



AMBULATORY BLOOD PRESSURE MONITORING IN COPD COMORBID WITH ARTERIAL HYPERTENSION: CLINICAL SIGNIFICANCE AND CIRCADIAN PROFILES

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Background. The coexistence of chronic obstructive pulmonary disease (COPD) and arterial hypertension (AH) substantially increases cardiovascular risk and creates mutual aggravation of both conditions. Twenty-four-hour ambulatory blood pressure monitoring (ABPM) allows characterisation of circadian haemodynamic profiles, yet its patterns across COPD severity stages in comorbidity with AH remain insufficiently studied. **Keywords:** COPD; arterial hypertension; ambulatory blood pressure monitoring; circadian profile; night-peaker; nocturnal hypertension; comorbidity.

Aim. To evaluate 24-hour ABPM parameters and circadian blood pressure profiles across COPD severity stages (GOLD II–IV) in patients with comorbid arterial hypertension.

Materials and methods. A prospective study enrolled 291 patients with COPD (GOLD II–IV) comorbid with AH (main group) and 66 patients with COPD without AH (control group). ABPM was performed using the EC-ABP monitor (LABTECH, Hungary); spirometry was conducted with the Spirometer SP100 (Contec Medical Systems, China). Patients were stratified by GOLD stage: stage II — n=18 (main) / n=10 (control); stage III — n=92 / n=13; stage IV — n=181 / n=43.

Results. Daytime systolic blood pressure (SBP) remained relatively stable across GOLD stages (149.72±2.48, 152.1±0.75 and 153.18±0.69 mmHg at stages II, III and IV respectively; $p>0.05$ between all stages). Nocturnal SBP peaked at stage III (142.8±1.9 mmHg) — significantly higher than stage II (131.61±3.1 mmHg; $p<0.01$) — and decreased at stage IV (132.76±1.04 mmHg; $p<0.001$ vs stage III). Nocturnal diastolic BP rose progressively from stage II (71.89±2.4 mmHg) to stage IV (83.7±0.83 mmHg; $p<0.001$). The 'dipper' profile was most common at stage II (61.1%) and declined sharply at stages III (15.2%) and IV (11.0%; $p<0.001$). The 'night-peaker' profile was most prevalent at stage III (42.4%) and stage IV (22.7%), with significant differences between stages II–III ($\chi^2=24.669$; $p<0.001$) and stages II–IV ($p<0.05$).

Conclusions. COPD severity is associated with progressive disruption of the circadian blood pressure pattern. The 'night-peaker' profile predominates at GOLD stage III, likely reflecting sympathetic hyperactivation via carotid chemoreflexes triggered by nocturnal hypoxaemia. At stage IV, relative stabilisation of pathological haemodynamics shifts the predominant pattern toward 'non-dipper'. These findings underscore the necessity of ABPM in all patients with COPD+AH to detect nocturnal hypertension that remains unrecognised by office blood pressure measurement alone.