

## Heart Failure – Chronic Heart Failure, Pathophysiology and Mechanisms, Haemodynamics of Heart Failure

### Impact of latest 2022 ESC/ERS Guidelines for the diagnosis and treatment of pulmonary hypertension: retrospective single center cohort study

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**Background:** The 2022 published ESC/ERS Guidelines for the diagnosis and treatment of pulmonary hypertension (PHT) lowered the cut off value for invasively measured mean pulmonary arterial pressure (mPAP) with right heart catheterization (RHC) from mPAP > 25mmHg to mPAP > 20mmHg. The impact of this new classification on the diagnosis of PHT in heart failure (HF) patients or patients with suspected PHT remains to be evaluated.

**Purpose:** The aim of this study was to evaluate whether the new cut off values of PHT according to the 2022 guidelines promote the diagnosis of precapillary, post-capillary or combined PHT and to better describe demographic and hemodynamic characteristics of patients who, in retrospect, have been reclassified as having PHT according to the new guidelines.

**Methods:** This retrospective single center cohort study included 435 patients referred for RHC based on various indications between January 2015 and October 2023. Patients were divided in three groups: mPAP < 20 mmHg (group A), mPAP 20-25 mmHg (group B) and mPAP > 25mmHg (group C). Demographic characteristics, cardiovascular risk factors, left ventricular ejection fraction (LVEF), RHC indication, HF diagnosis and days between HF diagnosis and RHC were obtained from our electronic health records. We used ANOVA and CHI-squared tests for statistical analysis.

**Results:** Main results are depicted in table 1. As to be expected with a lower threshold, more patients fit the diagnosis for PHT. In total, 75 patients (17%) previously considered to have normal lung pressures were found to have PHT according to the 2022 guidelines. In this patient group ("B"), there are 45 patients (60%) with postcapillary PHT and 28 patients (37%) with precapillary PHT. Only 2 patients (3%) had combined PHT. We observed a significant difference in prevalence of precapillary PHT ( $p=0,002$ ), postcapillary PHT ( $p<0,001$ ) and combined PHT ( $p<0,001$ ) between group B and C. In group B, 54 (72%) patients had a diagnosis of HF prior to RHC, with an average of 1218 days passed between HF diagnosis and RHC, compared to 99 patients (61%) and 713 days in group A ( $p=0.066$ ). In this patient group ("B"), the primary RHC indications were cardiomyopathy in 32 patients (43%) and HF in 20 patients (27%). Only two patients (7%), classified as having precapillary PHT in group B, had suspected PHT as indication for RHC.

**Conclusion:** When applying the new guidelines isolated post- and precapillary PHT but not combined PHT are diagnosed more often. Indications for RHC in the precapillary PHT subgroup of group B were predominantly not PHT related. Based on this analysis, a lower threshold for referring for RHC may be warranted in patients with suspected high pulmonary pressures. Earlier and more accurate diagnosis of PHT will lead to more rapid treatment initiation, especially in precapillary PHT patients, and ultimately better clinical outcomes. These findings also merit to be confirmed in larger patient cohorts.