

Complex treatment of periodontitis with calcitrin and its effect for phosphorus-calcium metabolism

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Objective: to study the effect of calcitrin on calcium-phosphorus metabolism in the treatment of periodontitis.

Material and methods. In 120 patients with periodontitis, the dynamics of complex treatment determined the activity of alkaline phosphatase, calcium and phosphorus, depending on various doses of calcitrin.

Results. Traditional therapy of periodontitis promotes a short-term and insignificant increase in the activity of alkaline phosphatase in the blood serum of patients with periodontitis. The inclusion of calcitrin in a dose of 1-2 units in complex therapy increases the effectiveness of treatment. The best effect is achieved with a dose of 2 units of calcitrin.

Conclusion. Calcitrin can be used in the complex treatment of severe periodontitis, when other methods of increasing and prolonging positive changes are not effective.

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High incidence of periodontitis, the socio-medical significance of its widespread prevalence, insufficiently developed problems of early diagnosis due to untimely treatment of patients, the relatively low effectiveness of treatment methods, as a rule, of unsatisfactory long-term consequences, frequent relapse, low the effectiveness of preventive measures indicate that the problems of periodontitis are priority in modern dentistry and the study of various aspects of pathogenesis and treatment and the prevention of this disease do not lose relevance [1-4]. This is equally true with respect to methods for the correction of metabolic disorders associated with periodontitis, alkaline phosphatase (ALP)

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activity involved in the regulation of calcium-phosphorus metabolism [5-7].

Purpose: to evaluate the changes in the activity of alkaline phosphatase, calcium and phosphorus in the blood serum of patients with periodontitis in the dynamics of complex therapy with calcitrin [5-7].

Objective: to evaluate the changes in the activity of alkaline phosphatase, calcium, and phosphorus in the blood serum of patients with periodontitis in the dynamics of complex therapy with calcitrin.

Material and methods

During the study, the activity of alkaline phosphatase, calcium and phosphorus was determined in the blood serum of 120 patients with periodontitis, 60 of them received the traditional version of complex

therapy (control group - CG) and 60 received complex therapy with calcitrin (main group - MG). Men among all patients accounted for 46.5%, women 53.5%. 57.0% of patients were under the age of 40 years, of which 17.9% were aged 24-29 years and 20.8% were 30-35 years old. Patients with mild periodontitis accounted for 9.2%, moderate and severe degrees, respectively, 41.1 and 49.7%. The age structure, severity distribution, and patient composition by gender were identical in both groups of patients, except that in the MG, patients received calcitrin. The calcitrin allowed in the clinic was administered to patients of MG in doses of 1 unit, 1.5 units, and 2 units. The activity of alkaline phosphatase, calcium, and phosphorus was determined using standard kits before treatment, immediately after treatment, and 6 months after treatment. The results were statistically processed in groups of patients. The significance of the difference in average values in different groups of patients and at different periods of observation was determined.

Results and its discussion

In the group of patients receiving 1 unit of calcitrin, immediately after treatment, the activity of alkaline phosphatase was the same as with traditional complex therapy ($P > 0.1$), and after 6 months it was statistically significantly greater ($P < 0.001$). In traditional complex therapy, alkaline phosphatase activity increases immediately after treatment, but only the introduction of calcitrin prolonged this effect by 6 months or more, because after 0.5 years the enzyme activity remained significantly higher than in the control group.

1.5 dose units of calcitrin contributed to an almost 2-fold increase in the activity of alkaline phosphatase immediately after treatment ($P < 0.02$), and after 6 months it was at the same level as with a dose of calcitrin of 1 unit ($P > 0.05$). Dose of calcitrin in 2 units caused a more significant increase in alkaline phosphatase activity both immediately after treatment and in the long term. So, immediately after treatment, the average activity of alkaline phosphatase in relation to the initial (before treatment) was 60.85 ($P < 0.001$), 6 months af-

ter treatment - 47.0 ($P < 0.001$). The activity of alkaline phosphatase in this group of patients (MG), as with a calcitrin dose of 1.5 units, after 6 months decreased in relation to the indicator obtained immediately after treatment, but remained greater than the same indicator in this period in the CG. Only at a dose of calcitrin 1 unit immediately after treatment, the difference with the same indicator in the CG was significant, the remaining calcitrin doses at all times caused a significant increase in the activity of alkaline phosphatase. It is obvious that the increase in alkaline phosphatase activity when calcitrin is included in the complex therapy, firstly, is more significant, secondly, it is prolonged for a longer time, and thirdly, the positive effect of the inclusion of calcitrin in complex therapy directly depends on its dose in the range of 3 doses used (1; 1.5; 2 units). A more significant positive effect on the biochemical parameters of blood is exerted by a calcitrin dose of 2 units, which indicates the pathogenetic nature of the drug. The data are presented in table 1.

The calcium content in the blood serum of patients in the dynamics of complex treatment was also evaluated. As can be seen from the data of table 2, in the blood serum of patients of the control group, the calcium content only immediately after complex treatment decreased, however, this change is statistically unreliable ($P > 0.1$). In the main group, the greatest hypocalcemic effect was revealed in patients who received a calcitrin dose of 2 units in a complex of therapeutic measures. The maximum hypocalcemic effect was detected immediately after treatment, both with the introduction of 1.5 units, and 2 units. Immediately after treatment, the smallest hypocalcemic effect was detected when a calcitrin dose of 1 unit was administered. The conclusion about the greatest effect of the introduction of 2 units, especially in severe forms of periodontitis, is confirmed by the large hypocalcemic effect.

Immediately after treatment, the average serum calcium content at a dose of 2 units calcitrin decreased by 3.5 times ($P < 0.001$), at a dose of 1.5 units - 2.3 times and at 1 unit - 1.9 times.

Table 1. The level of activity of alkaline phosphatase (Unit / L) in the blood serum of patients with periodontitis before and after complex treatment

Group	Calcitric doses	Research Dates				
		Before treatment	After treatment	After 6 months	P	
					1-2	1-3
Control	-	26,14±3,74	31,16±3,12	25,64±1,19	>0,05	>0,1
Main	1 unit	27,6±1,5	36,75±5,37	30,7±0,8	>0,05	>0,05
	P ₁	-	>0,1	<0,001	-	-
	1,5 units	27,6±1,5	53,83±8,89	30,32±2,23	<0,02	>0,05
	P ₂	-	<0,05	<0,05	-	-
	2 units	27,6±1,5	60,85±0,04	47,0±1,29	<0,001	<0,001
	P ₃	-	<0,001	<0,001	-	-
	P ₄	-	=0,05	>0,1	-	-
	P ₅	-	<0,02	<0,001	-	-
	P ₆	-	>0,1	<0,001	-	-

P1 - significance of the difference between the data of the control and the main groups (1 unit);

P2 - data after treatment of the control and main groups (1.5 units);

P3 - control and main groups (2 units);

P4 - data of the main group (1.5 units and 1 unit);

P5 - data of the main group (2 units and 1 unit);

P6 - data of the main group (2 units and 1.5 units).

Table 2. Calcium content (mmol / L) in the blood serum of patients with periodontitis before and after treatment with various doses of calcitric (M ± m)

Group	Calcitric doses	Research Dates				
		Before treatment	After treatment	After 6 months	P	
					2-1	3-1
Control	-	2,35±0,08	2,32±0,06	2,59±0,02	>0,1	>0,05
Main	1 unit	2,79±0,09	1,45±0,08	2,21±0,08	<0,001	<0,001
	P ₁	-	<0,001	<0,02	-	-
	1,5 units	2,79±0,05	1,19±0,01	2,35±0,08	<0,001	<0,001
	P ₂	-	<0,001	<0,001	-	-
	2 units	2,79±0,05	0,79±0,13	2,12±0,04	<0,001	<0,001
	P ₃	-	<0,001	<0,001	-	-

P1 - significance of the difference between the data of the control and the main group;

P2 - data after treatment of groups 1 and 2 (calcitric - 1.5 units);

P3 - control and main groups (calcitric - 2 units).

In the control group of patients at the same time, the concentration of calcium remained at the same level. 6 months after the complex treatment, the calcium content increased, however, the initial level did not reach at any of the 3 applied doses of calcitric. With the introduction of 2 units the calcium concentration remained and after 6 months was slightly lower than with other doses of calcitric. The dynamics of the hypocalcemic effect of calcitric indicates the appropriateness of using 2 units in the complex treatment of periodontitis. The quantitative content of phosphorus in the

blood serum of patients in the dynamics of complex treatment was also determined. The data are presented in table 3. The data in the table indicate that in the control group immediately after treatment, the phosphorus content significantly decreased ($P < 0.001$), after 6 months, an increase in this indicator was noted, however, it remained less by 0.08 mmol / L compared with the original ($P = 0.05$). In the main group of patients, the largest decrease in the phosphorus content in the blood serum was noted immediately after treatment with the introduction of a dose of calcitric of 2

units, although a significant decrease was noted at 1 unit in both periods of observation ($P = 0.05$ and $P < 0.05$). At 1 unit calcitricin results in a decrease in phosphorus of 0.20 mmol / L ; with the introduction of 1.5 units immediately after treatment, the average concentration of phosphorus decreased by 0.4 mmol / L compared with the initial ($P < 0.001$), and by 6 months there was an increase in the average concentra-

tion of phosphorus, a difference compared to the initial ($P = 0.05$). 2 units calcitricin caused immediately after treatment a decrease in the average amount of phosphorus by 2.2 times compared with the initial ($P < 0.001$), after 6 months the average increased by 0.32 mmol / L , but at the same time remained at a statistically significantly lower level compared with the indicator before treatment ($P < 0.001$).

Table 3. The phosphorus content in the blood serum of patients with periodontitis (mmol / L) before and after treatment with various doses of calcitricin ($M \pm m$)

Group	Calcitricin doses	Research Dates				
		Before treatment months	After treatment	After 6 months	P	
					1-2	1-3
Control	-	$1,49 \pm 0,03$	$1,32 \pm 0,012$	$1,41 \pm 0,06$	$< 0,001$	$0,05$
Main	1 unit	$1,33 \pm 0,09$	$1,13 \pm 0,06$	$1,10 \pm 0,01$	$0,05$	$< 0,05$
	P ₁	-	$< 0,001$	$< 0,001$	-	-
	1,5 units	$1,33 \pm 0,09$	$0,94 \pm 0,07$	$1,15 \pm 0,06$	$< 0,001$	$0,05$
	P ₂	-	$< 0,001$	$< 0,001$	-	-
	2 units	$1,33 \pm 0,07$	$0,61 \pm 0,05$	$0,93 \pm 0,08$	$< 0,001$	$< 0,001$
	P ₃	-	$< 0,001$	$< 0,001$	-	-

P1 - significance of the difference between the data of the control and the main groups (calcitricin - 1 unit);

P2 - data after treatment of the control and main groups (calcitricin - 1.5 units);

P3 - data of the control and main groups (calcitricin - 2 units).

So, the inclusion of calcitricin in complex treatment causes a decrease in the content of both elements, the effect increases with an increase in the dose of the drug, 2 units cause not only a more pronounced decrease in calcium and phosphorus, but also contribute to a longer duration of the achieved effect. Before treatment in the blood serum of patients with periodontitis, the content of calcium and phosphorus practically fits into the framework of physiological standards.

Conclusion

Thus, it has been established that the traditional therapy of periodontitis contributes to a short-term and insignificant increase in the activity of alkaline phosphatase in the blood serum of patients with periodontitis. The inclusion of calcitricin in complex therapy increases the effectiveness of treatment and prolongs the achieved effect, which directly depends on the dose of calcitricin in the range of 1-2.0 units. The hypocalcemic effect of calcitricin in

the structure of the complex treatment of periodontitis can be considered as a pathogenetic element in the modification of complex therapy of this pathology. The data obtained allow us to conclude that, firstly, the best effect is achieved with a calcitricin dose of 2 units, and secondly, it is advisable to search for other ways to achieve a hypocalcemic effect in the management of periodontitis patients. The advantage in such searches should be given to drugs of a non-hormonal nature. Calcitricin can be used in the treatment of severe periodontitis, when other methods of increasing and prolonging positive shifts are not effective.

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- Salikhova M.M., interpretation of the results - Dzhanbulatov M.A., research design
- Abdurakhmanov A.I., typing and design of

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