



NT-PROBNP AS A TOOL TO STRATIFY SEVERITY OF PULMONARY HYPERTENSION IN CHRONIC OBSTRUCTIVE PULMONARY DISEASE

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Objective:

Pulmonary hypertension (PH) is a common complication of chronic obstructive pulmonary disease (COPD) that has an important implication on its prognosis. PH carries the risk of more frequent hospitalizations and shorter survival. However, it is often overlooked due to the difficulty in diagnosing. Echocardiographic assessment of PH may be subject to errors because of poor visualization of the heart due to emphysema, while right heart catheterization (RHC) is an invasive method. The aim of our study was to examine whether some routinely evaluated noninvasive parameter can predict which patient has pulmonary hypertension and requires invasive diagnostic procedure.



Methods: The study included 59 COPD patients (38 men, 21 women, age 60.9 ± 11.1), with RHC confirmed PH. The following tests were performed: complete blood count (CBC), NT- pro-BNP, troponin T, arterial blood tests, pulmonary functional test.

Results: The results of descriptive statistics are presented as mean $\pm$ SD. The parameters obtained by the right heartcatheterization were as follows: mean right atrium pressure (mRA) $10,7 \pm 5,33$ mmHg, mean pulmonary artery pressure (mPAP) $46,68 \pm 13,66$ mmHg, wedge $12,87 \pm 13,66$ mmHg, cardiac output (CO) $5,34 \pm 1,21$ L/min, cardiac index (CI) $2,8 \pm 0,6$ L/min/m². The prevalence of mild pulmonary hypertension was 17% (10/59), moderate 36% (21/59) and severe 47% (28/59). Pulmonary function parameters were: FVC $64,40 \pm 21,29$ % predicted, FEV1 $46,08 \pm 20,77$ % predicted, FEV1 / FVC $0,54 \pm 0,12$, DLCO $37,97 \pm 21,26$ % predicted. Laboratory parameters were: erythrocytes $5,13 \pm 0,64 \times 10^{12}/L$, hemoglobin $150,6 \pm 20,0$ g/L, hematocrit $0,46 \pm 0,6$, troponin T $14,05 \pm 20,04$ ng/ml, NT-proBNP $1806 \pm 2191,69$ ng/L, pH $7,43 \pm 0,38$, PaO2 $65,78 \pm 9,3$ mmHg, PaCO2 $44,16 \pm 10,58$ mmHg, PaO2/FiO2 $289,5 \pm 55,84$. A significant correlation was found between mPAP and NT-proBNP ($R = 0.311$, $p = .037$).

Conclusion: NT-proBNP is released as a result of atrial and ventricular wall stretching. In addition being a marker of left heart failure, its elevated value may also indicate a load on the right heart. There are few studies on its value in identification of pulmonary hypertension in COPD patients, and their results indicate that NT-proBNP has relatively good sensitivity and specificity. The results of our study also suggest that NT-proBNP can predict the severity of pulmonary hypertension in COPD. Further research is needed to assess its value as a screening tool for noninvasive detection of PH in COPD patients.