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TREATMENT AND PREVENTION OF INFLAMMATORY PERIODONTAL DISEASES IN PROFESSIONAL ATHLETES

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340 athletes were examined. The athletes were divided into 2 treatment groups of 20 patients in each group. Patients of the second group, in addition to traditional therapy, received applications to the gum with propolis for 10 days. Gingivitis index and papillary bleeding index were used to assess the severity of the pathology and the effectiveness of therapeutic and preventive measures. In 16–19 – year- old athletes, sextants with a bleeding rate of 1.40±0.11 are most often detected, that is, gingivitis occurs, while periodontitis of the most severe severity was diagnosed in professional boxers aged 26–32 years, which indicated an insufficient level of periodontal care. At the final stage of clinical trials, the gingivitis index in the main observation group decreased to the minimum value for all groups and terms – 0.63±0.027 points. Whereas, in the control group, the data obtained indicated the development of an inflammatory process of moderate severity – 1.45±0.024 points ($p<0.001$). In patients of the main observation group, the papillary bleeding index was determined at 0.55±0.030 points, versus 1.63±0.021 points, values in the control group ($p<0.001$). Due to the absence of allergic reactions and high efficacy, a propolis–based drug can be recommended for widespread use in sports medicine, as an important element in the complex anti–inflammatory therapy of periodontal diseases in professional athletes.

Keywords: athletes, physical activity, periodontitis, treatment

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ЛІКУВАННЯ І ПРОФІЛАКТИКА ЗАПАЛЬНИХ ЗАХВОРЮВАНЬ ПАРОДОНТУ У ПРОФЕСІЙНИХ СПОРТСМЕНІВ

Було обстежено 340 спортсменів. Спортсмени були поділені на 2 лікувальні групи по 20 пацієнтів у кожній групі. Пацієнти другої групи на додаток до традиційної терапії отримували аплікації на ясна гелем на основі прополісу протягом 10 днів. Для оцінки тяжкості перебігу патології та ефективності лікувально-профілактичних заходів використовували індекс гінгівіту, папілярний індекс кровоточивості. У 16–19-річних спортсменів найчастіше виявляються секстанти з кровоточивістю 1.40±0.11, тобто зустрічається гінгівіт, тоді як пародонтит найтяжчого ступеня тяжкості діагностувався у професійних боксерів у віці 26–32 роки, що свідчило про недостатній пародонтологічний рівень допомоги. На завершальному етапі клінічних досліджень індекс гінгівіту в основній групі спостереження знизився до мінімального за всіма групами та термінами значення – 0.63±0.027 бала. Тоді як у контрольній групі отримані дані свідчили про розвиток запального процесу середнього ступеня тяжкості – 1.45±0.024 бали ($p<0.001$). У хворих основної групи спостереження індекс кровоточивості сосочків визначався у значенні 0.55±0.030 бала, проти 1.63±0.021 бала, значень у контрольній групі ($p<0.001$). Лікарський засіб на основі прополісу через відсутність алергічних реакцій та високу ефективність, може бути рекомендований для широкого використання у спортивній медицині, як важливий елемент у комплексній протизапальній терапії пародонтопатій у професійних спортсменів.

Ключові слова: спортсмени, фізичне навантаження, пародонтит, лікування

The work is a fragment of the doctoral dissertation "Dental status and its correction in professional athletes".

The growth of the share of those engaged in professional sports in the general structure of the population, the transition to high physical and psycho–emotional loads, to a completely different rhythm, the desire to achieve high sports results by increasing the volume and intensity of training loads, which sometimes reach critical values, are the factors that modern scientific and practical medicine has to reckon with for the timely correction of pathological changes occurring in various organs and systems of the body [3, 4]. Certain difficulties in this matter are related to the fact that, in general, sports negatively affect the psycho–emotional and somatic status of athletes, especially athletes with high qualification grades [1]. And with an increase in qualifications and an increase in the terms of professional sports activity, there is a further deterioration in the general and psychological state, and against this background, a decrease in stress resistance. As for the consideration of inflammatory diseases of oral tissues from a systemic perspective, an integral approach is also very important here, which allows us to comprehend and evaluate the etiopathogenetic mechanisms of the interdependence of functional disorders in the body, diseases of internal organs and oral cavity, in particular, in professional athletes based on the general theory of functional systems [10]. The studies of scientists have convincingly demonstrated the close morphofunctional relationship between chronic generalized periodontitis and the immunological reactivity of the body against the background of excessive physical exertion [5]. It should be noted that the systematic nature of the analysis of pathogenetic mechanisms of the development of inflammatory periodontal diseases in athletes engaged in high – performance sports determines the deterioration of their overall functional state and a decrease in the reserve capabilities of the body as a whole, which, in turn, negatively affects the performance of professional athletes and their sports results [7]. Correction of the functional state and adaptive capabilities of the body of a professional athlete in the conditions of the development of chronic odontogenic foci of infection should be based on effective therapeutic and preventive technologies

and should be aimed at strengthening adaptive capabilities both at the local and systemic levels, and at restoring metabolic reserves of organs and tissues of the oral cavity with the normal functioning of biosystems in it [8]. As for the problem of inflammatory and dystrophic periodontal tissue diseases, the prevalence and intensity of which among the able–bodied population reaches 90–97 %., the development and implementation of effective non – drug treatment and prevention technologies without side effects is, especially for professional athletes, increasing the reserve and regulatory capabilities of their body in conditions of excessive physical and psycho-emotional stress, an urgent and unresolved problem of modern sports medicine and dentistry [12]. Thus, the priority direction in the development of the methodology of restorative medicine from the point of view of correcting the dental status of persons engaged in high – performance sports is timely measures to organize their dispensary records aimed at restoring and maintaining the functional state of the organs and tissues of the oral cavity, compensating for the impaired functions of the dental system and thus restoring the working capacity of professional athletes [6].

The purpose of the study was to identify the frequency of occurrence of major dental diseases among professional athletes and the efficacy of biologically neutral drugs in their treatment.

Material and methods. 340 athletes were examined at the pre-competition stage of the training cycle, having the same regime, but with different orientations and intensities of the training process. At the first stage of the study, professional athletes of the Olympic reserve aged 18–32 years with a sports experience of 9–13 years were clinically examined. At this stage of research, information about injuries to the maxillofacial region of athletes was accumulated and the dental status of athletes was determined. Inflammatory periodontal diseases and their severity were diagnosed on the basis of clinical and radiological studies. The degree of development of the pathological process in periodontal tissues and the need for periodontal care were evaluated using the CPITN index, 1980, proposed by WHO – the index of the need for periodontal treatment. The first group consists of athletes who experience a constant high physical and stressful load for a long time (five days a week). The second group consisted of professional athletes who were not involved in the national team, and with a relatively low workload. The subjects were identical in age, gender and level of sportsmanship. All athletes were masters of sports, including international class. At the next stage, the athletes were divided into 2 treatment groups of 20 patients in each group. Patients of all groups initially underwent conservative treatment with training in individual oral hygiene, selection of hygiene products, professional oral hygiene, and elimination of supra – and subgingival dental deposits, closed curettage of periodontal pockets with the help of curettes Gracie. Selective grinding of teeth was carried out in the presence of traumatic occlusion. Patients of the first group with chronic generalized periodontitis of mild degree (CGP) were medicamentally treated with irrigation of periodontal pockets with 0.05 %. chlorhexidine solution for 10 days. Patients of the second group, in addition to traditional therapy, received applications to the gums with Asepta Gel (Vertex AO, Russia) with propolis for 10 days. After rinsing the mouth with water, the inflamed areas were isolated and drained, and covered with a layer of gel and so remained for 10–12 minutes, 2 times a day for 10 days. Patients were advised to drink and eat 1 hour after the procedure which was completed. To assess the severity of the pathology and the effectiveness of therapeutic and preventive measures, the WHO Oral Hygiene Index (OHI) according to the Green and Vermilion method (I960), gingivitis index GI (Loe H., Silness J., 1963), papillary bleeding index PBI (Papilla Bleeding Index, Saxer & Mühlemann, 1975).

The results of the study were processed by the method of variation statistics. To characterize a group of homogeneous units, their arithmetic averages (M), its standard error (m) and the range of changes (min – max) were determined. For statistical data processing, the Student's t-criterion was applied. as a method for evaluating differences in indicators. The statistical difference between the groups was considered significant at a value of $p<0.05$. Statistical processing of the obtained data was carried out on a personal computer using the freely distributed JAMOVI software (ver. 1.2.2.0) [15].

Results of the study and their discussion. The statistical data obtained indicate a sufficient number of teeth removed for various reasons and a low and insufficient volume and level of dental care provided, especially periodontal care in all examined age groups of professional athletes.

The following table presents the data of clinical and epidemiological studies of the intensity of inflammatory and destructive periodontal diseases and its various nosological forms among the examined professional boxers engaged in high – performance sports.

The incidence of chronic generalized periodontitis of mild severity among the examined athletes, the characteristic feature of which is most often the presence of hard dental deposits, was 2.28±0.12 in the second group (fig.1).

In the younger age group: in 16–19 – year- old athletes, this indexr was at the level of 1.50±0.11. In the age group of 26–32 years, the lowest indices were noted for the number of sextants with tartar – 1.45±0.10. As for individual nosological forms of periodontal diseases, according to the obtained indicators, it can be concluded that sextants with a bleeding rate of 1.40±0.11 are most often detected in 16–19 – year-old athletes, that is, gingivitis occurs, while periodontitis of the most severe degree was

diagnosed in most cases in the examined professional boxers aged 26–32 years, which indicated an insufficient level of dental, in particular, periodontal care, both in younger and older age groups.

In the course of our clinical and epidemiological studies, statistically verified and age – related indicators of the prevalence of diseases of hard tissues of teeth and the need for their correction in young and adult athletes of the Olympic reserve are presented. So, on average, 32.90 %. of the detected affected teeth in all examined professional boxers need treatment of carious lesions. The specific weight in the structure of the CPU of complications of dental caries that are subject to treatment (element "P") averaged 5.38 %. for all examined athletes (fig.2).

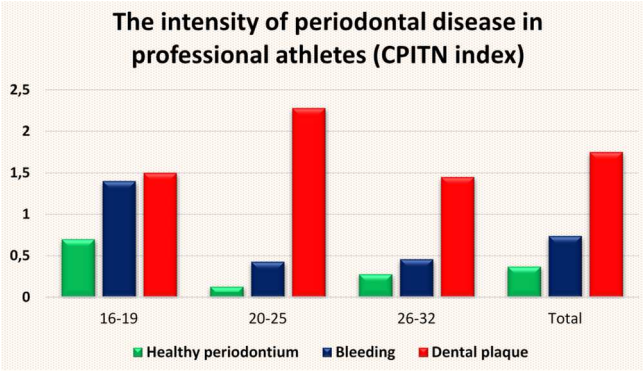

Fig. 1 Condition of periodontal tissues in professional athletes index (CPITN)

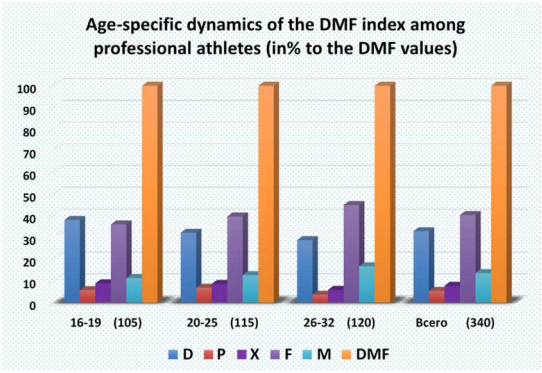

Fig. 2 Dynamics of the CPI index depending on the age of professional athletes

When comparing the data obtained by the above element, the maximum values were recorded in the average age group – 6.85 %. Whereas in the oldest age group of athletes, the indicators were determined within 3.62 %.

The incidence of complications in all examined groups of dental caries that were subject to removal (element "X") most often due to the development of destructive forms of apical periodontitis averaged 7.75 %... The proportion of restored teeth (element "P") among the youngest persons did not exceed an average of 36.04 %, the minimum in this group were the indicators for the number of removed teeth (element "Y"), which were recorded at 11.28 %... The highest rates for the number of teeth extracted for certain reasons were found in the third group of examined athletes, who made up the oldest age group – 16.72 %. The statistical data obtained indicate the high need of professional boxers representing the interests of the country at major international competitions for timely and highly qualified therapeutic and orthopedic dental care and serious problems in its organization on the ground, especially during the period of intense physical and emotional stress in the pre–competition and post–finish periods of the training cycle.

Due to the lack of time for proper rest, balanced nutrition and lack of opportunity to receive timely dental care, it is very urgent to introduce effective means of prevention and treatment of inflammatory periodontal diseases that would show their anti–inflammatory effectiveness in a short time and preserve it for a long time, which is very important from the point of view of improving the quality of life of an active athlete and achieving high sports results. The scheme of treatment of periodontitis developed by us using a complex of traditional methods and a combined adhesive gum balm in the main group containing a relatively high concentration of antiseptic substances and natural antioxidants, according to the results of clinical studies, can be recommended as an additional supportive and corrective therapy. So, if the gingivitis index (GI) in athletes of the main group at the initial stage of the examination was 1.92±0.052 points, then in the control group it was determined at 1.75±0.043 points, which indicated the development of moderate pathology in periodontal tissues. On the next day of the examination, after the start of the course of basic therapy, the index indicators in patients of the first group significantly decreased and were already 1.31±0.030 points, which was lower than in the control group – 1.65±0.040 points at the same time ($p<0.001$). At the final stage of clinical trials, the gingivitis index in the main observation group decreased to the minimum value for all groups and terms – 0.63±0.027 points. Whereas, in the control group, the data obtained indicated the development of an inflammatory process of moderate severity – 1.45±0.024 points ($p<0.001$) (table 1).

□□bl□1

Dynamics of GI during treatment

Groups	Terms of treatment			
	Before	In 14 days	In 1 month	In 3 months
Main	1.92±0.052	1.31±0.030	1.06±0.033	0.63±0.027
Control	1.75±0.043	1.65±0.040	1.50±0.027	1.45±0.024
p	<0.05	<0.001	<0.001	<0.001

Note: p – statistical reliability of indicators between groups

According to the HDI index, after probing the gingival sulcus from the palatine surface of the first and third quadrants and on the labial (buccal) surface of the second and fourth quadrants of both jaws, the degree of bleeding of the gingival papillae was determined. The index data was identified for each quadrant,

after which the average value was output. The highest degree of bleeding according to this index is characterized by intense bleeding on the tooth or gum during probing. The papillary bleeding index (PBI) in patients of the main group of professional athletes on the first day of the examination was 2.24±0.044 points, and in the control group – 2.32±0.036 points (table 2).

Table 2

Changes in PBI before and after treatment

Groups	Terms of treatment			
	Before	In 14 days	In 1 month	In 3 months
Main	2.24±0.044	1.73±0.025	1.26±0.037	0.55±0.030
Control	2.32±0.036	2.13±0.041	1.88±0.038	1.63±0.021
p	>0.05	<0.001	<0.001	<0.001

Note: p – statistical reliability of indicators between groups

On the 2nd day of clinical observations and after the start of treatment, the papillary bleeding index in patients of the first group after gel application was 1.73±0.025 points, and in the control group – 2.13±0.041 points, which was significantly higher than the values of the previous group ($p<0.001$). In subsequent periods of observation and index evaluation of treatment results, a similar dynamics was recorded in the indicators of the studied index, as evidenced by the data recorded after 10 days. During these periods, in patients of the main observation group, the papillary bleeding index PBI was determined at 0.55±0.030 points, versus 1.63±0.021 points, values in the control group ($p<0.001$).

In the course of these studies, the role of intense physical exertion, negatively affecting the hygienic status of the oral cavity and maintaining it at the proper level, in the genesis of inflammatory diseases of periodontal tissues was revealed. A number of other authors came to similar conclusions in the course of clinical and laboratory studies [11]. In the index assessment of the condition of periodontal soft tissues in the professional athletes we examined, severe periodontitis, which was characterized by the presence of sub – and supragingival hard dental deposits, was more often diagnosed in older age groups, which was reflected in the works of some foreign scientists [9]. It is necessary to note the high level of tooth decay in the examined persons with caries, which often, along with injuries, leads to tooth loss and disorders in the entire dental system. The high frequency of occurrence of athletes with caries and teeth removed due to it is evidenced by the results of some scientific studies [10]. The analysis of the world literature has shown the increased attention of specialists in the field of dentistry and sports medicine to the use of biologically neutral agents in the complex therapy of dental diseases, and here it is important to note the presence of works proving the effectiveness of propolis-based drugs [14]. Our data have proven its effectiveness in the treatment of inflammatory diseases of periodontal tissues. Similar results were obtained in the course of studies by other authors [2, 13]. Thus, the treatment and prevention of possible relapses of periodontal diseases with the use of effective propolis–based drug increases the effectiveness of conservative basic therapy and may, due to the absence of allergic reactions, be recommended for widespread introduction as an important element of complex periodontal treatment in professional athletes.

Conclusion

The highest rates for the number of extracted teeth were found in the third oldest age group – 16.72 %. of cases. According to certain nosological forms of periodontal diseases in 16–19–year-old athletes, sextants with a bleeding rate of 1.40±0.11 are most often detected, clinical manifestations of severe periodontitis were more often detected in the examined athletes aged 20–25 years.

At all stages of therapeutic and preventive measures, the index indicators in patients of the main group decreased more pronounced than in athletes in the control group – on day 10, the index of papillary bleeding PBI in the main group was 0.55±0.030 points, versus 1.63±0.021 points, values in the control group.

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THE SIGNIFICANCE OF MAGNETIC RESONANCE IMAGING IN ADDITION TO COMPUTER TOMOGRAPHY IN THE EVALUATION OF CERVICAL SPINE TRAUMAS IN PATIENTS WITH BLUNT TRAUMA

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Missed spinal injuries can be fatal, leading to paralysis and lifelong disability. The possibility of avoiding missed trauma was determined in 78 patients with blunt trauma, the mean age was 43.1±8.14 years. The patients underwent CT and MRI. Statistical analysis was conducted using computer software package SPSS. Transport injuries were more common – 87.2 %. In 16.7 % of cases, CT revealed concomitant ossification of the posterior longitudinal ligament. The chance of finding bilateral facet dislocation was 0.238 for hernia using MRI, 0.026 for CT, 0.857 and 0.114 for epidural hematoma, respectively. The chance of finding unilateral facet dislocation with bone edema without fracture was 1.516 on MRI and 0.182 on CT. Bone anatomy is better visualized on CT, disc herniation and hemorrhage on MRI. When evaluating spinal injuries, the use of CT and MRI is recommended.

Key words: blunt trauma, cervical spine, computed tomography, magnetic resonance imaging, injury mechanism, chance ratio

Г.Ш. Гасимзаде

ЗНАЧЕННЯ МАГНІТНО-РЕЗОНАНСНОЇ ТОМОГРАФІЇ У ДОПОВНЕННЯ ДО КОМП'ЮТЕРНОЇ ТОМОГРАФІЇ ПРИ ОЦІНЦІ ПОШКОДЖЕНЬ ШИЙНОГО ВІДДІЛУ ХРЕБТА У ПАЦІЄНТІВ З ТУПОЮ ТРАВМОЮ

Пропущені травми хребта можуть мати фатальні наслідки: призвести до паралічу та довічної інвалідності. Можливість запобігання пропущеній травмі визначено у 78 пацієнтів із тупою травмою, середній вік – 43.1±8.14 років. Пацієнтам проведено КТ та МРТ. Статистичні аналізи виконано за допомогою програми SPSS. Найчастіше відзначалися транспортні травми – 87.2 %. У 16.7 % випадків КТ виявила супутню осифікацію заднього поздовжнього зв'язування. Шанс знайти двосторонній фасетковий вивих склав при грижі за допомогою МРТ 0.238, при КТ – 0.026, при епідуральній гематомі 0.857 та 0.114 відповідно. Шанс знайти односторонній фасетковий вивих при набряку кісток без перелому при МРТ становить 1.516, при КТ – 0.182. Шанс визначити внутрішньочерепний крововилив при МРТ становить 1.108, при КТ – 0.219. Шанс підозри на травму грудного відділу хребта при МРТ становить 0.814, при КТ – 0.182. Анатомія кісток краще візуалізується при КТ, грижа диска та крововилив – при МРТ. При оцінці травм хребта рекомендується застосування КТ та МРТ.

Ключові слова: тупа травма, шийний відділ хребта, комп'ютерна томографія, магнітно-резонансна томографія, механізм травм, відношення шансів

This work is a fragment of a doctoral dissertation: "Prognostic value of modern methods of radiation diagnostics in severe combined injuries."

Cervical spine injuries are a concern due to their high incidence. They can be very different, from whiplash injuries, which are associated with very minor complications, to ligament injuries, various fractures, spinal cord injuries, which can have not only morbidity, but also concomitant mortality. Since the spine, due to its complexity, is the most difficult part of the skeletal system for radiological assessment,