

**Analysis of selected factors related to coronary angiography and total mortality in 425 patients in long-term follow-up.**

**ABSTRACT**

**Introduction**

Smoking tobacco is the most complex and the least comprehended factor of multiple cardiovascular, respiratory and neoplastic conditions. It affects each organ of the body and the list of diseases caused by tobacco smoke is still growing. It is the major, fully modifiable risk factor of the heart ischemic disease, in the diagnostics of which coronarography still remains a “golden standard”, which apart from the diagnostic aim (evaluation of coronary arteries’ anatomy and hemodynamically significant stenoses) enables risk stratification and selection of the optimal treatment.

**Aim of study**

The main aim of the study was to determine which factors significantly contribute to death of a patient undergoing scheduled coronarography in a five years’ observation period. It was analysed whether age, gender, education, smoking, coronarography result, type and dose of a contrast agent have a significant effect on the patient’s survival for 1, 2, 3, 4, 5 years following a scheduled coronarography.

**Material and method**

A prospective study was conducted on the group of consecutive 425 patients (260 men, 165 women aged 32-85,  $63,8 \pm 9,85$  on average) who were scheduled for coronarography, agreed to take part in the study and made their coronarography result available.

In the statistical analysis, a chi-squared test or Fisher’s exact test were performed (for categorical variables). For continuous variables the Mann-Whitney U test was applied. The adopted significance level was  $\alpha = 0.05$ . The preliminary selection of variables for models of logistic regression was conducted based on the prior statistical tests. The adopted significance level of potential variables which could be used in the model was  $\alpha = 0.3$ . Then, for the so selected variables, the stepwise selection algorithm with Akaike information criterion was used.

The survival curves were drawn using the Kaplan-Meier estimator. The statistical significance between the curves were verified with the use of a log-rank test.

All calculations were performed with the use of R environment for statistical computing, version 3.6.0 (2019-04-26).

## **Results**

Women had a longer survival rate in the period under study (significant differences between genders in this regard were observed towards the end of the observation). Age, smoking and duration of smoking habit negatively affected the patient's survival. The adverse effect of a significant LAD stenosis on the patient's survival was significantly noticeable after 5 years following the start of the observation. The analysis also revealed a negative effect of significant lesions in the left circumflex (LCx) on the survival rate: a group of patients with more than 70 percent stenosis of this coronary vessel was characterised by a significantly greater percentage of deaths both during the first four years of the observation period as during the whole period. Taking a closer look at any of the five time points of the analysis it may be noticed that the patients who did not survive a given period had their contrast agent administered in a significantly smaller amount than those who survived.

The survival curve analysis confirmed most of these relations – only the relationships between the dose of the contrast, age and the survival rate proved not to be statistically significant. On the other hand, a multifactor analysis with the use of logistic regression showed the increase of death risk in a five years' observation period as a result of smoking more than 10 cigarettes daily, significant lesions in the circumflex branch and the drop of this risk due to PCI.

## **Conclusions**

The five years' long observation of patients and the statistical analysis suggest that there is a connection between the age, gender, smoking (present smoking habit, duration and intensity of smoking habit), hemodynamically significant stenosis of the left anterior descending artery and the left circumflex, the method of invasive procedure, the dose of the contrast agent and the survival rate of patients who underwent scheduled coronarography.

**Key words:** smoking, coronary artery disease, coronary heart disease, coronary angiography, mortality.