Western European Journal of Linguistics and Education
Volume 4, Issue 2, February 2026
https://westerneuropeanstudies.com/index.php/2
ISSN (E): 2942-190X Open Access| Peer Reviewed

MICROBIOLOGICAL INDICATORS OF ORAL CAVITY IN PATIENTS WITH EPILEPSY

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Abstract.
To improve the quality of dental care for patients suffering from epilepsy, a study was conducted on the impact of a general somatic disease (epilepsy) on oral microflora. It is clear that oral dysbiosis is observed in this group of patients.
Keywords: epilepsy, oral microflora, dysbiosis.

Current:

In recent years, the number of epilepsy patients has been increasing. Therefore, the quality of their lives is becoming one of the most important issues (Gecht A.B., 2000). However, according to literature data, the condition of the oral cavity and the prevalence of dental pathology in patients with epilepsy, despite the importance of this problem and its relevance, have not been sufficiently studied.

Homeostasis and balance of oral microflora are among the main factors in maintaining oral health. Local and general factors of the body's defense also play a large role. In patients suffering from epilepsy, various lesions of the oral cavity organs are observed, which forces us to think about the etiopathogenesis of these pathologies. [5]

Thus, to date, sufficient research has been devoted toex assessing the condition of the oral cavity, clarifying the pathogenetic mechanisms of dental and periodontal diseases, as well as data on the study of the complex in such a socially significant category of mental patients as epilepsy patients. [1]

Materials and methods:

The study involved 105 patients divided into 2 groups. The first (control) group consisted of 48 somatically healthy patients, with a gender ratio of 31 women versus 17 men.

The second (main) group consisted of 57 patients suffering from epilepsy, the sex ratio in this group was 32 women versus 25 men.

All patients were selected according to the following principles:[1]

1. Only somatically healthy patients requiring orthopedic dental care were selected for the control group.
2. The main group consisted of patients with mild and moderate severity of the underlying disease. All patients in this group also needed orthopedic dental care.
3. All patients had no internal organ diseases or systemic diseases other than epilepsy.
4. All patients underwent a thorough dental examination.

All examined individuals underwent oral lavage, and the resulting mass was inoculated onto nutrient media. After colony formation, the qualitative and quantitative composition of the oral microbial flora was calculated. [1]

Material sampling from patients was carried out as follows:

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- The patient is asked to rinse their mouth with a physiological solution (10-15 ml of 0.9% NaCl) for 30-60 seconds.
- After washing, the patient spits the liquid into a sterile test tube.
- The test tube is tightly sealed and marked, indicating the patient's data, the date and time of material collection.

After collecting the material, the obtained material was delivered to the laboratory in the shortest possible time (no more than 1-2 hours) at a temperature of +4...+8°C. If the research was delayed, the material was kept in the refrigerator for no more than 6 hours[1].

After the material was delivered to the laboratory, it was inoculated onto nutrient media. Before starting work, the workplace and tools were thoroughly disinfected. The washing was thoroughly mixed. Then, 0.1-0.5 ml of material was taken from it and inoculated onto nutrient media:

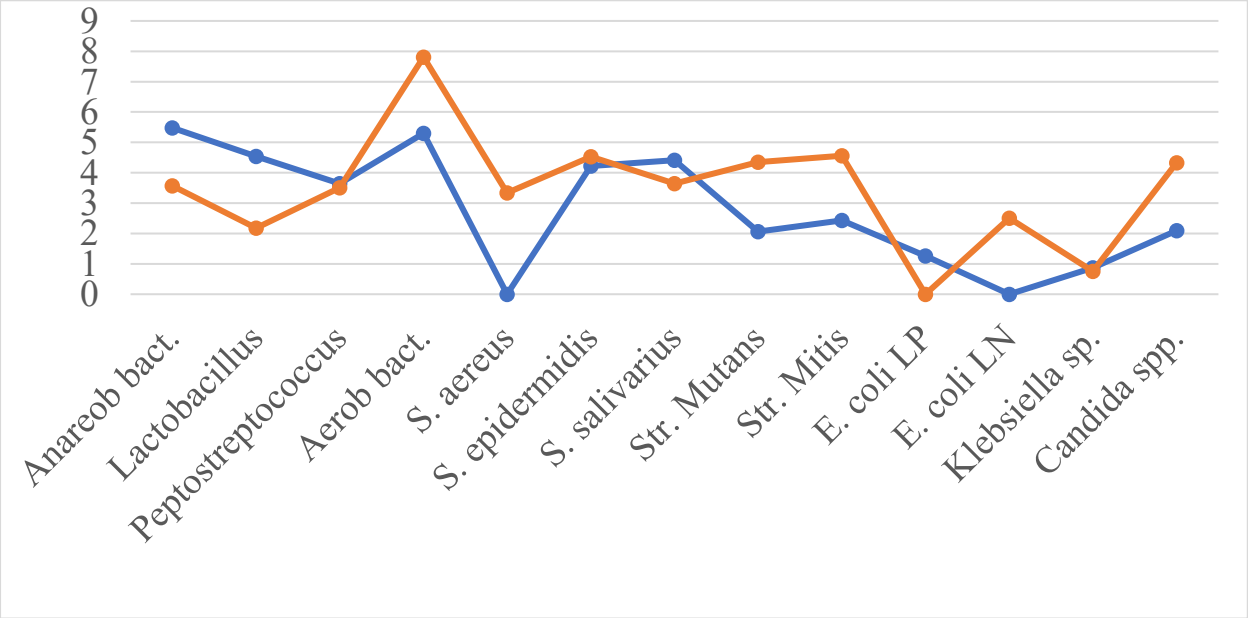
- **Blood agar** - for determining the total number of bacteria.
- **Saburo medium** - for detecting Candida genus fungi *Candida*.

The material was evenly distributed across the surface of the medium using a sterile spatula or loop [4]. After sowing, it was placed in a thermostat at a temperature of +37°C:

- 24-48 hours for bacterial cultures.
- 3-5 days for Candida genus fungi *Candida*.

Research results:

In the control group, streptococci are most common, predominantly *Str. salivarius* (90%), followed by *Str. mitis* (80%), *Str. mutans* (60%) and epidermal staphylococcus culture (50%). Gram-negative microbes such as Escherichia (10%), Proteus (8%), and Klebsiella (5%) have the lowest occurrence rates, while fungi are found in an average of 20% of the control group.



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Control group Main group

The results of microbiological studies of the oral cavity in patients with epilepsy showed significant changes in the quantitative and qualitative characteristics of the oral fluid. In these patients, a decrease in the number of anaerobic microorganisms, especially lactobacilli, was noted, their number was 2.18±0.15 CFU/ml, which is almost two times lower than in the control group (4.54±0.14 CFU/ml). 1). At the same time, in patients with epilepsy, a significant increase in facultative flora, predominantly coccal flora, is observed. The increase in pathogenic staphylococcus and escherichia strains, as well as a noticeable increase in Candida fungi in the oral cavity, is particularly noteworthy.

Table 1

Characteristics of oral microflora in epilepsy patients (Lg M±m CFU/ml)

No.	Microbial groups	Number of microbes in 1 ml of saliva	
		Control group	in patients with epilepsy
1.	Total anaerobes	5.48±0.15	3.57±0.13*
2.	*Lactobacillus*	4.54±0.14	2.18±0.15*
3.	*Peptostreptococcus*	3.64±0.11	3.51±0.13
4.	Total aerobes	5.30±0.17	7.81±0.32*
5.	*S. aereus*	0	3.34±0.12
6.	*S. epidermidis*	4.22±0.14	4.53±0.16
7.	*Str. salivarius*	4.41±0.15	3.64±0.13*
8.	*Str. mutans*	2.06±0.10	4.35±0.18*
9.	*Str. mitis*	2.43±0.12	4.56±0.20*
10.	*E.coli LP*	1.26±0.01	0
And	*E.coli LN*	0	2.51±0.11
12.	*Klebsiella*	0.87±0.01	0.76±0.01
13.	*Candida*	2.09±0.18	4.33±0.22*

Note: * - P<0.05 relative to normal indicators

In patients with epilepsy, a significant change in the spectrum of microorganisms in the oral cavity is observed. Fungi of the genus *Candida* occupy a dominant position in terms of occurrence frequency (80%), followed by staphylococci (50%). At the same time, the frequency of streptococci is significantly reduced, especially *Str. salivarius*, which accounts for only 30% of streptococci in patients with epilepsy.

Table 2

Indicators of local factors protecting the oral cavity in patients with epilepsy

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No.	Indicators	Control group	Main group
1.	Lysozyme titer (mg%)	19.5±0.7	11.9±0.11*
2.	Phagocytosis index (%)	57.6±1.5	34.3±1.2*
3.	Secretory IgA level (mg%)	1.77±0.3	0.79±0.1*

Note: * - P<0.05 relative to normal indicators

Also, to determine the causes of oral microflora dysbiosis, we conducted a study of salivary lysozyme, phagocytosis indicators, and the level of class A secretory immunoglobulin (Table. 2). From the table, it can be seen that in patients suffering from epilepsy, immunodeficiency is observed in the oral cavity in all studied parameters; for example, in patients, the lysosime titer was 11.9±0.11 mg%, the phagocytosis index was 34.3±1.2%, and the level of secretory immunoglobulin class A was 0.79±0.1 mg%.

In conclusion, it can be said that oral dysbiosis in patients suffering from epilepsy plays a significant role in the occurrence of oral organ pathologies.

Disruption of the spectrum and frequency of microorganisms occurrence and the formation of dysbiotic changes in oral microflora leads to the aggravation of the dental disease on one hand and affects the course of the underlying disease on the other.

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