

Prevalence of cardiovascular risk factors and obesity in youth with type 1 diabetes in Lithuania

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Background

Obesity and other cardiovascular risk factors are pervasive problems among young individuals with type 1 diabetes (T1D). Interventions targeted at decreasing cardiovascular risk in patients with diabetes may be the most effective during adolescence and young adulthood, before atherosclerotic lesions become advanced or cardiac changes become irreversible.

Objective

The aim of this study was to evaluate the prevalence of obesity and other cardiovascular risk factors and their association with disease duration and control in T1D children, adolescents and young adults in Lithuania.

Methods

A cohort of 883 patients diagnosed with T1D for at least 6 months was investigated (mean duration of diabetes in the whole cohort (6.7±4.8 yrs). 66.8% of the study cohort were children and adolescents (<18 years, n=590) and 33.2% young adults (18-25 years, n=293). Anthropometric parameters and blood pressure (BP) were measured, and lipid profile and HbA1c were determined. Dyslipidemia was diagnosed if at least one lipid profile parameter was outside the normal range. All patients were evaluated for microvascular diabetes complications.

Results

The mean age of study subjects was 16.2±5.6 yrs. 19.5% (n=171) of patients were overweight and 3.6% (n=32) were obese. Prevalence of overweight and obesity were similar among males and females. Distribution of weight status among different age groups is shown in Fig. 1

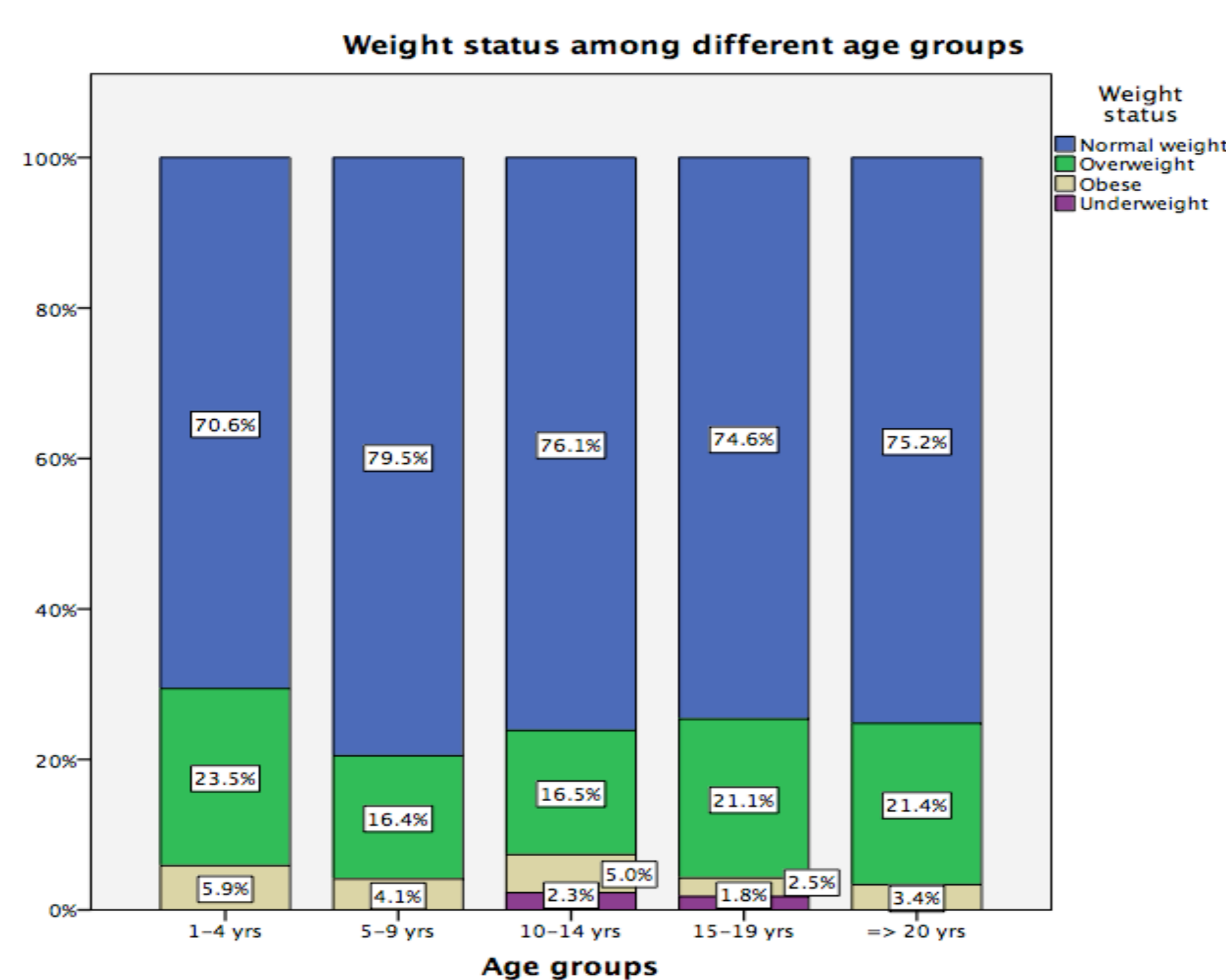


Fig. 1. Distribution of patients by weight status in age groups.

Hypertension was diagnosed in 29.8% of participants. 34.5% of males and 26.1% of females had elevated BP (p=0.007). Hypertension was more prevalent in overweight and obese compared to normal weight patients (44.6 vs. 25.6%, respectively, p<0.001). Relationships between systolic/diastolic BP and BMI z-score are shown in Fig. 2 (controlled for age and gender).

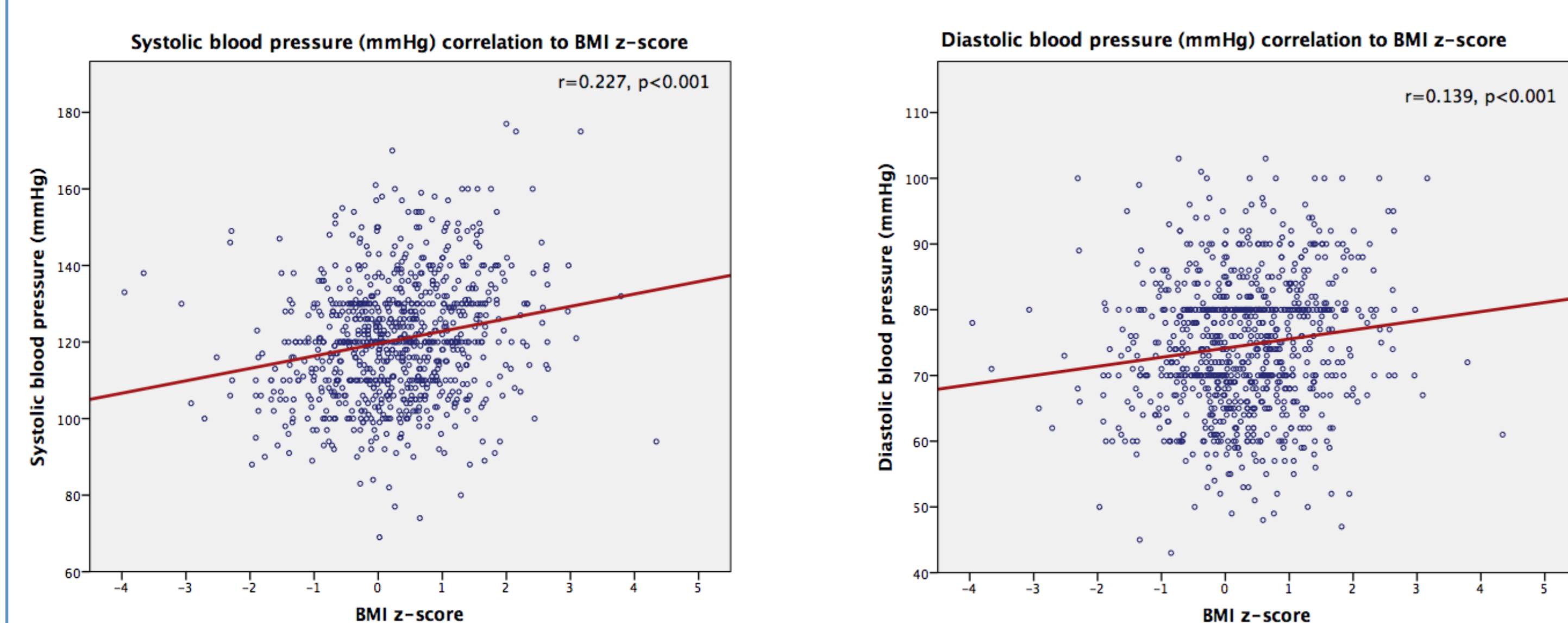


Fig. 2. Relationships of systolic and diastolic blood pressure and BMI z-score.

Study subjects' mean HbA1c was 8.5±2%.

Dyslipidemia was diagnosed in 62.6% of participants. Prevalence of dyslipidemia increased with duration of diabetes (p<0.05). Correlations between the levels of HbA1c and total cholesterol, LDL cholesterol, triglycerides and HDL cholesterol are shown in Fig. 3.

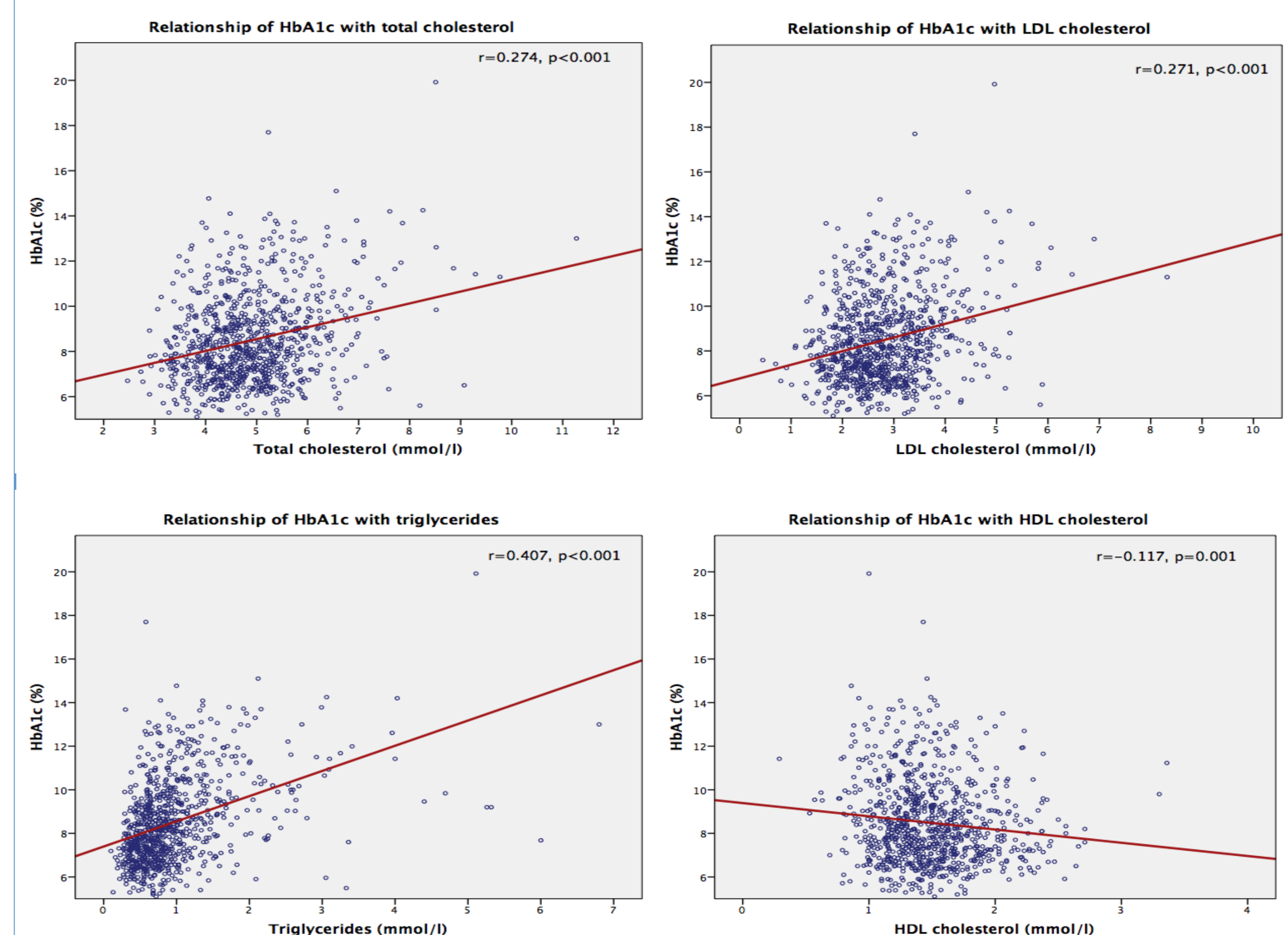


Fig. 3. Relationship of HbA1c with total cholesterol, LDL cholesterol, Tg and HDL cholesterol

In the whole cohort, 212 (24%) subjects were diagnosed with at least one microvascular complication. Frequency of microvascular complications is shown in Fig. 4.

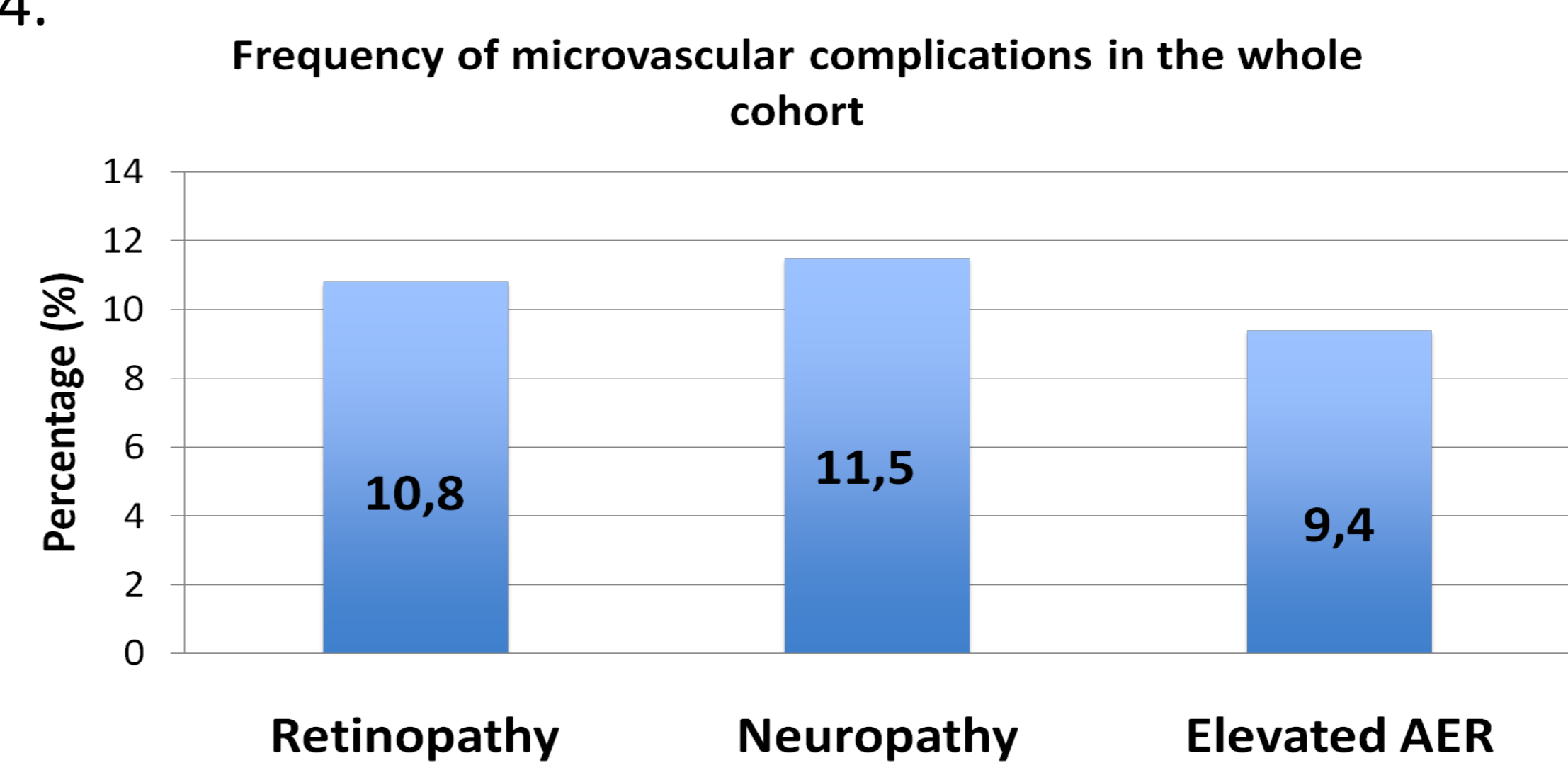


Fig. 4. Frequency of microvascular complications.

Frequency of microvascular complications was higher among patients with dyslipidemia (24.5 vs. 21.5%, p<0.001) and among those with hypertension (25.9 vs. 23.2%, p<0.001) (adjusted for disease duration and HbA1c). Comparison of patients with and without microvascular complications is shown in Table 1.

	Retinopathy		Neuropathy		Elevated AER	
	Absent	Present	Absent	Present	Absent	Present
Duration of DM (yrs)	6±4.2	12.8±4.4	6.2±4.5	11±4.7	6.4±4.6	9.3±5.7
	p<0.001		p<0.001		p<0.001	
HbA1c (%)	8.3±1.8	10±2.3	8.4±1.9	9.3±2.3	8.4±1.9	9.5±2.4
	p<0.001		p<0.001		p<0.001	

Table 1. Clinical characteristics according to presence of diabetic microvascular complications.

Conclusions

We found high frequency of cardiovascular risk factors among young T1D patients in Lithuania, associated with diabetes duration, obesity and poor metabolic control.

Acknowledgements

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