same, in the group of practically healthy individuals, positive results were obtained in 2 cases, in particular, with a procedural nurse who regularly contacts the drug.

Conclusion. Anti-rituximab antibodies were detected in every third patient with an unfavorable course of the disease. If we suppose that immunogenicity is an important factor that should be considered in the overall treatment strategy, we should take actions to reduce antidrug antibodies formation: modifying drug administration; increasing dose; decreasing immunogenicity by adding immunosuppressive agents to the regimen or using new drugs which are supposed to be less immunogenic such as humanized or fully human monoclonal antibodies.

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The interaction of methylacrylic polymer materials of removable plate prosthetics and the mucous membrane of the prosthetic bed of patients with partial secondary adentia and concomitant gastrointestinal diseases: a comparative analysis of complications

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Abstract

The article presents the data of an original study on the improvement of orthopedic treatment of partial secondary adentia in patients with concomitant chronic pathology of the gastrointestinal tract by the method of removable plate prosthetics. For this purpose, a comparative analysis of three alternative to each other preparations of methyl acrylic polymer for the manufacture of bases of prostheses was made: 1) «GC», 2) «3M-Espe», 3) «Ftorax». A scientific assumption has been formulated that the choice of a specific polymer preparation (within the comparison base) will lead to a change in the number of complications developing during the operation of the prosthesis. In three independent groups of patients, using the compared preparations of methyl acrylic polymer, the relative number of complications was estimated. After the implementation of the study, it was found that the most positive results are shown by the polymer «GC», the least positive – by the polymer «Ftorax», the polymer «3M-Espe» occupies an «intermediate position». The results obtained have a high level of statistical significance, which makes it possible to recommend them for consideration for use in the practice of orthopedic dentistry.

Key words: partial secondary adentia, chronic pathology of the gastrointestinal tract, removable plate prosthetics, methyl acrylic polymers, complications.

Аннотация

В статье представлены данные оригинального исследования по улучшению ортопедического лечения частичной вторичной адентии у пациентов с сопутствующей хронической патологией желудочно-кишечного тракта методом съемного пластиночного протезирования. С этой целью произведен сравнительный анализ трех альтернативных друг другу препаратов метилакрилового полимера для изготовления базисов протезов: 1) «GC», 2) «3М-Espe», 3) «Фторакс». Сформулировано научное предположение о том, что выбор конкретного препарата полимера (в пределах базы сравнения) приведет к изменению количества осложнений, развивающихся при эксплуатации протеза. В трех независимых группах пациентов с использованием сравниваемых препаратов метилакрилового полимера произведена оценка относительного количества осложнений. После реализации исследования было установлено, что наиболее положительные результаты показывает полимер «GC», наименее положительные – полимер «Фторакс», полимер «3М-Espe» занимает «промежуточное положение». Полученные результаты имеют высокий уровень статистической значимости, что позволяет рекомендовать их к рассмотрению к использованию в практике ортопедической стоматологии.

Ключевые слова: частичная вторичная адентия, хроническая патология желудочно-кишечного тракта, съемное пластиночное протезирование, метилакриловые полимеры, осложнения.

Actuality. Partial secondary adentia retains a socially significant position in the structure of modern dental pathology [1]. In addition to the deterioration of the functional and aesthetic aspects, its untimely treatment leads to the development of serious disorders at the level of the dentoalveolar sphere and the temporomandibular joint [1, 2]. Radical correction of adentia with the help of dental implantation is not feasible in all cases; therefore, prosthetics of missing teeth with removable plate prostheses is often an uncontested method of choice [1]. For the manufacture of bases for removable plate prostheses, there is a certain set of modern polymeric materials, among which polymethylacrylic materials are most widespread and recognized by clinicians. But even with the use of these rather perfect (today) materials, in many cases, the development of complications after prosthetics and the beginning of the operation of the prosthesis [1, 3], which significantly reduces the final quality of orthopedic treatment. This is largely due to the fact that various modifications of methyl acrylic polymers have varying degrees of «aggression» towards the mucous membrane of the forming prosthetic bed [4], which largely explains the current situation. Therefore, there is a still unresolved problem of rational choice of basic polymethyl acrylates on the basis of preventing or minimizing complications. Thus, the fact that many dental patients are of real interest in the context of the problem under consideration in the implementation of prosthetics [1, 3], as well as insufficient knowledge of its statistical aspects, prove the relevance of this study.

Purpose. To compare the qualitative and quantitative composition of complications developing after removable plate prosthetics during the operation of the prosthesis, in the conditions of using three alternative methylacrylic polymer preparations for patients with partial secondary adentia and concomitant chronic gastrointestinal pathology, and thereby optimize the choice of them.

Materials and methods. The study involved 300 patients with partial secondary adentia and concomitant chronic gastrointestinal pathology (chronic cholecystitis, chronic pancreatitis). The study participants were stratified into 3 groups of 100 patients each according to the compared preparations of methylacrylic polymer or («GC», «3М-Espe» and «Ftorax», respectively).

The compared groups were standardized by age and gender distribution, the presence of concomitant somatic pathology.

To assess the statistical significance of the differences in the relative numbers of complications in the compared groups, we used the method of comparing the observed and expected frequencies using the Pearson χ^2 goodness test, the minimum accepted level of statistical significance for intergroup differences in the complication rates was $p < 0,05$ [5]. The calculation, recording and storage of the obtained results were carried out using a personal computer with StatSoft Statistica 6.0 software.

Results. When analyzing the qualitative and quantitative composition of complications after prosthetics, it was revealed that after prosthetics, in a number of cases, there are 6 typical complications (1 or more), but the probability of their occurrence significantly differed under the conditions of using the compared polymers. In particular, the relative quantity of complications was:

- in the conditions of application the polymer «GC»: local allergic reaction – 0%; mucosal candidiasis without violations of oral hygiene – 1%; burning sensation of the tongue without signs of allergy – 0%; fragility of the prosthesis in the shortest possible time – 15%; fragility of the prosthesis in the maximum period – 38%; increased abrasion of the dental cusps of the prosthesis – 3%;
- in the conditions of application the polymer «3M-Espe»: local allergic reaction – 1%; mucosal candidiasis without violations of oral hygiene – 1%; burning sensation of the tongue without signs of allergy – 1%; fragility of the prosthesis in the minimum period – 21%; fragility of the prosthesis in the maximum period – 42%; increased abrasion of the dental cusps of the prosthesis – 4%;
- in the conditions of application the polymer «Ftorax»: local allergic reaction – 8%; mucosal candidiasis without violations of oral hygiene – 1%; burning sensation of the tongue without signs of allergy – 6%; fragility of the prosthesis in the shortest possible time – 43%; fragility of the prosthesis in the maximum period – 63%; increased abrasion of the dental cusps of the prosthesis – 84%.

It was found that the most optimal characteristics in terms of reducing the quantity of complications that occur after accomplished prosthetics are possesses a polymer «GC», the least optimal – polymer «Ftorax». This is confirmed by the fact that the level of quantitative advantages of the «GC» polymer relative to the «Ftorax» polymer was:

- by the quantity of types of developing complications – 4 possible types of complications instead of 6;
- in the probability of complications – 6-28 times, depending on the complication (it should be noted that there were no differences between the compared polymers in only one type of complication – candidiasis of the oral mucosa – 1% in all cases).

It was also revealed that between polymers with «polar» levels of clinical efficacy, namely «GC» and «Ftorax», the polymer “3M-Espe” occupies an «intermediate position». This is confirmed by the fact that it is «inferior» to «GC» in the likelihood of complications – 1,1-1,4 times, depending on the type of complication.

The level of statistical significance of intergroup differences p was $< 0,05$ in all declared cases.

Consideration. Based on the results obtained, it should be concluded that the rating of the functional effectiveness of the studied basic polymers according to the parameters of complications after prosthetics are presented in this form:

«GC» > «3M-Espe» > «Ftorax».

Thus, a «direct» optimization of the choice of basic methyl acrylic polymers in the implementation of removable plate prosthetics was carried out.

Conclusion. The use of various preparations of methyl acrylic polymer as a base material for removable plate prostheses is associated with a different likelihood of complications after prosthetics in dental patients with concomitant chronic gastrointestinal pathology. When treating partial secondary adentia with the use of removable plate prostheses in dental patients with concomitant chronic gastrointestinal pathology in order to increase the level of functional efficiency of basic polymers (namely, to minimize the number of complications after prosthetics), it is recommended to focus to the results of this study.

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