Research Article

Evaluation of Oral Hygiene in Patients with Generalized Periodontitis of II Degree and Stage II Hypertension

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Abstract
Generalized periodontitis is the most common form of periodontal pathology, especially in the second half of life. Nowadays, the problem of periodontal disease is relevant due to its high prevalence, tendency to progression, multifaceted influence on the dentoalveolar system and the whole organism as well as uncertain treatment. Therefore, there is a need to find optimal ways of prevention and treatment of this disease. Close relationships between periodontal pathology and systemic diseases, such as hypertension, which affects every 2nd-3rd adult were determined.

The objective of the research was to determine the status of oral cavity hygiene in patients with generalized periodontitis of II degree and stage II hypertension.

Materials and methods. The study included 30 patients with generalized periodontitis of II degree and stage II hypertension being treated in the Ivano-Frankivsk Regional Clinical Cardiology Dispensary; the average age ranged from 35 to 54 years (the main group). The control group included 10 patients of the same age without generalized periodontitis and somatic pathology.

The status of oral cavity hygiene was determined using the Green Vermillion index. The diagnosis of periodontal disease was made on the basis of the classification proposed by M.F. Danilevsky. The obtained results were subjected to variation-statistical analysis using statistical package “Stat Soft 6.0”; classical methods of variational statistics were applied; mean values and their reliability were evaluated.

Results. The results of examination showed poor oral hygiene in almost all patients. The analysis of hygienic indices showed the following results: in patients of the main group, the Green Vermillion index was 1.99 ± 0.13 points (p < 0.001) which corresponds to unsatisfactory level of oral hygiene. In patients of the control group, this index was 1.10 ± 0.17 points which corresponds to satisfactory level of oral hygiene. According to the index, 9 (30.0%) patients of the main group had satisfactory oral hygiene, and in 9 (30.0%) patients, poor oral hygiene was observed. In the control group, 2 (20.0%) patients had good oral hygiene, 6 (60.0%) patients had satisfactory oral hygiene and in 2 (20.0%) patients, unsatisfactory oral hygiene was observed. There were no patients with poor oral hygiene. The analysis of the indicators of the Green Vermillion index showed that in case of the pathological process exacerbation the oral hygiene status in patients deteriorated.

Conclusions. The level of oral hygiene in patients of both groups was low due to incorrect selection of personal hygiene products or their untimely replacement. In patients with generalized periodontitis of II degree and stage II hypertension, the level of oral hygiene was lower than in somatically healthy persons: the worse status of oral cavity hygiene – the more pronounced changes in the periodontal tissues. We can suppose that high blood pressure affects the status of the oral cavity, creates a higher risk and exacerbates the periodontal diseases.

Keywords
generalized periodontitis; hypertension; status of oral cavity hygiene

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Problem statement and analysis of the recent research

Nowadays, the problem of periodontal disease is relevant due to its high prevalence among the working-age population [1, 2, 4, 8, 13]. Generalized periodontitis is a chronic disease being characterized by progressive destruction and loss of periodontal tissue [1, 2, 13]. This disease affects anatomical structures such as the alveolar bone, periodontal ligament, and tooth cement, which, according to modern research [1, 2, 5] require a long time to recover. The disease is multifactorial as the development and progression of the disease depend on both local and general factors.

Infectious factors as well as poor oral hygiene are important etiological factors. Dental plaque has a special composition and different set of microorganisms. The formation of dental plaque (or biofilm) is one of the most important mecha-
Gasparova I, Ivashchenko E. The status of oral cavity hygiene – the more pronounced is the decrease of oral hygiene indices in patients with periodontal disease compared to somatically healthy persons. The worse treatment and the lower level of oral hygiene indices are observed in patients with periodontal disease. The status of oral cavity hygiene was determined using the Green Vermillion index. The diagnosis of periodontal disease was made based on the anamnesis, clinical examination and traditional additional diagnostic examinations. The analysis of hygienic indices showed the following results: in patients of the main group, the Green Vermillion index was 1.99 ± 0.13 points (p<0.001) which corresponds to unsatisfactory level of oral hygiene. In patients of the control group, this index was 1.10 ± 0.17 points which corresponds to satisfactory level of oral hygiene.

In the control group, 2 (20.0%) patients had high blood pressure in Ukraine [12]. Cardiovascular pathology and the reduction in bone mineral density are interrelated processes; osteopenia and osteoporosis are progressing in parallel with atherosclerotic changes complicating treatment of generalized periodontitis.

The objective of the research was to determine the status of oral cavity hygiene in patients with generalized periodontitis of II degree and stage II hypertension.

1. Materials and methods

The study included 30 patients with generalized periodontitis of II degree and stage II hypertension being treated in the Ivano-Frankivsk Regional Clinical Cardiology Dispensary; the average age ranged from 35 to 54 years (the main group). The control group included 10 patients of the same age without generalized periodontitis and somatic pathology.

The diagnosis of periodontal disease was made based on the data of the anamnesis, dental examination and traditional additional diagnostic examinations. Patients of the main group were examined on the 1st-5th days after discharge from the hospital.

The status of oral cavity hygiene was determined using the Green Vermillion index. The diagnosis of periodontal disease was made based on the classification proposed by M.F. Danilevskyi. The obtained results were subjected to variation-statistical analysis using statistical package “Stat Soft 6.0”; classical methods of variational statistics were applied; mean values and their reliability were evaluated.

2. Results and discussion

The results of examination showed poor oral hygiene in almost all patients. All patients used personal devices for oral care, however, in the majority of patients toothpaste and brush were incorrectly selected or the period of using the brush exceeded the recommended one. Only a few of them used dental floss and mouthwash. The analysis of hygienic indices showed the following results: in patients of the main group, the Green Vermillion index was 1.99 ± 0.13 points (p<0.001) which corresponds to unsatisfactory level of oral hygiene. In patients of the control group, this index was 1.10 ± 0.17 points which corresponds to satisfactory level of oral hygiene.

According to the index in the main group, 9 (30.0%) patients had satisfactory oral hygiene, 12 (40.0%) patients had poor oral hygiene, and in 9 (30.0%) patients, poor oral hygiene was observed.

In the control group, 2 (20.0%) patients had good oral hygiene, 6 (60.0%) patients had satisfactory oral hygiene and in 2 (20.0%) patients, unsatisfactory oral hygiene was observed. There were no patients with poor oral hygiene.

The analysis of the indicators of the Green Vermillion index showed that in case of the pathological process exacerbation the oral hygiene status in patients deteriorated (Table 1).

3. Conclusion

1. The level of oral hygiene in patients of both groups was low due to incorrect selection of personal hygiene products or their untimely replacement.

2. In patients with generalized periodontitis of II degree and stage II hypertension, the level of oral hygiene was lower than in somatically healthy persons: the worse status of oral cavity hygiene – the more pronounced changes in the periodontal tissues.
Table 1. Status of oral cavity hygiene in the main and control groups (M ± m)

| Groups of patients          | n   | Green Vermillion Index | Hygiene level               |
|-----------------------------|-----|------------------------|-----------------------------|
| The main group (A)          | 30  | 1.99±0.13              | Poor hygiene                |
| The control group (B)       | 10  | 1.10±0.17              | Satisfactory hygiene        |

*p*(A:B) p<0.001

Note.

- **p** – the confidence index of differences between the data of the main and control groups.

3. We can suppose that high blood pressure affects the status of the oral cavity, creates a higher risk and exacerbates the periodontal diseases.

4. **Prospects for further research**

Further study of etiological factors and pathogenetic mechanisms of the development of periodontal diseases on the background of hypertension as well as the optimization of existing methods of treatment is promising.

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