Abstract: 

Is the new PH classification useful to assess the need for heart transplantation? Looking for harder markers for hard patients.

Authors:
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Topic(s):
Hemodynamics of Heart Failure

Citation:
Background. Pulmonary hypertension (PH) is an important prognostic marker among patients (pts) with heart failure. Recent ESC guidelines have introduced the concept of diastolic transpulmonary gradient (DPG) to differentiate combined (CpC) and isolated (IpC) post-capillary PH. However, its validation in a setting of patients evaluated for heart transplantation (HT) has been poorly explored; moreover, it doesn’t incorporate right ventricular (RV) function.

Purpose. To analyze the prognostic role of current classification of PH and its interplay with RV function and diuretic therapy in pts with advanced heart failure referred for HT.

Methods. We included all pts evaluated for HT in our Center (2002-16) undergoing to a right heart cath (RHC), collecting data at first evaluation. Patients were divided into three groups: no PH (mPAP<25 mmHg), IpC-PH (mean PAP > 25 mmHg, PVR<3 WU), CpC-PH (mean PAP>25 mmHg, PVR ≥3 WU and/or DPG ≥7 mmHg). Pulmonary artery pulsatility index (PAPi) was analyzed as a marker of RV function; oral furosemide> 125 mg/day (median value) or i.v. diuretics/dialysis were considered as high-dose diuretics (HDD). The study endpoint was the combined incidence of death or need for high urgent HT, expressed as 2-yrs survival rate.

Results. Among the overall cohort of 458 pts (53.1 ± 10.9 yrs, 82.6 % males, 40.3 % CAD, 9.3% on IABP), 57.9 % had PH: 30.8% IpC-PH, 27.1% CpC-PH. Only 8 pts (0.2%) had DPG= 7, one with PVR<3. The use of HDD differed significantly according to PH classes (44.6% vs 56.3% vs 68.3%, no PH vs IpC vs CpC-PH respectively, p<0.01) and was associated with a worse outcome (p<0.01). The incidence of the primary endpoint in the overall cohort was 74.1 ± 2.5%. While pts with CpC-PH had the worst prognosis, DPG=7 did not predict the primary endpoint. At multivariate analysis, PVR ≥3 WU (HR:16.7), PAPi <3.8 (median value, HR: 4.1), HDD (HR:5.6) were independent predictors of the primary endpoint, (p<0.04 for all) as well as need for IABP (HR: 19.0, p<0.01), even adjusting for clinical variables. Lower PAPi values carried an higher risk at 2 years both in IpC and CpC PH groups, thus allowing to better stratify the need for urgent HT (81.6±6.6% vs 78.6±5.7% vs 67.3±6.7% vs 49.1±7.9% respectively, p<0.001) (Fig.1).

Conclusion. Our results suggest that, even if current definition of type 2 PH predicts the need of urgent HT, the incorporation of DPG = 7 is epidemiologically irrelevant and doesn’t increase accuracy, whereas combining an indirect marker of RV function (PAPi) with PVR assessment, even correcting for diuretic therapy, could help to better stratify the need of a rare resource like HT in patients with advanced heart failure and pulmonary hypertension.
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