Assessment of the effectiveness of differential management of patients in the early postoperative period following the dental implant surgery

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Key words: dental implants, oral hygiene, differential treatment.

Aim of the study. To assess the effectiveness of the proposed differential medicamentous therapy after dental implant surgery based on the results of clinical picture dynamic monitoring in the early postoperative period (up to 3 months).

Materials and methods. 124 somatically healthy people (54 men and 70 women) aged from 18 to 34 years were examined, among them: 25 patients with intact periodontium, 35 patients with chronic catarrhal gingivitis (CCG), 30 patients with generalized periodontitis (GP) of the initial, initial-I degrees of severity, 34 patients with GP of the I and III degree of severity. Patients were divided into 2 equal study groups: the proposed differential therapy was used for the experimental group (62 patients) in the early post-surgical period depending on the determined initial oral hygienic status; the traditional medicamentous treatment was applied for the control group (62 patients). Since the special medicamentous therapy was not advisable for the patients with healthy periodontium (25 patients) after the implant surgery, they made up the comparison group. Immunomodulating monotherapy (6 ‘Imudon’ lozenges per day for 2 weeks) was prescribed to patients with CCG in the postoperative period. Immunomodulating therapy (‘Imudon’ by the same scheme) combined with a universal broad-spectrum antimicrobial drug ‘Miramistin’ was prescribed to patients with GP of the initial, initial-I, I and I–II degrees of severity for 2 weeks.

Results. One week after removing the stitches a significantly better oral hygienic status was observed in the main group of patients with CCG compared to the control (P < 0.05). When assessing the mucosa state above the intraosseous element in CCG patients, cases of peri-implantitis were detected neither in the main nor in the control group in the postoperative period. In the main group of patients with GP of the initial, initial-I degrees of severity the oral cavity hygiene status was significantly better in all periods of observation, starting from the first week after removing the stitches and after 3 months compared with the control (P < 0.05). When assessing the mucosa state above the intraosseous element in patients with GP of the initial, initial-I degree of severity in the postoperative period, one case of peri-implantitis was revealed in the control group. It manifested as hyperemia and edema of the mucosa above the intraosseous element during the 1st week after removing the stitches and granulation tissue growth during the 2nd week. The main group of patients with GP of the I, I–II degrees of severity were characterized by significantly better oral hygienic status (~ 1.90 times on average (P < 0.05), compared with the control, from the 1st week after removing the stitches and over the follow-up period up to 3 months. When assessing the mucosa state above the intraosseous element in patients with GP of the I, I–II degrees of severity in the postoperative period, one case of peri-implantitis was revealed in the control, similarly to patients with GP of the initial, initial-I degrees of severity.

Conclusions. Analysis of the clinical parameters dynamics in the patients after dental implant surgery suggests the effectiveness of the proposed methods in addition to the traditional maintenance therapy in the early period of 1 week after removing the stitches to 3 months. The obtained results allow to recommend the proposed methods of differential medicamentous therapy in the early postoperative period following the dental implant surgery for a wide application in dental practice.
Оцінка ефективності диференцірованого медикаментозного ведення больних после операции дентальной имплантации в ближайшие сроки

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Развитие современной дентальной имплантологии как науки происходит стремительно, приобретая все большее значение. Несмотря на несомненные достижения, важной проблемой дентальной имплантации остается риск возникновения послеоперационных осложнений воспалительного характера.

Цель работы – оценка эффективности предложенной дифференцированной медикаментозной терапии в послеоперационном периоде у больных, которым была проведена дентальная имплантация, по результатам динамического наблюдения за клинической картиной в ближайшие сроки до 3 месяцев.

Материалы и методы. Обследовано 124 соматически здоровых человека (54 мужчины и 70 женщин) в возрасте от 18 до 34 лет. Среди них 25 человек с синтактом пародонтом, 35 больных хроническим катаральным гингивитом (ХКГ), 30 больных генерализованным пародонтитом (ГП) начальной-І степени, 34 больных ГП І–ІІ степеней тяжести. Пациентов поделили на 2 группы: опытная (62 человека), которая в раннем послеоперационном периоде получала предложенную медикаментозную терапию (объем определялся исходным гигиеническим состоянием полости рта); контрольная (60 человека), которая получала традиционную терапию.

Результаты. Через 1 неделю после снятия швов отмечено достоверно лучшее гигиеническое состояние полости рта у больных ГП І–ІІ степеней в сравнении с контролем (р < 0,05). При оценке состояния слизистой оболочки над внутрискелетным элементом у больных ГП начальной-І степени в послеоперационном периоде в контроле выявлен один случай периимплантита, который на 1 неделю после снятия швов проявился в виде гиперемии и отечности слизистой оболочки над внутрискелетным элементом, а на 2 – появлением грануляций. У больных ГП І–ІІ степени основной группы, начиная с 1 недели после снятия швов, и во все последующие сроки наблюдения до 3 месяцев, отмечено достоверно лучшее гигиеническое состояние полости рта по сравнению с контролем (р < 0,05). При оценке состояния слизистой оболочки над внутрискелетным элементом у больных ГП начальной-І степени в послеоперационном периоде в контроле отмечен один случай периимплантита, который на 1 неделю после снятия швов проявился в виде гиперемии и отечности слизистой оболочки над внутрискелетным элементом, а на 2 – появлением грануляций. У больных ГП І–ІІ степени основной группы, начиная с 1 недели после снятия швов, и во все последующие сроки наблюдения до 3 месяцев, отмечено достоверно лучшее гигиеническое состояние полости рта по сравнению с контролем (р < 0,05). При оценке состояния слизистой оболочки над внутрискелетным элементом у больных ГП начальной-І степени в послеоперационном периоде в контроле отмечен один случай периимплантита.

Вывод. Анализ данных клинических показателей у больных после дентальной имплантации свидетельствует об эффективности предложенных методов дополнительной к традиционной поддерживающей терапии с ближайшие сроки от 1 недели после снятия швов до 3 месяцев. Результаты позволяют рекомендовать предложенные методы медикаментозного лечения в раннем послеоперационном периоде после дентальной имплантации для широкого применения в практической стоматологии.

Ключевые слова: дентальная имплантация, гигиеническое состояние, дифференцированное лечение.
Purpose

Purpose of this study was to assess the effectiveness of the proposed differential medicamentous therapy after dental implant surgery based on a dynamic monitoring of the clinical picture in the early postoperative period (up to 3 months).

Materials and methods

124 somatically healthy people (54 men and 70 women) aged from 18 to 34 years old were examined, among them: 25 patients with intact periodontium, 35 patients with chronic catarrhal gingivitis (CCG), 30 patients with generalized periodontitis (GP) of the initial-I, I degrees, 34 patients with GP I, I–II degrees of severity. Diagnosis of CCG and GP was based on the clinical examination, radiography, periodontal indices and tests, in accordance with the classification of periodontal diseases by N. F. Danilevsky (1994). For the purpose of an objective oral hygiene assessment, the total oral hygiene index (OHI-S) (Green, Vermillion, 1960) was determined, taking into account the plaque and debris components (score 0–3, total score 0–6).

Clinical and X-ray examination and complex treatment of patients, including dental implantation, were provided on the basis of the “University Clinic” (2012–2014) and the Department of Dentistry No. 2 (2015–2016) of the Donetsk National Medical University and on the basis of the Department of Dentistry of Postgraduate Education at the Higher State Educational Establishment “Ukrainian Medical Stomatological Academy” (2015–2016).

Prior to the dental implant surgery, all patients underwent the oral cavity sanation and professional dental cleaning. Patients diagnosed with CCG and GP received a complex treatment in accordance with the “Protocols of dental treatment” (Order of the MoH of Ukraine No. 566 dated 23 November, 2004).

Edentulism was corrected with intraosseous screw implants. The surgery was performed using two-stage procedure. At the first stage, implants were installed with subsequent suturing of the mucous membrane: on the upper jaw – for 3 months, on the lower – for 6 months. After removal of the stitches, weekly examinations were carried out for 3 months. At the same time, attention was paid to the condition of the mucous membrane covering the intraosseous elements of the implants because during this period the most characteristic complications in the form of peri-implantitis and dental implant failure can be observed. The clinical picture of peri-implantitis in the region of the intraosseous element during the first stage is characterized by the local edema and hyperemia, fistula, or granulation tissue on the mucosa covering the intraosseous element (in 2–3 weeks). In contrast with peri-implantitis, dental implant failure is an inflammatory process that begins in the surrounding bone. The clinical picture of this variant of dental implant failure is characterized by hyperemia, edema, fistula over the intraosseous element (after 2–3 weeks).

Patients were divided into 2 equal study groups: the proposed differential therapy was used for the experimental group (62 patients) in the early post-surgical period depending on the determined initial oral hygienic status; the traditional medicamentous treatment was applied for the control group (62 patients). Since the special medicamentous therapy was not advisable for the patients with healthy periodontium (25 patients) after the implant surgery, they made up the comparison group.

Immunomodulating monotherapy (“Imudon” lozenges per day for 2 weeks) was prescribed to patients with CCG and unsatisfactory hygienic status in the postoperative period. Immunomodulating therapy (“Imudon” by the same scheme) combined with a universal broad-spectrum antimicrobial drug “Miramistin” was prescribed to patients with GP of the initial, initial-I, I and I–II degrees of severity for 2 weeks. Control examinations were performed one week after removing the stitches, then weekly for 3 months before the second stage of surgery.

The obtained digital data were processed by variation statistics analysis on an IBM PC using standard Microsoft Excel software. The average arithmetic mean (M), the standard deviation (S), standard error of the mean value (m) were calculated for each sample group of observation. Student’s t-criterion was used for comparison of means. The result was considered statistically significant when the 3-value was less than 0.05.

Results

As can be seen from Table 1, a significantly better oral hygienic status was observed in the main group of patients with CCG compared to the control (P < 0.05) 1 week after removing the stitches. In this case, the Green–Vermilion’s OHI-S was in average 1.32 times lower in the main group in comparison with the control. Such difference remained over the follow-up period. It should be noted, that the level of oral hygiene in patients who received the proposed treatment with “Imudon” was the same as that in individuals with healthy periodontium in this period. When assessing the mucosa state above the intraosseous element in CCG patients, cases of peri-implantitis were detected neither in the main nor in the control group in the postoperative period.

In the main group of patients with GP of the initial, initial-I degrees of severity the oral cavity hygienic status was significantly better in all periods of observation, starting from the first week after removing the stitches and after 3 months compared with the control (P < 0.05). Green–Vermilion’s OHI was in the range from 1.48 ± 0.24 to 1.59 ± 0.24 points in the main group, and it was on average 1.58 times lower in comparison with the control. It is worth mentioning that the level of hygiene in patients who received the proposed immunomodulatory drug “Imudon” in combination with the universal broad-spectrum antimicrobial drug “Miramistin” was the same as that in individuals with healthy periodontium in this period.

Table 1
The values of Green–Vermillion’s OHI in the main and comparison groups reflect the average level of oral hygiene in patients in the early period after the dental implant surgery. When assessing the mucosa state above the intraosseous element in patients with GP of the initial, initial-I degrees of severity after dental implant surgery, one case of peri-implantitis was revealed in the control group. It manifested as hyperemia and edema of the mucosa and granulation tissue growth during the 2nd week after removing the stitches and over the follow-up period up to 3 months. In this case, the Green–Vermillion’s OHI was in the range from 1.47 ± 0.23 to 1.60 ± 0.26 points (average hygiene level) in the main group, and from 2.86 ± 0.29 to 2.98 ± 0.34 points (very poor hygiene level) in the control group. It should be noted that the level of hygiene in patients who received the proposed immunomodulatory drug “Imudon” was the same as that in individuals with healthy periodontium in this period, i.e. it was of average level and reached, on average, 1.53 ± 0.24 points. When assessing the mucosa state above the intraosseous element in patients with GP of the I, I–II degrees of severity after dental implant surgery, one case of peri-implantitis was revealed in the control group, similarly to patients with GP of the initial, initial-I degrees of severity, which manifested as hyperemia and edema of the mucosa above the intraosseous element during the 1st week after removing the stitches and granulation tissue growth during the 1st week after removal of stitches.

As can be seen from Table 3, the main group of patients with GP of the I, I–II degrees of severity were characterized by significantly better oral hygiene status – 1.90 times on average (P < 0.05), compared with the control, from the 1st week after removing the stitches and over the follow-up period up to 3 months. In this case, the Green–Vermillion’s OHI was in the range from 1.54 ± 0.27 to 1.89 ± 0.24 points (average hygiene level) in the main group, and from 1.89 ± 0.23 to 2.18 ± 0.34 points (very poor hygiene level) in the control group. It should be noted that the level of hygiene in patients who received the proposed immunomodulatory drug “Imudon” in combination with the universal broad-spectrum antimicrobial drug “Miramistin” was the same as that in individuals with healthy periodontium in this period, i.e. it was of average level and reached, on average, 1.53 ± 0.24 points. When assessing the mucosa state above the intraosseous element in patients with GP of the I, I–II degrees of severity in the postoperative period, one case of peri-implantitis was revealed in the control group, similarly to patients with GP of the initial, initial-I degrees of severity, which manifested as hyperemia and edema of the mucosa above the intraosseous element during the 1st week after removing the stitches and granulation tissue growth during the 1st week after removal of stitches.

Discussion

The obtained results confirm our concept of expediency of taking into account the initial level of the oral hygienic status in the management of patients in the postoperative period. Despite the fact that modern medicine has in its arsenal a sufficient number of methods of rehabilitation after dental implantation [13], effective methods of laser therapy are limited in application due to the lack of clear recommendations on the choice of exposure parameters [14]. Methods of protein-mineral metabolism correction, which include calcium-containing drugs, antiresorbers, stimulators of bone tissue formation, are mainly indicated in a long-term period after implantation and do not affect the level of oral cavity hygiene status [15]. The local and systemic immunity normalizing drugs are recommended for the management of patients with primary or secondary peri-implantitis in the postoperative period. The large number of scientific studies, focused on the essential role of oral hygiene after dental implantation, is increasingly convincing that even perfect oral hygiene is not enough to prevent the biofilms formation, and hence complications.

Conclusions

1. Analysis of the clinical indices dynamics in patients with chronic catarrhal gingivitis after dental implant surgery suggests the effectiveness of the proposed monotherapy with “Imudon” in addition to the traditional maintenance therapy in the early period of 1 week after removal of the stitches and up to 3 months.

2. Analysis of the clinical indices dynamics in patients with GP of the initial, initial-I degrees of severity after dental implant surgery suggests the effectiveness of the proposed monotherapy with “Imudon” in addition to the traditional maintenance therapy in the early period of 1 week after removal of the stitches and up to 3 months.
combined therapy with “Imudon” and “Miramistin” in addition to the traditional maintenance therapy in the early period of 1 week after removal of the stitches and up to 3 months.

3. Analysis of the clinical indices dynamics in patients with GP of the I, I–II degrees of severity after dental implant surgery suggests the effectiveness of the proposed combined therapy with “Imudon” and “Miramistin” in addition to the traditional maintenance therapy in the early period of 1 week after removal of the stitches and up to 3 months.

The obtained results allow to recommend the proposed methods of differential medicamentous therapy in the early postoperative period following the dental implant surgery for a wide application in dental practice.

Due to the progressive development of implantology nowadays, these studies are promising. With an increase in the number of dental implant surgeries, an increase in the number of dental implant surgeries, an increase in the number of complications is observed, an increase in the number of complications is observed, a further study of this issue.

Conflicts of interest: author has no conflict of interest to declare.

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