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CIRCADIAN BLOOD PRESSURE PROFILES ACROSS COPD CLINICAL PHENOTYPES IN COMORBIDITY WITH ARTERIAL HYPERTENSION

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Background. Clinical phenotypes of COPD — bronchitic, emphysematous and mixed — differ in their pathophysiological mechanisms and may demonstrate distinct haemodynamic patterns. The relationship between COPD phenotype and circadian blood pressure regulation in patients with comorbid arterial hypertension has not been adequately characterised.

Keywords: COPD; arterial hypertension; ambulatory blood pressure monitoring; bronchitic phenotype; emphysematous phenotype; mixed phenotype; night-peaker; non-dipper; circadian profile; autonomic dysregulation.

Aim. To compare 24-hour ABPM parameters and circadian blood pressure profiles across COPD clinical phenotypes (bronchitic, emphysematous and mixed) in comorbidity with arterial hypertension.

Materials and methods. The study included 291 patients with COPD+AH: bronchitic phenotype — n=117, emphysematous — n=55, mixed — n=119. All patients underwent 24-hour ABPM (EC-ABP, LABTECH, Hungary) and spirometry (SP100, Contec Medical Systems, China). Blood pressure profiles were classified as dipper, non-dipper, night-peaker and over-dipper according to the degree of nocturnal BP reduction.

Results. Daytime SBP was highest in the mixed phenotype (157.1±0.57 mmHg) compared to bronchitic (152.25±1.37 mmHg) and emphysematous (142±2.65 mmHg; $p<0.001$ between all phenotypes). Nocturnal SBP followed the same pattern: mixed 151.55±0.85 mmHg vs bronchitic 143.85±1.01 mmHg ($p<0.001$) vs emphysematous 137.2±3.1 mmHg ($p<0.05$). The 'dipper' profile was present in 34.2% of bronchitic, 20.0% of emphysematous, and 0% of mixed phenotype patients ($p<0.001$ between bronchitic/emphysematous vs mixed). The 'non-dipper' profile predominated in the bronchitic phenotype (65.8%), followed by mixed (50.4%) and emphysematous (40.0%; $p<0.001$ bronchitic vs emphysematous). The 'night-peaker' profile was absent in the bronchitic phenotype (0%), but present in 40.0% of emphysematous and 49.6% of mixed phenotype patients ($p<0.001$ vs bronchitic for both).

Conclusions. COPD clinical phenotype exerts a significant influence on circadian blood pressure regulation. The mixed phenotype is associated with the highest nocturnal BP values and the complete absence of the physiological 'dipper' pattern, indicating the most profound autonomic dysregulation. The 'night-peaker' profile — carrying the highest cardiovascular risk — was observed exclusively in emphysematous and mixed phenotypes. These results demonstrate that phenotype-specific ABPM assessment is essential for cardiovascular risk stratification in patients with COPD+AH.