

values ranging from 120 to 140 mm Hg for systolic pressure, and from 80 to 90 mm Hg for diastolic pressure, which implies the effective treatment of arterial hypertension. The control group consisted of 32 healthy persons, aged from 20 to 36 years (27.4 on average), who were not on any form of medication, whose systolic pressure varied from 120 to 130 mm Hg, and diastolic pressure from 80 to 85 mm Hg, and these results were within the range of normal blood pressure values.

To determine dental plaque index, Quigley and Hein plaque index was used (5). On the day of the examination the patients did not perform any hygienic procedures in the oral cavity. Before examination teeth surfaces were discoloured with erythrosine. The plaque was evaluated on the lingual surfaces of the lower jaw teeth in the section 33–43 using the scoring system acc. to a 6-degree scale based on the following criteria: 0 – no plaque, 1 – individual plaque islets, 2 – plaque bands clearly connected with each other near the gingival line, 3 – plaque extending on one-third of the cervical zone, 4 – plaque covering two-thirds of tooth surface, 5 – plaque covering the whole of evaluated surface, up to the dental crown.

The quotient of the sum of all the obtained values and the number of evaluated surfaces was assumed to be dental plaque index (PI-QH).

To determine dental calculus index, Marginal Line Calculus Index (MLCI) was used (5). In this method the subject of evaluation is the presence of dental calculus along the gingival line of inferior anterior teeth from 33 to 43 on their lingual surfaces. The gingival line is divided into halves and calculus amount is determined in per cent in proximal and distal directions along this line. MLCI index is the quotient of the sum of the obtained values and the number of examined surfaces.

DISCUSSION

The deposition of dental concretion is a complex process (6). Reduced values of plaque and calculus indexes in patients with arterial hypertension treated with beta-blocker indicate that beta-blocker may affect dental concretion deposition. That influence can be multidirectional in character, which is confirmed by altered values of saliva parameters which take part in dental concretion formation in people receiving beta-blocker. While evaluating deposition of dental concretion, differences were found between control and studied groups. They concerned both the values of dental plaque index (PI-QH) and dental calculus index (MLCI) as well.

Breuer (2) observed reduced levels of dental calculus in patients treated for arterial hypertension with beta-blocker. Simultaneously, the author failed to find any differences in dental plaque levels in the examined patients. On the basis of those observations the author suggested the direct influence of beta-blocker on the crystallization process of dental calculus. According to Breuer another possible explanation of that phenomenon is indirect influence of beta-blocker on some saliva components, such as e.g. protein content and glycoproteins, salivary enzymes activity and bacteria composition of the oral cavity and dental plaque. Similar opinion is held by Turesky (11). This study corresponds with the observations of Breuer (2) concerning dental calculus formation. In the studied group reduced values of dental calculus index were revealed in relation to the control group. Contrary to Breuer's studies reduced value of dental plaque index was observed in the group of patients treated with Metocard. The presented differences are difficult to explain since no reports on that subject have been found in the medical literature. In his studies the author used different methods for determining dental plaque and calculus levels in comparison to the ones used in this study. Moreover, Breuer analyzed the parameters above in patients treated with unselective beta-blocker, which could have an effect on the observed differences.

The formation, development and dissolving of hard concretions such as e.g. dental calculus are complex processes connected with the presence of various forms of calcium phosphate. It could be presumed that these processes also depend on the reaction of calcium compounds with organic substances contained in saliva (7).

Due to the composition and salivary origin of dental calculus components it must be supposed that the factors affecting saliva composition, its secretion rate, synthesis of its protein components have an effect on the formation of dental calculus.

Table 1. Dental plaque and calculus indexes in the control group and the studied group

Index	No	Control group	No	Studied group	p (Mann-Whitney test)
		Mean \pm SD		Mean \pm SD	
PI-QH	32	1.802 \pm 0.597	44	1.526 \pm 0.782	p = 0.045
MLCI	32	44.730 \pm 12.536	44	32.524 \pm 10.621	p < 0.001

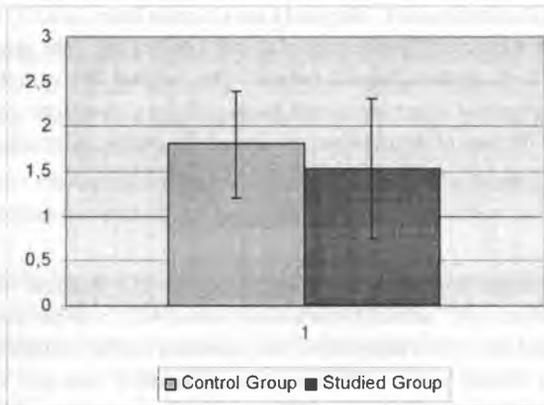


Fig. 1. Indexes of dental plaque (PI-OH) in the control group and the studied group

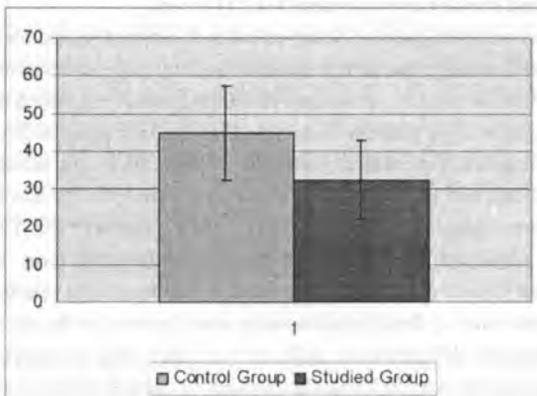


Fig. 2. Indexes of dental calculus (MLCI) in the control group and the studied group

CONCLUSIONS

In the group of patients with arterial hypertension treated with beta-blocker reduced dental plaque and calculus indexes were found.

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SUMMARY

Numerous factors influence the formation of dental calculus. They include saliva secretion rate, its density, viscosity, pH, bacterial flora and mineral content. Some of these parameters are controlled by the autonomous nervous system. It could be supposed that systemic diseases connected with the dysfunction of the autonomous nervous system as well as drugs affecting that system can have a direct or indirect effect on the formation of dental concretions. In the group of patients with arterial hypertension treated with beta-blocker reduced dental plaque and calculus indexes were found.

Poziom płytki i kamienia nazębnego u chorych na nadciśnienie tętnicze
w przebiegu leczenia beta-blokerem

W grupie chorych na nadciśnienie tętnicze leczonych beta-blokerem stwierdzono zmniejszone indeksy płytki i kamienia nazębnego. Wiele czynników wpływa na formowanie kamienia nazębnego. Są to szybkość wydzielania śliny, jej gęstość i lepkość, pH, flora bakteryjna i zawartość minerałów. Niektóre z tych parametrów są kontrolowane przez autonomiczny układ nerwowy. Można przypuszczać, że schorzenia ogólnoustrojowe związane z dysfunkcją autonomicznego układu nerwowego, jak również leki wpływające na ten układ mogą wpływać pośrednio lub bezpośrednio na formowanie się złogów nazębnych.