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Prognostic value of NT-proBNP, adrenomedullin, copeptin and proenkephalin in patients with pulmonary hypertension

J.A. Ribeiro Agostinho, R. Placido, I. Goncalves, T. Guimaraes, P. Carrilho Ferreira, J.S. Marques, D. Silva, N. Lousada, F.J. Pinto, S. Martins. *Hospital Universitário de Santa Maria/CHLN, CAML, CCUL,Faculdade de Medicina, Universidade de Lisboa, Lisbon, Portugal*

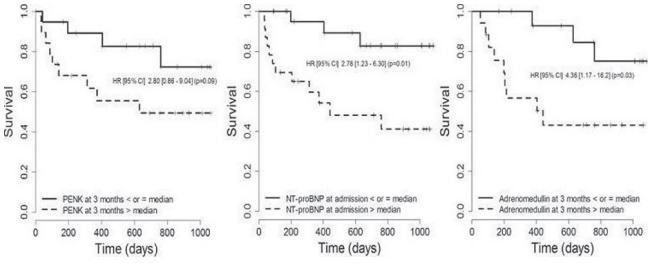
Introduction: Pulmonary hypertension (PH) comprises a group of progressive diseases characterized by an increase in pulmonary vascular resistance, leading to right ventricular dysfunction. Risk stratification is essential for prognostic evaluation and therapeutic decision, making the determination of new biomarkers important.

Purpose: To assess the prognostic value of new biomarkers in the prognostic evaluation of patients with PH.

Methods: Prospective cohort study of patients (pts) with PH confirmed by hemodynamic evaluation.

Pts underwent clinical and laboratory evaluations at baseline and every 3 months. Follow-up lasted for 18 months. NTproBNP and the new biomarkers (adrenomedullin, copeptin and proenkephalin) were measured. The Mann-Whitney test, Kaplan-Meier survival analysis and Cox regression were used for statistical analysis.

Results: Fifty one pts (75% males, mean age: 54±15 years) belonging to all groups of the WHO PH classification were included. At inclusion, all pts were in WHO functional class II or III. During the study period, 17 pts (33%) died. Baseline NTproBNP values were significantly higher in the non-survivors group (1327; 1061–2703pg/ml vs. 353.5; 190–1661pg/ml; p=0.022). The same did not occur for adrenomedullin, copeptin and proenkephalin baseline levels. The maximum NTproBNP, adrenomedullin and copeptin levels recorded during the follow-up period were significantly higher in the non-survivors group [2347.5 (1667–5073.25) pg/ml vs. 642.5 (208.25–4109.5) pg/ml, p=0.007; 53.6 (38.8- 94.2) pg/ml vs. 33.4 (27–48.8) pg/ml, p=0.0075; 20.69 (13.18–35.69) pmol/L vs. 9.97 (6.18–14.74) pmol/L, p=0.022, respectively]. This did not occur for the maximum proenkephalin level. The NT-proBNP level at admission and adremedullin level at 3 months were independent predictors of mortality (HR 2.78, CI95 1.23–6.30, p=0.01; HR 4.36, CI95 1.17–16.2, p=0.03).



Conclusion: The maximum level of NTproBNP, adrenomedullin and copeptin during the follow up were associated with higher mortality in pts with PH. NTproBNP level proved to be an independent predictor of mortality in those patients. These results suggest the prognostic importance of these biomarkers in the approach of pts with PH.