

Research Article

# Study of the State of Denture-Supporting Tissues in Patients with Pemphigus Vulgaris

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## Abstract

The analysis of professional literature indicated the absence of scientific papers related to studying the state of the oral mucosa tissues as well as denture-supporting tissues in patients with acantholytic pemphigus.

**The objective** of the research was to describe the effect of acantholytic pemphigus on the state of denture-supporting tissues.

**Materials and methods.** There were used the objective (visual examination, examination of the oral cavity) and special clinical examination methods (index assessment of oral hygiene and periodontal status). All the patients were divided into two clinical groups: Group I included patients with acantholytic pemphigus requiring orthopedic treatment and Group II included patients without somatic pathology (the control group).

**Results and discussion.** Patients of Group I complained of dryness (65.0%), bleeding gums (75.0%), petechiae (70.0%) and tongue edema (30.0%), as compared to patients of Group II who complained of bleeding gums (5.0%) and dryness (10.0%) only. The periodontal index was higher in Group I ( $3.41 \pm 0.75$ ) as compared to Group II ( $1.72 \pm 0.15$ ). The periodontal index increased with the increase in acantholytic pemphigus duration (from  $2.78 \pm 0.70$  to  $3.36 \pm 0.73$ ).

**Conclusions.** The comparative evaluation of dental parameters showed the deterioration of clinical condition of denture-supporting tissues, periodontal tissues of abutment teeth in Group I, and its progression with the increase in the duration of acantholytic pemphigus.

## Keywords

pemphigus vulgaris; prosthetic bed; tissue condition; index score

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## Problem statement and analysis of the recent research

Vesicular dermatoses constitute a global problem, the relevance of which is increasing all over the world. They are severe chronic relapsing autoimmune diseases of the skin and mucous membranes, the morphological basis of which is the process of acantholysis, i.e. the loss of the intercellular connections between epidermal cells [5, 6]. The lesions of the mucous membrane may be the only symptom of the disease for a long time lasting from 1 month to 2-3 years. The lesions are most frequently found on the soft palate, the retromolar area of the cheeks, at the bottom of the oral cavity, lips, gums (desquamative gingivitis) and pharynx [2]. The acantholytic process in the oral mucosa (OM) may lead to the Nikolsky's sign (detachment of the surface layers of the epithelium with the formation of erosions) due to mechanical effect of prosthetic basis on denture-supporting tissues. This, in turn, makes it impossible to use removable dentures during the exacerbation of vesiculobullous disease [1, 3]. Local therapy often involves frequent rinsing with antiseptic solutions and a 0.5% solution of novocain, lubrication with 1% methylene blue solution and Castellani paint, processing of erosions

with sea buckthorn oil. In the available literature, there are no scientific or scientific-practical papers related to local therapy for pemphigus [7].

The analysis of national and foreign literature has shown that the problem of the severity of clinical symptoms of the damage to the oral cavity due to acantholytic pemphigus is relevant and insufficiently studied.

The objective of the research was to diagnose the state of denture-supporting tissues in patients with acantholytic pemphigus which is important when creating the innovative approaches to orthopedic treatment of such patients.

## 1. Materials and methods of the research

We studied the effect of acantholysis on the state of denture-supporting tissues in 20 patients with acantholytic pemphigus (Group I). The control group consisted of 20 persons with partial loss of teeth without any somatic pathology having indications for orthopedic treatment (Group II).

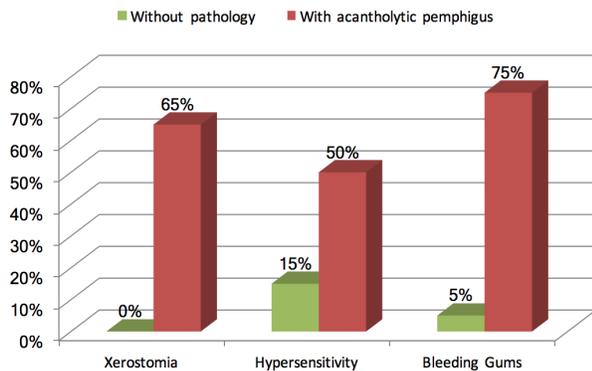
During the study, the following examination methods were used: clinical examination methods - questioning of patients with acantholytic pemphigus (complaints, medical history, life history, allergic anamnesis), the objective methods of examination (visual examination, examination of the oral cav-

ity), special clinical methods of examining teeth, periodontal tissues and the OM (index assessment of oral hygiene and periodontal status).

## 2. Results of the research and their discussion

The subjective as well as the objective assessment of the state of denture-supporting tissues was analyzed; the results of clinical examination and the frequency of various pathologies of the OM in the examined groups were provided; a comparative evaluation of dental indicators was performed. The initial survey found that 65.0% of patients with acantholytic pemphigus complained of dry mouth associated by them with the administration of corticosteroids or an increase in their daily dose during the exacerbation of pemphigus. Abnormal salivation in acantholytic pemphigus, in turn, may contribute to the deterioration of the state of both the OM and hard dental tissues (carious and non-carious lesions, the reduction in the activity of local factors of the oral cavity protection, etc.) [8, 9].

The frequency of complaints indicated by patients during the initial examination is shown in Fig. 1. In acantholytic

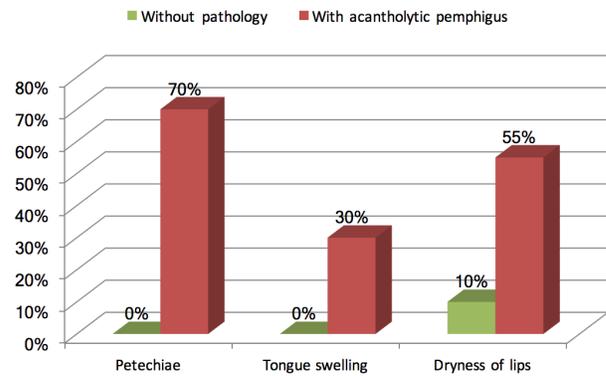


**Figure 1.** Subjective assessment of oral cavity status by patients

pemphigus, half of the patients complained of increased dental sensitivity. One of the causes of increased dental sensitivity was the progressive jaw osteoporosis on the background of intensive therapy with glucocorticosteroids resulting in the exposed neck of the tooth and gingival recession.

In some cases (60.0%), patients complained of discomfort and painful gums, bad breath, tooth mobility.

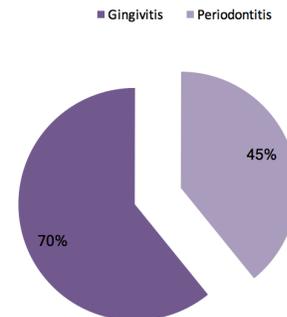
The results of physical examination of the oral cavity are shown in Fig. 2. When examining the OM in patients with acantholytic pemphigus, in 70.0% of cases, petechiae were found, in 30.0% of cases, tongue edema was observed, in 55.0% of cases, patients complained of dry lips, which might be the result of hyposalivation (decreased salivation in the oral cavity in acantholytic pemphigus was observed in 65.0% of cases). Significant changes were observed in patients during



**Figure 2.** Clinical condition of the oral cavity during the initial examination

the examination of the tongue - a white coated tongue, edema, altered taste and tactile sensations.

Inflammatory diseases of periodontal tissues in acantholytic pemphigus were found to develop in most cases. The structure of inflammatory diseases of periodontal tissues in patients with acantholytic pemphigus is represented in Fig. 3.



**Figure 3.** Structure of inflammatory diseases of periodontal tissues in patients with acantholytic pemphigus.

Table 1 shows the index assessment of periodontal status in patients with acantholytic pemphigus belonging to the control group.

Table 1 demonstrated that in patients with acantholytic pemphigus, the level of hygiene was significantly worse than in the control group. It could be due to dry mouth (65.0% of patients), painful feelings during tooth brushing due to tooth hyperesthesia and periodic oral ulceration due to the progression of the acantholytic process.

In patients with acantholytic pemphigus, the PMA and the PI were much higher than in patients of Group I. It indicated persistent periodontal disorders in patients with acantholytic pemphigus due to poor oral hygiene as well as intensive glucocorticosteroid therapy resulting in jaw osteoporosis and microcirculatory disorders.

**Table 1.** Index assessment of periodontal status in patients with acantholytic pemphigus belonging to the control group

Groups	Number of patients	FVOHI, points	OHI-s, points	PI, points	PMA, %	Bleeding index, points
Group I	20	2.3±0.66	2.21±0.61	3.41±0.75	28.3%±2.0	3.5±0.79
Group II	20	1.67±0.14	1.6±0.13	1.72±0.15	5.2%±1.3	1.0±0.1

Note.

FVOHI - Fedorov-Volodkina Oral Hygiene Index,  
 OHI-s – Simplified Oral Hygiene Index (Greene-Vermilion),  
 PI – Periodontal Index,  
 PMA - Papillary-Marginal-Alveolar Index

All the aforementioned data allowed us to suppose that in acantholytic pemphigus, the factors contributing to the transition of superficial inflammation to deeper layers affect the prosthetic bed. Such factors may be caused by immunodeficiency disorders on the background of corticosteroid therapy reducing the gingival barrier function, acantholysis in acute periods, progressive jaw osteoporosis [4].

The duration of the clinical course of acantholytic pemphigus is believed to affect the frequency and severity of pathological changes in periodontal tissues. The age of the examined patients ranged from 31 to 83 years (the average age was 55 years).

Patients with acantholytic pemphigus (20 individuals) were divided into 2 groups - those who suffer from acantholytic pemphigus and have received glucocorticosteroid therapy for more than 10 years (6 patients) and those who have received glucocorticosteroid therapy for at least 5 years (8 patients). The results of studying the state of periodontal tissues in these groups are presented in Table 2. The analysis of the obtained data showed that oral hygiene was at the identical level regardless of the duration of acantholytic pemphigus. The increase in the indicators of the PI in patients with disease duration of more than 10 years indicated the reduction in the ability of denture-supporting tissues to regenerate with the increase in disease duration.

Thus, the relationship between the duration of acantholytic pemphigus and severity degree of destructive changes in denture-supporting tissues has been found.

### 3. Conclusions

1. Acantholytic pemphigus as well as glucocorticosteroid therapy has a significant impact on the state of the OM and periodontal tissues.
2. The damage to the OM due to the acantholysis process was found in 100.0% of cases (dryness in 65.0% of patients, bleeding gums in 75.0% of patients, petechiae in 70.0% of patients, tongue edema in 30.0% of patients).
3. A sharp deterioration of periodontal status may be caused by immunodeficiency disorders on the background of corticosteroid therapy reducing the gingival

barrier function, acantholysis in acute periods, progressive jaw osteoporosis. The increase in the indicators of the PI in patients with disease duration of more than 10 years indicated the reduction in the ability of denture-supporting tissues to regenerate with the increase in disease duration.

### 4. Prospects for further research

The improvement of the methods of diagnosis and orthopedic treatment of patients with acantholytic pemphigus using removable dentures is promising.

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**Table 2.** State of periodontal tissue depending on the duration of acantholytic pemphigus

Groups	Number of patients	FVOHI, points	OHI-s, points	KI, points	PMA, %	Bleeding index, points
Group I <5 years	8	2.12±0.54	1.91±0.43	3.4±0.75	25.0±1.9	2.78±0.70
Group II >10 years	6	2.43±0.68	2.32±0.66	4.0±0.8	24.8±1.88	3.36±0.73
Without pathology	20	1.67±0.14	1.6±0.13	1.0±0.1	5.2±1.3	1.72±0.15

Note.

KI - Keratinization Index

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**Received:** 4 May 2017

**Revised:** 6 June 2017

**Accepted:** 6 June 2017