

## **A simple and valuable echocardiographic parameter for predicting prognosis in pulmonary hypertension; RVOT maximal systolic velocity**

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### **Introduction:**

Right ventricular outflow tract maximal systolic velocity (RVOT V<sub>max</sub>) at echocardiography may reflect pulmonary flow and cardiac output, which are important predictors in pulmonary hypertension (PH). In this study we aimed to assess the prognostic value of this simple echocardiographic parameter in predicting long term outcome in patients with PH.

### **Materials and Methods:**

We assigned 116 consecutive patients, under the regular follow up at PH center in Dokuz Eylul University Hospital. In this cohort, echocardiographic parameters at initial diagnosis were recorded including RVOT V<sub>max</sub> in addition to TAPSE, right ventricular annular tissue Doppler systolic velocity (RV S), RV Tei index, right atrial area (RAA), RV fractional area change (RFAC), and systolic pulmonary artery pressure (sPAP). Patients were followed up periodically with 3 months intervals. The prognostic value of these parameters were analyzed by Cox regression model.

### **Results:**

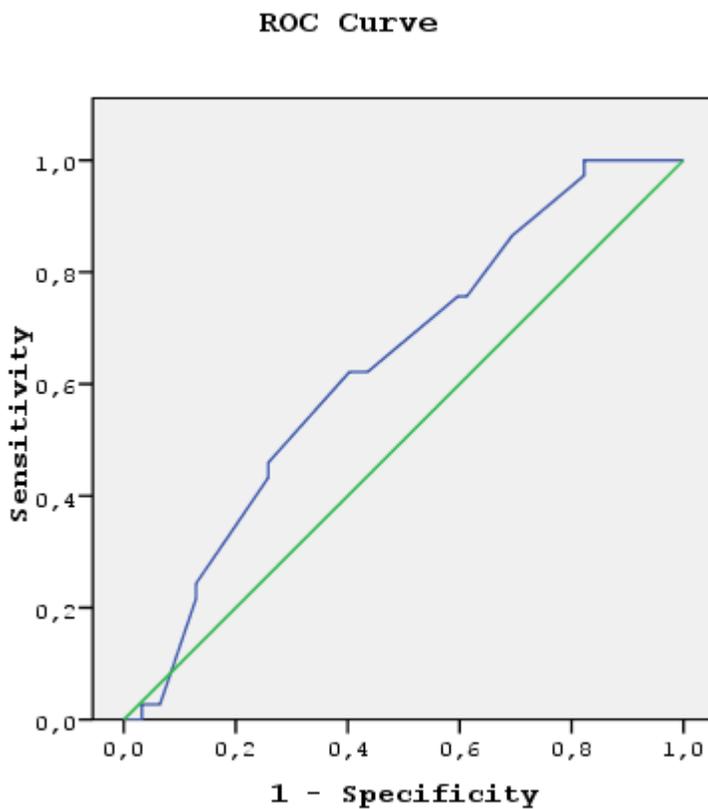
In a mean follow-up of 36 months, 42 deaths occurred. In univariate analyses, TAPSE and RVOT V<sub>max</sub> were found to be significantly associated with death. In multivariate analysis, RVOT V<sub>max</sub> was the only independent echocardiographic predictor of death (Table 1). Cut-off value of RVOT V<sub>max</sub> for death, which calculated by ROC analyses was 0.82 cm/sec. The hazard ratio for RVOT V<sub>max</sub> values < 0.82 for death was 2.479 (%95 CI: 1.261- 4.874; p=0.008).

### **Conclusion:**

This study indicated the importance of RVOT V<sub>max</sub> for predicting survival in patients with PH. This simple, easily measured echocardiographic parameter may be considered as an important surrogate marker in our clinical practice in PH patients.

**Table 1: Univariate and multivariate Cox regression analyses of echocardiographic parameters in predicting mortality in PAH patients**

	Univariate analysis			Multivariate analysis		
	HR	P value	95% CI	HR	P value	95 % CI
sPAP <sub>DE</sub>	1.003	0.711	0.988-1.017			
TAPSE	1.102	<b>0.010</b>	1,023-1,187	1.061	<b>0.133</b>	0.982-1.146
RAA	1,013	0.624	0.962-1.067			
RVOT Vmax	9.701	<b>0.003</b>	2.155-43.32	6.993	<b>0.012</b>	1.543-31.25
RV Tei index	1.088	0.659	0.748-1.582			
RV TD S vel	1.054	0.318	0.949-1.170			
RFAC	1.058	0.479	0.844-1.302			



**Figure 1:ROC Curve analysis of RVOT V<sub>max</sub> in predicting mortality in PH patients**

Area under the curve for RVOT V<sub>max</sub> was 0.67 (95% CI, 0.52-0.77; P =0.02) .(Figure 1)