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Detection of genes responsible for biofilm formation in blood of patients with ischaemic coronary artery disease

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Summary

▪ Background

It is known that bacteria are involved in the development and progression of atherosclerosis by forming biofilms within arterial plaques. It may lead to a rupture of unstable plaque and myocardial ischaemia. Clinically important microorganisms forming biofilms on or inside the human body, secrete bacterial DNA.

▪ Aim

The aim of the study was to detect bacterial genes (*wcaF*, *papC* and *sdhC*), responsible for a formation of a biofilm, in whole blood of patients with ischaemic coronary artery disease (CAD).

▪ Methods

80 blood samples of patients (40 women and 40 men) with cardiovascular diseases were tested for bacterial genes *wcaF*, *sdhC* and *papC* by using real-time PCR. Reference strain of *E. coli* ATCC 52922 was used as a positive control.

Research Results

There were determined differences in biofilm-associated gene prevalence according to gender (Table 1). Gene *sdhC* and gene *wcaF* were more frequently detected in male patients (respectively, 5 and 2.3 times) than in women patients.

Table 1. Prevalence of bacterial biofilm-associated genes detected in blood samples according to gender

	Male	Female	<i>p</i> value
<i>wcaF</i>	17.5 %	7.5 %	0.176*
<i>sdhC</i>	12.5 %	2.5 %	0.089*
<i>papC</i>	0 %	0 %	-

p – significance level; * χ^2 test

Conclusions

- Real-time PCR might be used as a reliable and rapid method for detection of bacterial biofilm-associated genes in whole blood of patients with ischaemic CAD;
- Bacterial genes were detected in nearly 1/5 of whole blood samples (gene *wcaF* in 1/8, gene *sdhC* in 1/13 when *papC* gene was not detected);
- Bacterial biofilm-associated genes are more often detected in men than women with ischaemic CAD.