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Title: Gender differences in right-ventricular arterial coupling in idiopathic pulmonary arterial hypertension

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Body: Introduction Male sex is an independent predictor of prognosis in idiopathic pulmonary hypertension (IPAH). We aimed to: 1) assess baseline gender differences in load-independent right ventricular (RV) systolic function and RV-arterial coupling, 2) assess the influence of baseline RV-arterial coupling on the gender-specific survival difference. Methods In 86 treatment naïve IPAH patients we determined RV end-systolic elastance (E_{es}), arterial elastance (E_a), RV-arterial coupling (E_{es}/E_a) and survival. Right heart catheterization was used to measure mean pulmonary artery pressure (mPAP) and stroke volume (SV). Maximal isovolumic pressure (P_{iso}) was estimated from RV pressure curves with the single-beat method. $E_{es}=(P_{iso}-mPAP)/SV$ and $E_a=mPAP/SV$. Results Baseline hemodynamics are shown in table 1. Figure 1 shows E_{es}, E_a, and E_{es}/E_a. Male (N=29) and female patients (N=57) showed similar E_{es}- ($p=0.08$) and E_a–values ($p=0.66$). However, E_{es}/E_a was lower in males ($p<0.05$). A total of 20 patients died during follow-up. Kaplan-Meier analysis showed a worse survival for male patients independent of E_{es}/E_a (log-rank $p<0.01$). Conclusions Male IPAH patients present with a lower RV-arterial coupling ratio compared to females, despite a similar afterload level. The lower baseline coupling ratio does not explain the observed survival difference between males and females.