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## Right ventricular longitudinal strain of patients with pulmonary hypertension

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**Introduction:** Noninvasive echocardiography evaluation of the right ventricle (RV) has been shown to have prognostic value in patients with pulmonary hypertension (PH). Recently, speckle-tracking echocardiography has emerged as a new tool in the RV assessment. In this study, we aimed to study the value of global longitudinal strain in the RV evaluation of these patients.

**Methods:** We collected clinical, laboratory, echocardiographic and right heart catheterization (RHC) data from consecutive patients referred to an expert tertiary care referral centre from 12/2016 to 11/2018. Global RV systolic peak longitudinal strain (RVS) and RV free wall peak longitudinal strain (RVFWS) (mean of the basal, mid- and apical-segments) were measured by speckle-tracking technique with Echo-Pac software from GE Healthcare®.

**Results:** Of the 97 included patients, 76% were female. The mean age was  $65 \pm 15$  years. Most patients were in NYHA class II. Median time between TTE and RHC was 70 days [IQR 34 - 184]. Group 2 PH was the most frequent aetiology of PH (35), followed by group 1 (26), group 4 (18), group 5 (3) and group 3 (2). The echocardiographic evaluation of this population showed borderline parameters of RV dysfunction (tricuspid annular plane systolic excursion (TAPSE)  $18 \pm 4$  mm, fractional area change (FAC)  $33 \pm 10\%$  and S' tricuspid wave  $10 \pm 3$  cm/sec). Mean RV global strain was  $-15 \pm 5$  and RV free wall strain was  $-17 \pm 7$ .

Both strain parameters significantly correlated with other echocardiographic parameters such as TAPSE, FAC, Tricuspid S wave, RV diastolic diameter, eccentricity index (EI), systolic pulmonary artery pressure (SPAP), pulmonary acceleration time and presence of RV outflow tract notching. Strain parameters were also associated with pulmonary artery pressures and pulmonary vascular resistance (PVR) measured by RHC. Strain parameters did not correlate with PECP ( $p > 0.05$ ).

In multivariate analysis, RV global longitudinal strain predicted invasive mean pulmonary artery pressure and PVR independently of TAPSE and FAC ( $\beta=1.38$ ,  $p < 0.001$ ). RV global strain  $> -17.1$  predicted PVR  $> 3$  wood (OR 3.46, CI 1.50 - 8.02, AUC 0.72) and PMAP  $> 20$  mmHg (OR 4.92, CI 1.67 - 14.51, AUC 0.78). TAPSE  $< 18$  mm predicted PVR  $> 3$  wood (OR 7.41, CI 2.99 - 18.36, AUC 0.72).

**Conclusion:** RV global and free wall longitudinal strain significantly correlate with other echocardiographic parameters of RV structure and function and with invasive pulmonary artery pressures and PVR.

Abstract 555 Figure.

