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STUDY OF ORAL FLUID TRACTABILITY AS A TENTATIVE TEST FOR DETERMINING AN UNFAVORABLE SITUATION IN THE ORAL CAVITY IN YOUNG PEOPLE

© Anastasia N. Belogortseva[1], Andrey K. Iordanishvili[2, 3]

[1] Children's Dental Polyclinic No. 3. 2, lit. A Brusovskaya str., Saint Petersburg 195271 Russian Federation
[2] North-Western State Medical University named after I.I. Mechnikov. 41 Kirochnaya str., Saint Petersburg 191014 Russian Federation
[3] Military Medical Academy named after S.M. Kirov. 6 Akademician Lebedev str., Saint Petersburg 194044 Russian Federation

Contact information:
Andrey K. Iordanishvili — Doctor of Medical sciences, Professor of the Department of Maxillofacial Surgery and Surgical Dentistry. E-mail: professoraki@mail.ru ORCID: https://orcid.org/0000-0000-9328-2014 SPIN: 6752-6698

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Abstract. At present there is little information about the possibility of using the test spinnbarkeit, which allows to establish the extensibility of saliva, although the possibility of its use with the exclusion of the laboratory stage has been proved, which allowed in the clinical practice of dentists to replace complex and time-consuming tests such as the secretion rate and viscosity of oral fluid (mixed saliva). The paper evaluated the possibility of using the oral fluid viscosity test in young people, taking into account their incidence of underlying dental pathology, as well as concomitant diabetes mellitus. Sixty-five people of young age were under observation and were divided into two groups depending on the concomitant pathology. Group 1 included 34 people who were somatically healthy. Group 2 included 31 people who suffered from diabetes mellitus. It was found that the patients of group 1 of the study according to the index of the intensity of dental caries (CPU) can be attributed to the group of people with subcompensated, and patients of group 2 — to decompensated activity of dental caries. This is due to satisfactory oral hygiene in group 1 patients and unsatisfactory oral hygiene in group 2 patients, as well as due to the established increased saliva tractability in group 2 patients. It is shown that the technique of determination of mixed saliva tractability can be used as an additional method in the study of dental status, as well as risk factors for demineralization of hard tissues of teeth and inflammatory periodontal pathology, provided that it is easy to perform and sufficiently informative.

Keywords*: young people, oral fluid, mixed saliva, dental caries, resistance of dental hard tissues, intensity of dental caries, oral hygiene, periodontal pathology, saliva viscosity, microcrystallization of saliva*

ИССЛЕДОВАНИЕ ТЯГУЧЕСТИ РОТОВОЙ ЖИДКОСТИ КАК ОРИЕНТИРОВОЧНЫЙ ТЕСТ ОПРЕДЕЛЕНИЯ НЕБЛАГОПРИЯТНОЙ СИТУАЦИИ В ПОЛОСТИ РТА У МОЛОДЫХ ЛЮДЕЙ

© Анастасия Николаевна Белогорцева[1], Андрей Константинович Иорданишвили[2, 3]

[1] Детская стоматологическая поликлиника № 3. 195271, г. Санкт-Петербург, ул. Брюсовская, д. 2, лит. А
[2] Северо-Западный государственный медицинский университет им. И.И. Мечникова. 191014, г. Санкт-Петербург, ул. Кирочная, д. 41
[3] Военно-медицинская академия им. С.М. Кирова. 194044, г. Санкт-Петербург, ул. Академика Лебедева, д. 6

Контактная информация:
Андрей Константинович Иорданишвили — д.м.н., профессор кафедры челюстно-лицевой хирургии и хирургической стоматологии. E-mail: professoraki@mail.ru ORCID: https://orcid.org/0000-0000-9328-2014 SPIN: 6752-6698

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Резюме. В настоящее время мало сведений о возможности использования теста spinnbarkeit, позволяющего установить растяжимость слюны, хотя доказана возможность его использования при исключении

лабораторного этапа, что позволило в клинической практике врачей-стоматологов заменить сложные и продолжительные по времени тесты, такие как скорость секреции и вязкость ротовой жидкости (смешанной слюны). В работе оценена возможность использования теста на тягучесть ротовой жидкости у людей молодого возраста с учетом их заболеваемости основной стоматологической патологии, а также сопутствующего сахарного диабета. Под наблюдением находилось 65 людей молодого возраста, которые в зависимости от сопутствующей патологии были разделены на две группы. В 1-ю группу вошли 34 человека, которые соматически были здоровы. Во 2-ю группу вошел 31 человек, страдающих сахарным диабетом. Установлено, что пациентов 1-й группы исследования по показателю индекса индекс интенсивности течения кариеса зубов (КПУ) можно отнести к группе людей с субкомпенсированнной, а пациентов 2-й группы — к декомпенсированной активностью кариеса зубов. Это связано с удовлетворительной гигиеной рта у пациентов 1-й группы и неудовлетворительной гигиеной рта у пациентов 2-й группы, а также в связи с установленной повышенной тягучестью слюны у пациентов 2-й группы. Показано, что методика определения тягучести смешанной слюны может использоваться в качестве дополнительного метода при исследовании стоматологического статуса, а также факторов риска возникновения деминерализации твердых тканей зубов и воспалительной патологии пародонта при условии простоты ее выполнения и достаточной информативности.

Ключевые слова: *люди молодого возраста, ротовая жидкость, смешанная слюна, кариес зубов, резистентность твердых тканей зубов, интенсивность кариеса зубов, гигиена полости рта, патология пародонта, тягучесть слюны, микрокристаллизация слюны*

INTRODUCTION

Currently, there is an opinion that dental caries is the initial symptom of a nonspecific infectious disease of the masticatory apparatus, provoked and maintained by a number of factors. The main ones being reduced resistance (permeability) of dental hard tissues, as well as poor oral hygiene and frequent consumption of carbohydrate-containing foods [1, 2].

In addition to determining the quality of dental care using oral hygiene indices, laboratory methods to diagnose the cariesogenic situation or so-called saliva tests are considered important. In the literature, salivary microcrystallization in patients of different age groups is the most frequently reported [3, 4]. At the same time, there is little information about the possibility of using the saliva tractability test to establish its extensibility, although the possibility of its use in the clinical practice of dentists to replace complex and time-consuming tests such as the secretion rate and viscosity of oral fluid (mixed saliva) has been proven [5, 6].

AIM

The aim of the study is to evaluate the feasibility of using the oral fluid tractability test in young adults, taking into account their incidence of major dental pathology as well as comorbidities.

MATERIALS AND METHODS

There were 65 (38 (58.47%) males and 27 (41.53%) females) young people (18 to 25 years old) under observation, who were divided into two groups depending on the concomitant pathology. Group 1 included 34 (26 (76.47%) males and 8 (23.53%) females) people who were somatically healthy. Group 2 included 31 (12 (38.71%) males and 19 (61.29%) females) individuals who had type 1 or type 2 diabetes mellitus. All patients in group 2 were under dynamic observation by a district endocrinologist and were continuously receiving insulin therapy, but they were not under dynamic observation by a dentist.

During the dental examination, the following parameters were investigated in patients:

1) CFE index (sum of carious, filled and extracted teeth) according to the generally accepted method [7];
2) simplified Green-Vermillion index (OHI-S) to assess the state of oral hygiene [7];
3) the method of determining the pulling power of oral fluid according to the method of P.A. Leus and L.V. Belyasova [8].

Dental examinations were performed once and the character of dental health of the examined patients in both study groups was assessed based on the obtained indicators.

The digital material obtained in the clinical study was processed on a personal computer using a specialized package for statistical analysis STATISTICA 6.0. Differences between the compared groups were considered reliable at $p \leq 0.05$. Cases when the probability values of "p" were in the range from 0.05 to 0.10 were considered as "presence of a tendency".

RESULTS AND DISCUSSION

During the clinical study, it was found that the young patients of study group 1 had good

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oral hygiene (simplified Green–Vermillion index (OHI-S) was 0.61±0.19) and the CFE index was 5.62±1.56. In patients of group 2 of the study, who had diabetes mellitus, oral hygiene was unsatisfactory (simplified Green–Vermillion index (OHI-S) was 2.36±0.37, p <0.05), and the CFE index was 10.46±2.44, p <0.05 (Fig. 1). Figure 2 shows the distribution of the CFE index according to the number of carious, filled and extracted teeth. It can be said that patients of the 1st group of the study according to the index of the CFE index can be attributed to the group of people with subcompensated, and patients of the 2nd group — with decompensated activity of dental caries (Fig. 2). The observed differences in caries intensity between the two groups of subjects were significant (p <0.01). Despite the fact that sanitation measures were necessary for all people from both study groups, the patients of group 2 obligatorily required professional oral hygiene, which provides not only real therapeutic and preventive measures, but also training of patients in individual dental hygiene.

The study of oral fluid tractability (mixed saliva) showed that 29% of group 1 patients had "short salivary tractability", i.e. salivary filament breakage occurred in the oral cavity, immediately below the cutting edges of the maxillary central incisors . Only 5% of patients in this group had "medium salivary tractability", in which salivary filament breakage occurred at the level from the upper lip to the tip of the nose [8]. Group 2 patients were significantly characterized by "long salivary tractability", which was noted in 27% of patients, and 7% of patients from this group had "medium salivary extensibility" (Fig. 3).

Thus, the young patients of the study group 2 with diabetes mellitus had significantly higher salivary tractability than the patients of group 1 (p <0.01).

The clinical method of assessing salivary tractability is imperfect, as its results can be affected by many factors that are difficult to take into account or exclude at an outpatient dental appointment. However, it should be noted the high diagnostic value of this technique, which indirectly allows us to judge a number of physical and chemical properties of oral fluid, namely the viscosity of saliva, as well as the rate of its secretion, on which largely depends on the biochemical composition of oral fluid and its viscosity [9]. Our use of the interpretation of the previously proposed degree of saliva tractability into "short, medium and long salivary extensibility" [8] coincided with the intensity of the course of dental caries and the nature of oral hygiene. That is, with the increase of saliva tractability with a high

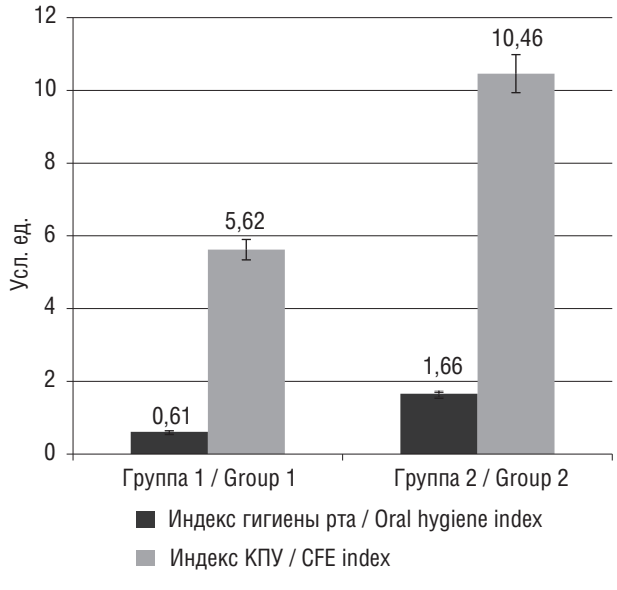

Fig. 1. Indicators of the Green–Vermillion (OHI-S) and the CFE index in patients of the study groups (arbitrary units)

Рис. 1. Показатели индекса гигиены рта Грина–Вермиллиона (OHI-S) и индекса КПУ у пациентов обследуемых групп (усл. ед.)

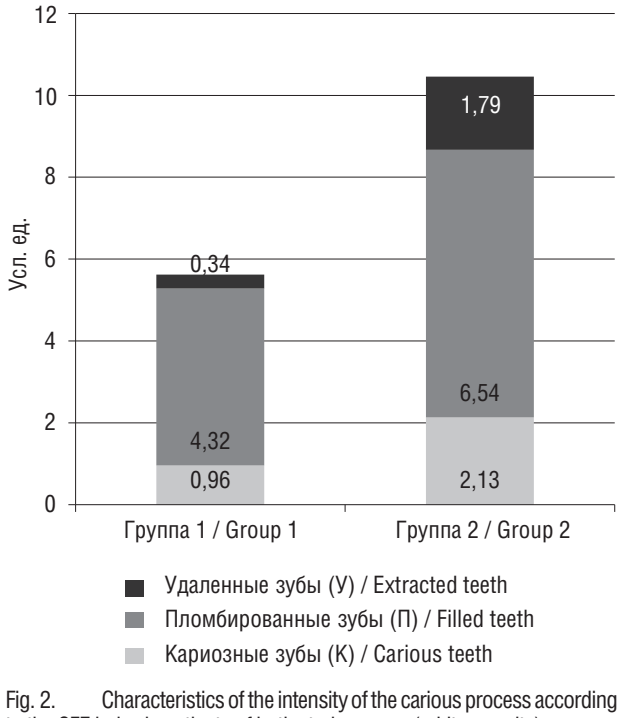

Fig. 2. Characteristics of the intensity of the carious process according to the CFE index in patients of both study groups (arbitrary units)

Рис. 2. Характеристика интенсивности течения кариозного процесса по показателю индекса КПУ у пациентов обеих групп исследования (усл. ед.)

degree of objectivity we can assume the increase of cariesogenic situation in the oral cavity, as well as the threat of the development of inflammatory periodontal lesions and the formation of soft and mineralized deposits on the crown parts of teeth, which is confirmed by the deterioration of oral hygiene in patients of the 2nd group of the study. It should be assumed that young patients suffering from diabetes mellitus, in addition to medical follow-up by an endocrinologist, should be under the observation by a dentist, which has a pronounced effect of improving the quality of dental health in such patients [10].

CONCLUSION

The performed clinical study on the evaluation of the use of the oral fluid pull test in young people with regard to their dental pathology, as well as concomitant diabetes mellitus, has shown that the tested method can be used as an additional method in the study of dental status and risk factors for demineralization of hard tissues of teeth and inflammatory periodontal pathology. The method of saliva tractability test is simple to perform and quite informative. With an increase in saliva extensibility with a high degree of objectivity should be assumed an increase in cariesogenic situation in the oral cavity, as well as the threat of inflammatory periodontal lesions.

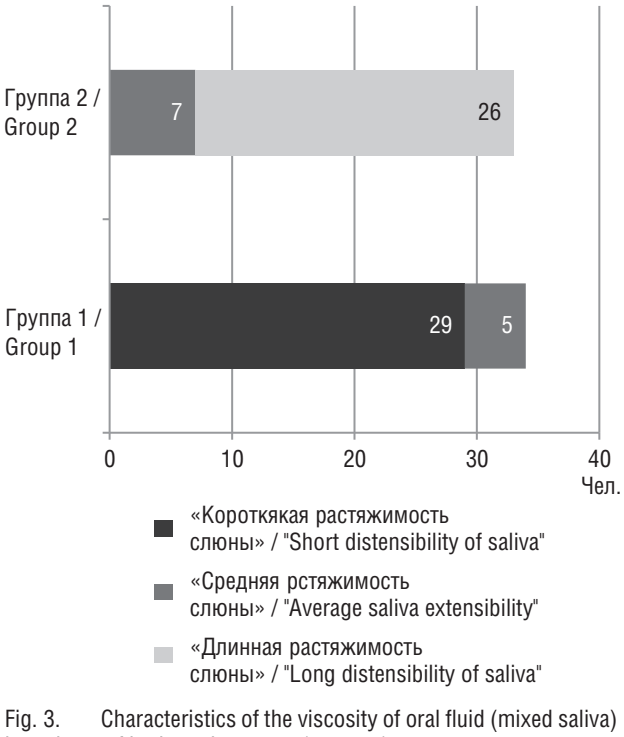

Fig. 3. Characteristics of the viscosity of oral fluid (mixed saliva) in patients of both study groups (persons)

Рис. 3. Характеристика тягучести ротовой жидкости (смешанной слюны) у пациентов обеих групп исследования (чел.)

ADDITIONAL INFORMATION

Author contribution. Thereby, all authors made a substantial contribution to the conception of the study, acquisition, analysis, interpretation of data for the work, drafting and revising the article, final approval of the version to be published and agree to be accountable for all aspects of the study.

Competing interests. The authors declare that they have no competing interests.

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Consent for publication. Written consent was obtained from the patient for publication of relevant medical information within the manuscript.

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