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## **Relationship between pre-operative pulmonary evaluation and postoperative outcomes in patients with COPD undergoing coronary artery bypass grafting surgery.**

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### **Background**

Patients with COPD (chronic obstructive pulmonary disease) undergoing all types of cardiac surgery have a higher risk of pulmonary complications, mortality, and longer ICU and hospital length of stay. Spirometry is commonly used to a quantitative evaluation and monitor status of the respiratory system. Parameter of FEV1 can be helpful to categorize the severity of COPD. The aim of the study is evaluation of the relationship between the result of the spirometry test and the occurrence of pulmonary complications and mortality in patients with and without COPD.

### **Material and methods**

The research was performed among 2764 patients admitted to planned operations at the Department of Cardiac Surgery SPSK2 PUM in Szczecin. The study excluded patients undergoing minimally invasive procedures, without the use of general anaesthesia and without sternotomy. Pre-surgery medical records provided information on demographic data, co-morbidities. Routine preoperative, and postoperative examinations yielded information on laboratory data and postoperative complications. Pulmonary evaluation was performed on the basis of spirometry tests performed on the day of admission (BTL-08 Spiro Pro, Poland).

### **Results**

In study group (n=2764) observed a relationship between a decrease FEV1.0 and pneumonia (OR=0.985; p=0.001), respiratory failure (OR=0.981, p=0.020) and hospital death (OR=0.982, p=0.020). In the group of patients with COPD was performed multivariate logistic regression analysis for pneumonia (adjusted by age, BMI, gender, diabetes mellitus, arterial hypertension), the analysis showed an association between decrease FEV1.0 and pneumonia during the hospital stay (OR=0.986, p=0.005). In addition, ROC analysis for pneumonia was performed among patients with COPD and an optimal cut-off point of 66.86 for FEV1.0% was obtained. Patients with COPD with a preoperative FEV1.0 less than 66.86 points showed a significant increase in the risk of pneumonia during the hospital stay (OR=6.38, p=0.016).

### **Conclusion**

Among patients after cardiac surgery was observed a relationship between the preoperative result of the spirometry test and pulmonary complications and mortality. The preoperative FEV1.0 parameter may be an important parameter in predicting the risk of respiratory complications (pneumonia) after cardiac surgery. This group of patients should be covered by a individual pulmonary rehabilitation program.

### **Biography**

Aleksandra Szylińska – PhD, Assistant Professor at the Department of Medical Rehabilitation and Clinical Physiotherapy of the Pomeranian Medical University in Szczecin. She works as coordinator of physiotherapists at Cardiac Surgery Clinic. She specializes in cardiac rehabilitation for patients after cardiac surgery. She conducts research regarding occurrence evaluation of relationships between pre-operative pulmonary function, comorbidities and intraoperative and postoperative complications after cardiac surgery, with particular interest in pulmonary complications. She is a graduate of postgraduate studies in Public Health - marketing and management in health care. Total score Impact Factor – 172.54 and Hirsch Index – 12.

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