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A 'VIRTUAL' ECHOCARDIOGRAPHIC SCORE FOR PREDICTING THE HEMODYNAMIC PROFILE IN PULMONARY HYPERTENSION

Poster Contributions

Poster Sessions, Expo North

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Background: Differentiating PH with elevated pulmonary vascular resistance (PVR) from PH from elevated left sided filling pressure is critical. We previously developed an "Echocardiographic score" to predict hemodynamics using direct measures of chamber size, RVOT Doppler profile shape, and transmitral Doppler velocities. Our purpose was to create a 'virtual' echo score using only features obtained from the clinical echo report.

Methods: The echo score ranged from -3 to +3 with higher scores suggesting pulmonary vascular disease (PH-PVD): +1 for left atrial (LA) dimension ≤ 4.0 cm; +1 for systolic flattening (SF) of the interventricular septum; +1 for E:e' lateral mitral annulus <10 ; -1 for LA > 4.0 cm; -1 for E:e' ≥ 10 ; -1 for absence of SF. The score was compared to invasive hemodynamics to predict PH-PVD, defined as wedge (PAWP) ≤ 15 mmHg and PVR > 3 Wood units (WU).

Results: Overall (n=59), mean PAP was 44.8 ± 10.6 mmHg, mean PAWP was 17.9 ± 7.2 mmHg, and PVR was 5.9 ± 3.4 WU. Twenty (34%) patients had PH-PVD. PVR increased and PAWP dropped with score; without as significant a change in PAP (Table). The score had AUC 0.84 for PH-PVD compared to AUC 0.67 for PASP-Doppler. A score > 0 predicted PH-PVD with an odds ratio of 9.

Score	PVR (WU)	PAWP (mmHg)	mean PAP (mmHg)
≤ -2	3.6 ± 1.9	22.4 ± 3.2	40.7 ± 9.3
-1 to +1	5.9 ± 3.4	18.6 ± 6.8	45.6 ± 11.2
$\geq +2$	$9.1 \pm 2.6^*$	$10.3 \pm 6.3^*$	48.6 ± 10.2

* $p < 0.05$ (between all groups), $\psi p < 0.05$ ($\geq +2$ vs. ≤ -2 only)

Conclusions: We present a virtual echo score that differentiates PH hemodynamics using routinely reported data, not requiring direct echo review or expertise. This approach will facilitate rapid screening and resource allocation for PH-PVD.