Improvement Of Trearment Methods For Hypertrophic Gingivitis In Patients With Epilepsy

Mardonova Dildora Kosimovna

Independent Applicant for the Department of Therapeutic Dentistry, Samarkand State Medical University, Samarkand, Uzbekistan

ABSTRACT

Patients with epilepsy often demonstrate specific oral and periodontal changes associated with antiepileptic drug therapy, particularly gingival hyperthrophy. To evaluate the dental and periodontal status of patients with epilepsy and to substantiate improved approaches to the treatment of hypertrophic gingivitis in this group. Epilepsy and long-term antiepileptic therapy significantly affect periodontal tissues. Improved preventive and therapeutic approaches aimed at early diagnosis and conservative periodontal treatment are required to prevent tooth loss in epileptic patients.

Keywords: epilepsy, hypertropic gingivitis, periodontal diseases, antiepileptic drugs, oral hygiene

1. Introduction

Epilepsy is one of the most common chronic neurological diseases requiring long-term pharmacotherapy. Antiepileptic drugs, particularly phenytoin, are known to cause adverse effects in the oral cavity, including gingival hyperplasia, periodontal inflammation, and changes in oral microbiocenosis. These complications significantly impair oral hygiene, contribute to periodontal disease progression, and reduce patients quality of life.

Despite the clinical relevance of this problem, the dental status of epileptic patients remains insufficiently studied, and treatment approaches for hypertrophic gingivitis in this population require further Improvement. Therefore, a comprehensive clinical and periodontal assessment is essential for optimizing therapeutic strategies. Epilepsy is one of the most prevalent chronic neurological disorders worldwide and rewuires long-term, often lifelong, pharmacological management. Continuous administration of antiepileptic drugs significantly improves seizure control; however, prolonged therapy is frequently associated with systematic and local adverse effects, including alterations in oral and periodontal tissues. Among these, gingival inflammation and drug-induced gingival overgrowth represent clinically significant complications that negatively affect oral hygiene, masticatory function, and patients quality of life.

The oral cavity in patients with epilepsy is exposed to multiple risk factors, such as reduced self-care abilities during seizures, xerostomia, changes in salivary composition, and disturbance in oral microbiocenosis. In addition, long-term use of antiepileptic medications, particularly phenytoin, is known to stimulate fibroblast proliferation and collagen accumulation in gingival tissues, leading to hypertrophic gingivitis. These pathological changes create favorable conditions for plaque retention, periodontal inflammation, and progression of periodontal diseases.

Therefore, a detailed clinical and periodontal assessment of patients with epilepsy is essential to identify specific oral manifestations associated with antiepileptic therapy and to improve existing treatment approaches. The present study aims to evaluate dental and periodontal status in patients with epilepsy and

to substantiate improved methods for the treatment and preventation of hypertrophic gingivitis in this vulnerable population.

2. Research Materials and Methods

2.1. Study Design and Setting. This observational clinical study was conducted at Clinic No.1 of Samarkand State Medical University and the Samarkand Regional Dental Polyclinic.

2.2. Study Population. A total of 149 subjects aged 18–60 years participated in the study.

- Main group: 67 patients diagnosed with epilepsy (29 males, 38 females).
- Comparison group: 52 patients with mental disorders (schizophrenia and organic brain lesions).
- Control group: 20 clinically healthy volunteers without somatic pathology.

2.3. Neurological Assessment

Patients with epilepsy were examined by an epileptologist, neurologist, psychiatrist, and clinical psychologist. Diagnostic procedures included EEG, REG, and CT. Phenytoin was used as monotherapy in 3% and as part of combined therapy in 26.9% of patients.

2.4. Dental and Periodontal Examination

Dental status was assessed using WHO-recommended indices:

- DMFT index for caries intensity
- CPITN index for periodontal status
- PMA index for gingival inflammation
- OHI-S (Green–Vermillion) for oral hygiene
- Measurement of oral fluid pH

Microbiological analysis of unstimulated saliva was performed. Statistical analysis was conducted using variation statistics; results were expressed as M ± m, with significance set at $p < 0.05$. In order to ensure the objectivity and reproducibility of the obtained results, all clinical examinations were performed by trained dentists following a unified diagnostic protocol. Dental indices were recorded under identical conditions for all study participants. Prior to the examination, patients were instructed not to perform oral hygiene procedures for at least 12 hours, which allowed for a more accurate assessment of dental plaque accumulation and gingival condition.Periodontal probing was carried out carefully using a standardized periodontal probe, and the most severe finding within each sextant was recorded in accordance with CPITN methodology. In cases where index teeth were absent, all remaining teeth within the sextant were examined, and the highest score was registered. This approach ensured a comprehensive evaluation of periodontal tissue status.

Microbiological assessment was focused on identifying changes in oral microflora associated with epilepsy and antiepileptic drug intake. The analysis was performed using conventional laboratory methods, and the obtained data were correlated with clinical periodontal parameters and oral hygiene indices. For data processing, the collected information was entered into a database and analyzed statistically. Descriptive and comparative analyses were applied to identify differences between the study groups. Statistical significance was determined using parametric tests, with confidence levels set at 95%. This methodological approach allowed for reliable comparison of dental and periodontal indicators among patients with epilepsy, individuals with mental disorders, and clinically healthy subjects.

3. Results

3.1. Dental Status. The DMFT index analysis revealed that patients with epilepsy had fewer carious teeth compared to patients with mental disorders; however, the number of extracted teeth was significantly higher ($p < 0.05$). This indicates that epileptic patients more frequently seek dental care, but treatment often results in tooth extraction rather than conservative management.

3.2. Periodontal Status. CPITN analysis demonstrated that periodontal pathology in epileptic patients was 1.3 times more frequent than in the control group. Hypertrophic gingivitis was detected in 11.3% of epileptic patients and occurred exclusively in individuals receiving antiepileptic drugs.

Catarrhal gingivitis was observed 2.2 times less frequently in epileptic patients compared to controls. Severe periodontitis was more prevalent among patients with mental disorders.

3.3. Influence of Antiepileptic Therapy

Among epileptic patients receiving phenytoin, hypertrophic gingivitis was diagnosed in 81.3% of cases. Mild to moderate periodontitis was identified in 57.7% of patients, while gingival atrophy was noted in 12.5%.

4. Attitude

The findings confirm that epilepsy and long-term antiepileptic therapy significantly influence periodontal tissues. Phenytoin-induced gingival hypertrophy complicates oral hygiene and promotes periodontal inflammation. Although caries prevalence in epileptic patients was relatively low, delayed dental visits often resulted in tooth extraction.

These results highlight the necessity of early preventive measures, individualized oral hygiene programs, and conservative periodontal treatment to prevent irreversible dental complications.

5. Conclusions

1. Epileptic patients demonstrate a high prevalence of periodontal pathology, particularly hypertrophic gingivitis.
2. Antiepileptic drugs, especially phenytoin, play a key role in the development of gingival hypertrophy.
3. Improved treatment strategies focusing on early diagnosis, professional oral hygiene, and conservative periodontal therapy are essential to reduce tooth loss.
4. Multidisciplinary cooperation between neurologists and dentists is crucial for optimizing oral health in epileptic patients.

The study was conducted in accordance with ethical standards and approved by the local ethics committee. Written informed consent was obtained from all participants.

REFERENCES

[1] Alzahrani F.A., Alharbi M.H., Alqahtani M.A., et al. Clinical presentation and management of drug-induced gingival overgrowth: A case series // Saudi Dental Journal. – 2021. – Vol. 33(8). – P. 1045-1052.

[2] Rizaev Z. A., Abdunosirovich R. R., Sharipovna N. N. Ways to improve the organization of dental services for chemical industry workers //The American journal of medical sciences and pharmaceutical research. – 2020. – Т. 2. – №. 12. – С. 35-39.

[3] Costa A.L.F., Yasuda C.L., Appenzeller S., et al. The association between periodontal disease and seizure severity in refractory epileptic patients // Seizure. – 2014. – Vol. 23(3). – P. 227-230.

[4] Wang M., Li Y., Zou Y., et al. Oral health and dental status of people with epilepsy: A community-based case-control study // Seizure. – 2019. – Vol. 65. – P. 49-54.

[5] Goswami M., Kumar S., Singh A., et al. Oral Health Considerations and Dental Management for Epileptic Patients: A Comprehensive Review // Cureus. – 2023. – Vol. 15(3).

[6] Tungare S., Paranjpe A.G. Drug-Induced Gingival Overgrowth. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2024 Jan-. Updated 2022 Oct

[7] Gavhar I., Utkurovna U. Y. Improving the methods of preventhing caries in the fissure area of permanent teeth in children // Journal of new century innovations. – 2022. – Т. 18. – №. 4. – С. 16-18.

[8] Nuriddinovna I. G., Utkurovna U. Y. Improving methods to prevent caries of the permanent tooth fissure area in children // ACADEMICIA: An International Multidisciplinary Research Journal. – 2022. – Т. 12. – №. 5. – С. 436-439.

[9] Sridharan K., Abushanab D. Drug-associated gingival disorders: a retrospective pharmacovigilance analysis using the United States Food and Drug Administration adverse event reporting system database // Scientific Reports. – 2025. – Vol. 15. – Article 5079.

[10] Tripodi D., Condo S.G., Tecco S., et al. Effects of anti-epileptic drugs on the oral health of paediatric patients: a cross-sectional study // European Journal of Paediatric Dentistry. – 2023. – Vol. 24(1). – P. 46-50.

[11] Priyadharshini V., Anitha V., Sherlin H.J., et al. Successful management of phenytoin and phenobarbitone induced gingival enlargement: A rare case report // Journal of Clinical and Diagnostic Research. – 2014. – Vol. 8(6). – ZD20-ZD22.

[12] Chen L., Wang X., Zhang Y., et al. Periodontal bone loss detection based on hybrid deep learning and machine learning models with a user-friendly application // Computer Methods and Programs in Biomedicine. – 2022. – Vol. 225. – 107049.

[13] Papapanou P.N., Sanz M., Buduneli N., et al. Periodontitis: Consensus report of workgroup 2 of the 2017 World Workshop on the Classification of Periodontal and Peri-Implant Diseases and Conditions // Journal of Clinical Periodontology. – 2018. – Vol. 45 (Suppl 20). – P. S162-S170.