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EVALUATION OF THE EFFECTIVENESS OF COMPLEX TREATMENT OF PATIENTS WITH GENERALIZED PERIODONTITIS

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The study was devoted to evaluating the complex treatment of generalized periodontitis, as well as the dynamics of changes in periodontal tissues after its completion. In total, 15 patients aged 30–55 were examined with the periodontal probing system to monitor the treatment measures taken at the end of conservative treatment of symptomatic gingivitis. Of these, 15 patients were examined approximately after 8–9 months from start of the treatment and 11 patients were examined approximately 2 years from start of the treatment. Treatment results indicated higher effectiveness on the lower jaw with a reduction in epithelial attachment depth by 23.8±4.6 % 6–8 months post-treatment, compared to 9.1±1.6 % on the upper jaw. The therapeutic effects were found to be persistent even 2 years after treatment completion

Key words: periodontal tissues, oral health, treatment, inflammatory disease, adult patients.

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ОЦІНКА ЕФЕКТИВНОСТІ КОМПЛЕКСНОГО ЛІКУВАННЯ ХВОРИХ З ГЕНЕРАЛІЗОВАНИМ ПАРОДОНТИТОМ

Дослідження було присвячене оцінці комплексного лікування генералізованого пародонтиту, а також динаміці змін у тканинах пародонту після його завершення. Всього було обстежено 15 пацієнтів 30–55 років за допомогою пародонтальної зондової системи для контролю лікувальних заходів, проведених після закінчення консервативного лікування симптоматичного гінгівіту. З них 15 пацієнтів були обстежені приблизно через 8–9 місяців від початку лікування, а 11 пацієнтів – приблизно через 2 роки від початку лікування. Результати лікування показали вищу ефективність на нижній щелепі зі зменшенням глибини прикріплення епітелію на 23,8±4,6 % через 6–8 місяців після лікування, порівняно з 9,1±1,6 % на верхній щелепі. Терапевтичний ефект виявився стійким навіть через 2 роки після завершення лікування

Ключові слова: тканини пародонту, здоров'я порожнини рота, лікування, запальні захворювання, дорослі пацієнти.

Generalized periodontitis, a widespread inflammatory disease of the supporting structures of the teeth, poses significant challenges for dental professionals worldwide [1, 2, 7, 12]. Its progressive nature often leads to tooth loss if not addressed promptly and effectively. Numerous studies have shown that the cornerstone of effective treatment is a comprehensive approach that combines therapeutic, surgical and orthopedic interventions [1, 5, 6, 9, 10]. Notably, the evaluation of treatment outcomes is intricate. Conventional measures like the PMA GI PI indices predominantly target the evaluation of soft tissues in the marginal periodontium. Panoramic radiographs, although widely used, offer a subjective insight and fall short in providing an exhaustive assessment, especially concerning the alveolar bone wall from the oral and vestibular perspectives [8, 11, 13, 14].

Furthermore, traditional methods like assessing the gingival pocket depth with specific probes, while valuable, are marred by subjectivity and are labor-intensive. This paves the way for more advanced techniques to bridge the existing diagnostic gaps. One such promising system is the computerized periodontal probing system "Florida Probe" from the USA, which offers an objective and less cumbersome alternative to conventional methods.

In light of these diagnostic challenges and the potential of emerging tools, our study sets out with a precise purpose. We intend to critically evaluate the outcomes of a comprehensive treatment approach for generalized periodontitis and monitor the post-treatment dynamics of periodontal tissues. Our primary tool for this exploration is the "Florida Probe" system, which we believe holds the potential to revolutionize the way we assess and understand periodontal treatment outcomes.

The purpose of the study was to evaluate the complex treatment of generalized periodontitis and the dynamics of changes in periodontal tissues after its completion.

Materials and methods. In total, 15 patients aged 30–55 were examined with the periodontal probing system to monitor the treatment measures taken at the end of conservative treatment of symptomatic gingivitis. All 15 patients were evaluated approximately 8 to 9 months after treatment initiation, and 11 of these patients were evaluated approximately 2 years after treatment initiation.

For the treatment of generalized periodontitis, we performed a complex of therapeutic (conservative treatment of symptomatic gingivitis), surgical (flap surgery in combination with the technique of directed bone regeneration, orthopedic (manufacturing of fixed splinting structures) measures. In order to reduce the depth of bone pockets with subsequent stimulation of alveolar bone regeneration, we used osteoplastic materials during surgical treatment.

The dental examination was carried out in the dental office at the consulting and polyclinic department of the SE "The Institute of dentistry and maxillofacial surgery of the National Academy of Medical Sciences of Ukraine" (SE "ISMFS NAMS").

To assess the depth of the epithelial attachment of the periodontal mucosa, as an indicator of the dynamics of changes in the depth of the pathological gingival pocket (PGP), we used the Florida Probe periodontal probing system (USA). Using the program, the following indicators were determined at 6 points of each tooth for each patient, 3 measurements from the oral and vestibular surfaces: periodontal pocket depth (PPD), gingival recession (GR), and pithelial attachment loss (PAL). The measurement data were automatically recorded in the computer memory and then printed out in the form of an "examination map".

The results were processed by variational statistical methods of analysis using the Microsoft Office Excel 2016 software. Statistical processing of the experimental study results was carried out by the methods of variation analysis using the Student's test. The difference was considered statistically significant at $p<0.01$ [4].

Results of the study and their discussion. The data of all patients who participated in the study are summarized in Tables 1 and 2.

Table 1

Dynamics of changes in the depth of gingival epithelial attachment in the area of the teeth of the upper jaw of the examined patients, M±m

The stage of treatment / Patient	% of improvement after 8–9 months		% of improvement in 2 years after treatment		Mean % of improvement	
	Buccal surface	Lingual surface	Buccal surface	Lingual surface	8–9 months after treatment	2 years after treatment
1	13.8	3.8	27.0	16.5	8.8	21.8
2	10.5	2.2	28.1	35.9	7.5	32.0
3	12.4	5.5	20.2	19.1	9.0	19.7
4	16.2	9.2	25.0	17.5	12.7	21.3
5	11.3	3	21.0	18.2	7.6	19.6
6	12.5	7.2	18.1	22.4	9.85	20.3
7	14.5	8.1	26.0	24.0	11.3	25.0
8	12.7	5.2	23.6	25.4	9.0	24.5
9	15.1	4.1	20.8	16.9	9.6	18.9
10	11.2	7.5	29.2	30.2	9.4	29.7
11	9.8	2.8	19.1	19.5	6.3	28.9
12	11.9	6.2	–	–	9.1	–
13	11.2	3.5	–	–	7.4	–
14	13.1	2.5	–	–	7.8	–
15	12.8	7.9	–	–	10.4	–
Mean	–	–	–	–	9.1±1.6	23.8±4.6

Table 1 offers a detailed quantification of the variations in the depth of the gingival epithelial attachment in the upper jaw region of patients treated for generalized periodontitis. These variations represent the efficacy of the treatment regimen over time.

Each patient's data is segregated to depict percentage improvements on both the buccal (outer) and lingual (inner) surfaces at two pivotal post-treatment junctures: approximately 8–9 months and 2 years.

Delving into specifics, Patient #1 demonstrated a 13.8 % improvement on the buccal surface and a 3.8 % improvement on the lingual surface at the 8–9 months interval. By the 2-year assessment, the improvements for the same patient rose to 27.0 % and 16.5 % for the buccal and lingual surfaces, respectively. When averaged out, this translates to an 8.8 % improvement after 8-9 months and a significant 21.8 % improvement after 2 years.

On aggregating the data, there's a discernible trend in the overall treatment efficacy. The cumulative average improvement at the 8–9 months marker was 9.1±1.6 %. By the 2-year point, this average escalated to an impressive 23.8±4.6 %. This not only points to the sustained efficacy of the treatment approach but also underscores its potential for greater gains as time progresses.

In essence, Table 1 encapsulates the progressive benefits of a comprehensive treatment for generalized periodontitis. The figures delineate not just the short-term effects but also the amplifying benefits over a more extended period. This suggests that while immediate results are commendable, patience and persistence in treatment could lead to substantially enhanced outcomes in the longer run.

Table 2 delves into the intricacies of the depth of gingival epithelial attachment in the teeth of the lower jaw over two distinct time frames: a shorter span of 8–9 months and a longer duration of 2 years post-treatment. This data is segmented further by the buccal (the side of the tooth adjacent to the cheek) and lingual (the side of the tooth adjacent to the tongue) surfaces, offering a comprehensive view of the treatment's efficacy.

Table 2

Dynamics of changes in the depth of gingival epithelial attachment in the area of the teeth of the lower jaw of the examined patients, M±m

The stage of treatment / Patient	% of improvement after 8–9 months		% of improvement in 2 years after treatment		Mean % of improvement	
	Buccal surface	Lingual surface	Buccal surface	Lingual surface	8–9 months after treatment	2 years after treatment
1	25.4	18.4	28.6	38.1	21.9	33.4
2	23.0	18.0	31.6	21.9	20.5	23.4
3	24.2	16.8	31.2	42.2	20.5	36.7
4	25.6	20.2	29.6	39.2	22.9	34.4
5	28.2	20.1	27.5	35.2	24.2	29.7
6	26.2	19.1	28.2	34.9	22.7	31.6
7	23.2	16.4	30.4	39.4	19.8	35
8	27.5	18.9	29.2	35.1	23.2	32.4
9	23.4	19.7	30.6	42.5	21.6	33.2
10	24.5	20.3	28.4	41.0	22.4	27.9
11	22.5	21.9	29.5	37.6	22.2	35
12	24.2	17.4	–	–	20.8	–
13	25.2	16.0	–	–	20.6	–
14	23.5	15.1	–	–	19.3	–
15	23.2	16.9	–	–	20	–
Mean	–	–	–	–	22.3±3.4	32.1±3.9

For a majority of the patients, there is a marked increase in the percentage of improvement when comparing the two periods. Within the initial 8–9 months, the average improvement rate stands at 22.3 %. This figure escalates to 32.1 % after a full 2 years. Such an uptick over time hints at the treatment's sustained and perhaps cumulative positive influence, suggesting its long-term benefits.

This data takes on greater significance when juxtaposed with Table 1, which dealt with the upper jaw. Upon comparison, it's evident that the treatment exhibits a comparably beneficial effect on both the upper and lower jaws. Moreover, the distinction between buccal and lingual surfaces provides a more granular perspective on the treatment's performance, further underscoring its comprehensive impact.

The depth of gingival epithelial attachment is crucial for dental health, and understanding its dynamics post-treatment is paramount. This table, with its thorough breakdown, serves as a valuable resource for clinicians and patients alike, offering insights into the potential long-term benefits and patterns of the treatment. It reaffirms that irrespective of the specific jaw or surface being treated, there's a consistent trajectory of improvement that patients can look forward to.

Diving deep into our research on the dynamics of changes in the depth of gingival epithelial attachment, it's fascinating to see the ripple effects of the treatment strategies on both the upper and lower jaws of patients suffering from generalized periodontitis. It's clear that the therapeutic approach we've adopted is making waves in terms of positive outcomes. Taking a glance at the short-term results, roughly 8–9 months after treatment, we saw notable improvements across the board. The upper jaw showed a mean increase of 9.1 %, while the lower jaw, interestingly, reported a higher mean increase of 22.3 %. These figures harmonize beautifully with global standards, underscoring the universally acknowledged idea that early interventions can effectively halt the onslaught of the disease. Now, fast-forwarding to the 2-year mark, the improvements were not just maintained but even amplified. We clocked in at 23.8 % for the upper jaw and an impressive 32.1 % for the lower jaw. This trajectory mirrors many global observations, suggesting that the fight against periodontitis doesn't end with the initial treatment; it's the continued care and those regular dental visits that make all the difference. Zooming out and juxtaposing our results with international studies, it's

heartening to see how our outcomes sing a similar tune. There's a universal rhythm in these findings, emphasizing the comprehensive impact of the treatments we've all been administering. The results, though based on our local patient group, seem to dance in step with the global narrative. However, akin to many global studies, we too faced challenges in gathering long-term data [1–3, 5, 7, 15]. As observed with some patients, the farther out we go, the trickier it becomes to track improvements. This phenomenon isn't unique to us; it's a hurdle faced by many in the realm of longitudinal studies, highlighting the necessity of keeping patients engaged in the process [6, 11]. Wrapping things up, our study's resonance with global findings isn't just about validation. It emphasizes that we're on the right track in treating generalized periodontitis. As we journey forward, we should lean into these insights, cherry-pick from global best practices, and focus on nurturing long-lasting patient relationships. After all, the road to optimal oral health is a marathon, not a sprint!

Conclusions

1. Generalized periodontitis is a prevalent dental challenge requiring a comprehensive treatment approach. This study, involving 15 patients, evaluated the efficacy of this treatment, utilizing the advanced "Florida Probe" system to objectively measure treatment outcomes, especially concerning the dynamics of changes in periodontal tissues post-treatment.

2. Treatment results indicated higher efficacy on the lower jaw with a reduction in epithelial attachment depth by 22.3±3.4 % 6–8 months post-treatment, compared to 9.1±1.6 % on the upper jaw. The therapeutic effects were found to be persistent even 2 years after treatment completion.

Prospects for further research. Given the promising results and the objective insights provided by the "Florida Probe" system, further research in this direction is warranted. This could potentially pave the way for refining treatment protocols and enhancing patient outcomes in managing generalized periodontitis.

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