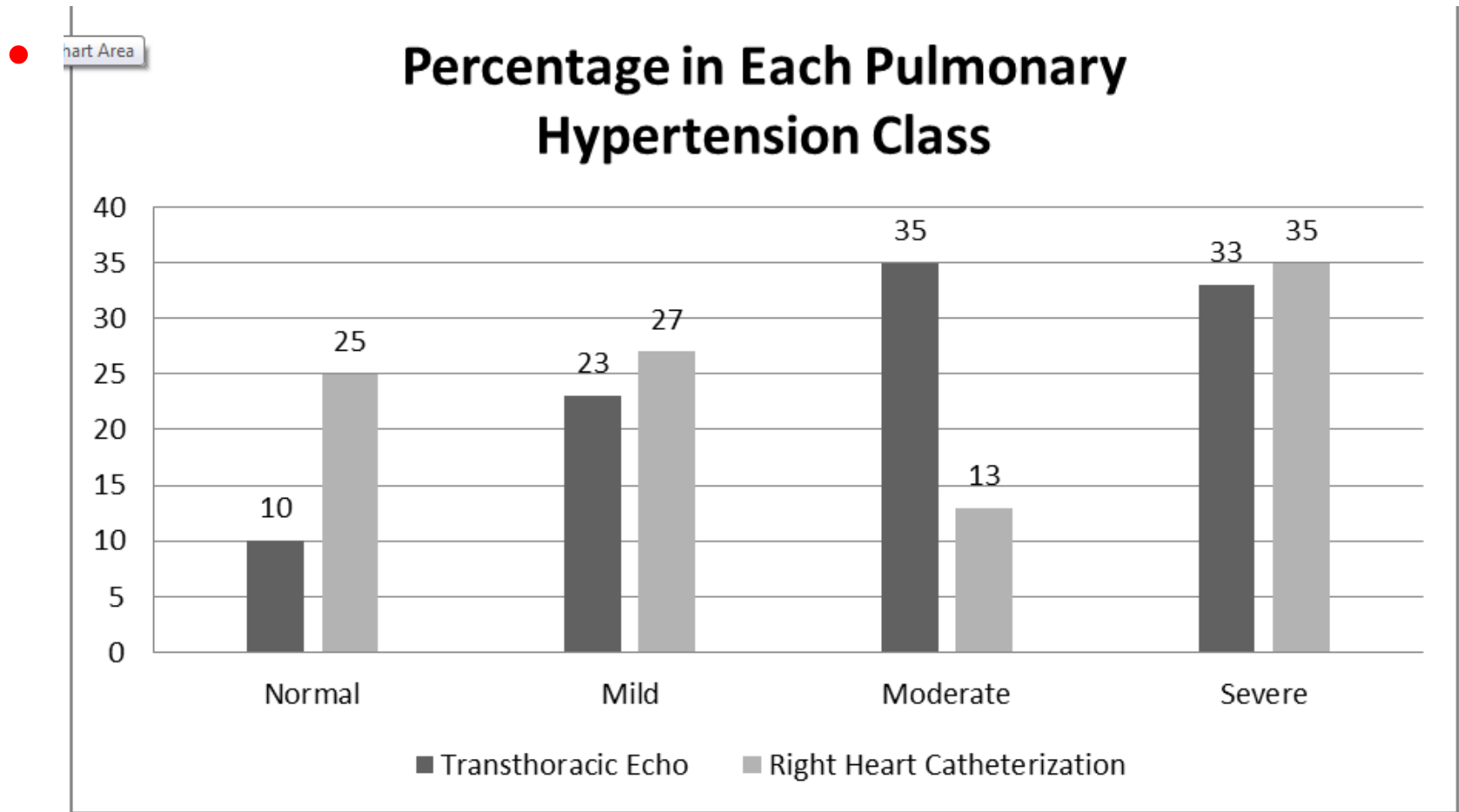
Accuracy using 30 mm Hg cut off

	Elevated PASP by RHC	Normal PASP by RHC	Totals
Elevated PASP by Echo	36	11	47
Normal PASP by Echo	3	2	5
Totals	39	13	52

Sensitivity	**92%**
Specificity	**15%**
Positive Predictive Value	**77%**
Negative Predictive Value	**40%**
Accuracy	**73%**

Accuracy using 40mm Hg cut off

	Elevated PASP by RHC	Normal PASP by RHC	totals
Elevated PASP by Echo	27	14	41
Normal PASP by Echo	2	9	11
totals	29	23	52

Sensitivity	**93%**
Specificity	**39%**
Positive Predictive Value	**65%**
Negative Predictive Value	**82%**
Accuracy	**69%**

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Limitations

- **Selection bias: women with severely elevated pressures more likely to be referred for RHC**

- **Estimation of RA pressure based on older guidelines**

- **RHC and TTE not performed simultaneously in previously published papers**

Conclusions

- **TTE is a reasonable screening tool for pHTN, although RHC may provide more accurate stratification, especially for women with moderate pHTN.**

THANK YOU