CARDIAC AND VASCULAR COMPONENTS IN BLOOD PRESSURE VARIABILITY DURING VOLUNTARY APNEA IN OBSTRUCTIVE SLEEP APNEA PATIENTS

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The aim of this study was to evaluate the cardiovascular response to the activation of arterial chemoreceptors during voluntary apnea in hypertensive obstructive sleep apnea patients (OSA). 10 OSA patients and 10 healthy non-snoring normotensive men (control group) were enrolled in the study. The experimental session consisted of 20 voluntary apneas interspersed with 1 min free breathing periods. The following parameters were recorded continuously and noninvasively: blood pressure (Portapres), ECG, and arterial oxygen saturation. Data analysis was based on the Śmietanowski procedure, written in the 4-th generation script language of MATLAB environment, which allows assessing the relative contribution of cardiac and vascular components to blood pressure variability. The results indicate that repetitive voluntary apneas led to significantly greater increases in blood pressure in the OSA patients. In this group, the domination of vascular influences during voluntary apnea periods reached 70 ±3%, whereas in controls it was 35 ±2% ($P<0.01$). By contrast, the contribution of the cardiac component to the blood pressure response to apnea was greater in the control than in the patient group. We conclude that activation of carotid chemoreceptors during voluntary apnea evokes a greater cardiovascular response in hypertensive OSA patients, which may be related to the reflex increase in total peripheral vascular resistance.