Exploring the relationship between smoking status and the total number of coronary arteries with significant stenoses in a young population with ST-segment elevation myocardial infarction

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Background: A plethora of studies have proven the increase in cardiovascular risk associated with smoking in all age groups[1], including the one at the focus of this study – the young[2,3]. With regard to the total number of coronary arteries (CA) with significant stenoses, one might expect current smokers to have more affected CA than non- and former smokers. *Aim:* To explore the relationship between smoking status and the total number of CA with significant stenoses in a young ST-segment elevation myocardial infarction (STEMI) population.

Patients and Methods: Data were attained from medical records of 147 patients (mean age 43.9±6.5 years) hospitalized with STEMI at the University Hospital Centre Zagreb from January 2012 to October 2018, with a cut-off age at 45 years for men (n = 93) and 55 years for women (n = 54). Patients were divided in 2 groups based on smoking status – non- and former smokers (N = 29 (20%), with former smokers making up 9/29 or 31% of the group), and current smokers (N = 118 (80%)). To evaluate whether smoking status was associated with a higher total number of CA with significant stenoses, Pearson's chi-squared test was performed. During post hoc testing, the p value was adjusted to maintain the familywise error rate at 0.05 (p = 0.008) and compared to p values of each subgroup.

Results: The two groups had no significant differences in baseline characteristics (**Table 1**). In both groups, the majority of patients (58.6% vs. 74.6%) had only one affected CA, followed by two (27.6% vs. 19.5%) and three (13.8% vs. 5.9%) CA. Pearson's chi-squared test showed no statistically significant difference in the total number of affected CA between the two groups (p = 0.176). Post hoc testing confirmed statistically insignificant associations in all subgroups (p > 0.008, **Table 2)**. In multiple regression ($F(2, 144) = 9.27$, $p < 0.001$, $R^2_{adjusted} = 0.10$), age (B = 0.03, p = 0.001) and family history for cardiovascular disease (B = 0.30, p = 0.003) remained associated with the number of affected CA.

TABLE 1. Patient characteristics.

Characteristic	Non-smokers and former smokers (N = 29)	Current smokers (N = 118)	P-value
Age – years	43.4 ± 6.9	44.0 ± 6.4	0.698
Female sex – n (%)	10 (34.5)	44 (37.3)	0.780
Body mass index – kg/m^2	29.6 ± 5.4	28.6 ± 4.8	0.290
Hypertension – n (%)	16 (55.2)	55 (46.6)	0.410
Diabetes mellitus – n (%)	2 (6.9)	10 (8.5)	0.782
Family history for cardiovascular disease – n (%)	16 (55.2)	65 (55.1)	0.993

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TABLE 2. Contingency table analysis of smoking status and the total number of coronary arteries with significant stenoses.

		Number of coronary arteries with significant stenoses			Total
		One	Two	Three	
Non-smokers and former smokers	Count	17.0	8.0	4.0	29.0
	Expected Count	20.7	6.1	2.2	29.0
	% within group	58.6%	27.6%	13.8%	100.0%
	Adjusted p value	**0.088**	**0.338**	**0.149**	
Current smokers	Count	88.0	23.0	7.0	118.0
	Expected Count	84.3	24.9	8.8	118.0
	% within group	74.6%	19.5%	5.9%	100.0%
	Adjusted p value	**0.088**	**0.338**	**0.149**	
Total	Count	105.0	31.0	11.0	147.0
	Expected Count	105.0	31.0	11.0	147.0
	% of total	71.4%	21.1%	7.5%	100.0%

Note. The critical p value was adjusted to maintain a familywise error rate of 0.05 (p = 0.008).

Conclusion: Within our dataset of young patients with STEMI, a very high proportion (reaching 80%) were active smokers. A similar total number of CA was affected by significant stenoses, regardless of smoking status. However, caution should be exercised when interpreting these results that require additional input on comorbidities and risk factors enabling conclusions to be drawn from a broader context.

LITERATURE

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