

Does Calcium Antagonists induced gingival overgrowth influence the tooth loss in Bulgarian elderly people?*

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Summary

The increase of mean life expectancy and increase of elderly people percentage, both in Bulgaria and other countries, state new problems to modern dentistry. These relate to higher tooth loss as age proceeds, the subsequent mastication loss, and the necessity of prosthetic devices.

Aim of the study: to evaluate calcium antagonists induced gingival overgrowth as a risk factor for tooth loss, comparing patients' data to those of other people, belonging to the same age group and not treated systematically with calcium antagonists.

Subjects and Methods. We studied tooth loss dynamics and sequence in two groups, on the base of inquiry data and clinical observations.

Ist group - a randomized sample of 653 individuals, belonging to Bulgarian elderly population (over 60 years of age);

IInd group - 144 elderly patients (from 51 to 88 years of age), treated with calcium antagonists therapy (medicines from nifedipine, verapamil, and diltiazem groups). 54.9% of them show gingival overgrowth.

Both groups were divided by gender and age, as follows:

Ist group patients: 60-64 years, 65-69 years, 70-74 years, 75-79 years, over 80 years;

IInd group patients: up to 60 years, 60-64 years, 65-69 years, 70-74 years, over 75 years.

Results. The comparison of results, obtained in both groups, shows similarity in dynamics and sequence of tooth loss, by age, gender, and tooth type.

Conclusion. Based on the obtained results, we may conclude that tooth loss is related to natural aging and calcium antagonists induced gingival overgrowth is not a factor in this process.

Keywords: elderly people, tooth loss, calcium antagonists induced gingival overgrowth.

Introduction

The increase of mean life expectancy and increase of elderly people percentage, both in Bulgaria and other countries, state new problems to modern dentistry. These relate to higher tooth loss as age proceeds, the subsequent mastication loss, and the necessity of prosthetic devices.

Some authors show data of common tooth loss sequence concerned with tooth type, natural aging, periodontal disease slow progression, and caries complications, and not significantly related to any specific organic systematic disease [1]. Others suggest the uncontrolled diabetes mellitus, smoking, etc., as risk factors for more rapid tooth loss dynamics [2, 3, and others].

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The results of our research show that gingival overgrowth is the most common side effect, among 26 studied side effects, of calcium antagonists systemic therapy – the average distribution of the disease is met in 54.9% among the patients treated with Nifedipine, Verapamil, and Diltiazem [4,5].

The possibility of bacterial plaque greater accumulation and the presence of granulation tissue at gingival overgrowth sites may deepen the observed alveolar bone destruction. These changes may determine calcium antagonists induced gingival overgrowth as a risk factor for tooth loss.

Aim of the study: to evaluate calcium antagonists induced gingival overgrowth as a risk factor for tooth loss, comparing patients' data to those of other people, belonging to the same age group and not treated systemically with calcium antagonists.

Subjects and Methods

We studied tooth loss dynamics and sequence in two groups, on the base of inquiry data and clinical observations (including present tooth status and its registration on an inquiry-clinical chart).

- Ist group – a randomized sample of 653 individuals, belonging to Bulgarian elderly population (over 60 years of age);
- IInd group – 144 elderly patients (from 51 to 88 years of age), treated with calcium antagonists therapy (medicines from Nifedipine, Verapamil, and Diltiazem groups). 54.9% of them show gingival overgrowth.

Both groups were divided by gender and age, as follows:

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Results and Discussion

The distribution of individuals from Ist and IInd groups, according to the number of their missing teeth, is shown in *Figure 1* and *Figure 2*.

Figure 1. Distribution of individuals in Ist group, according to the number of missing teeth

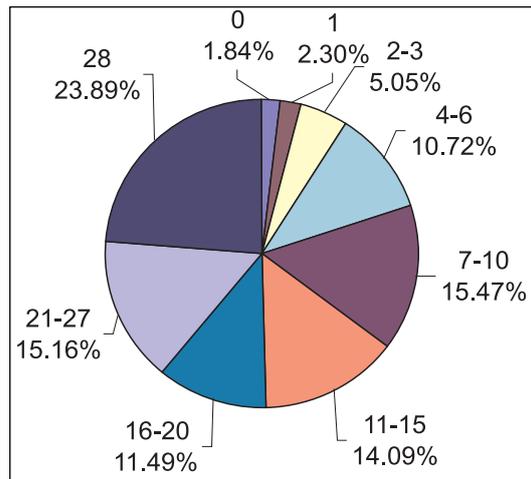
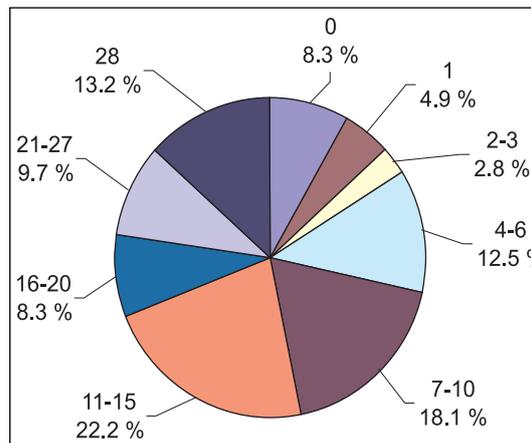


Figure 2. Distribution of individuals in IInd group, according to the number of missing teeth



Almost all individuals of Ist group (98.16%) have at least one extracted tooth. Only 1.84% have preserved 28 own teeth. 91.7% of IInd group individuals have at least one extracted tooth and 8.3% correspondingly, have no extracted tooth. (*Figures 1, 2*).

Individuals with reasonable level of preserved teeth (18-21 teeth) are 15.47% in Ist group, and 18.1% in IInd group (Figures 1, 2).

A stable tendency of increase of average number of missing teeth, related to aging, is observed in Ist group and statisti-

cally reliable increase of missing teeth number, related to aging, is observed in IInd group ($p < 0.01$).

Total tooth loss, related to aging, is shown in Figure 3 and Figure 4.

Figure 3. Distribution of total tooth loss individuals in Ist group, by age (in %)

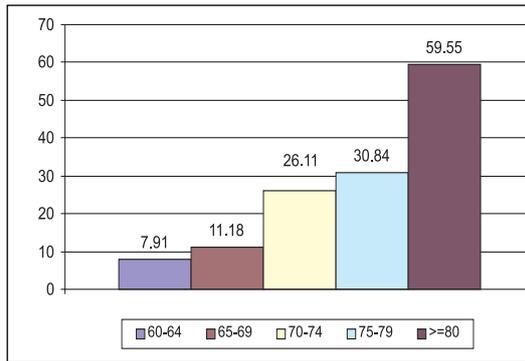
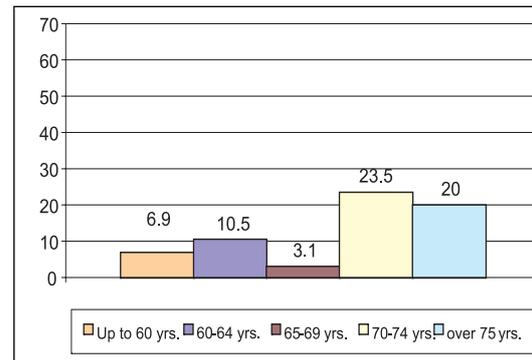


Figure 4. Distribution of total tooth loss individuals in IInd group, by age (in %)



Tooth loss dynamics in both groups shows an increase of individuals with total tooth loss with age.

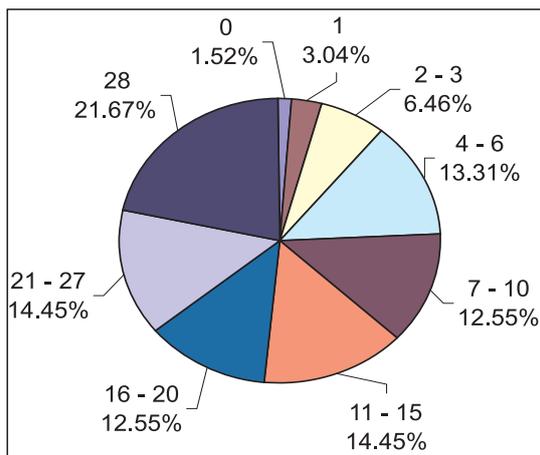
The average number of missing teeth per individual in Ist group is 16.14 and of preserved teeth is 11.86. The average num-

ber of missing teeth per individual in IInd group is 15.5 and of preserved teeth is 12.5.

The number of extracted teeth in both groups, divided by gender, is shown in Figure 5 and Figure 6.

Figure 5. Distribution of Ist group individuals, according to the number of extracted teeth and by gender

Ist group, males:



Ist group, females:

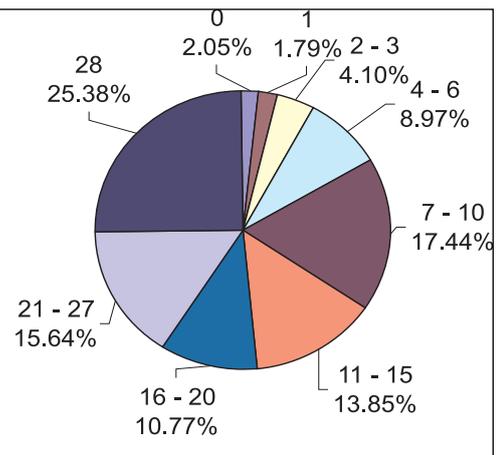
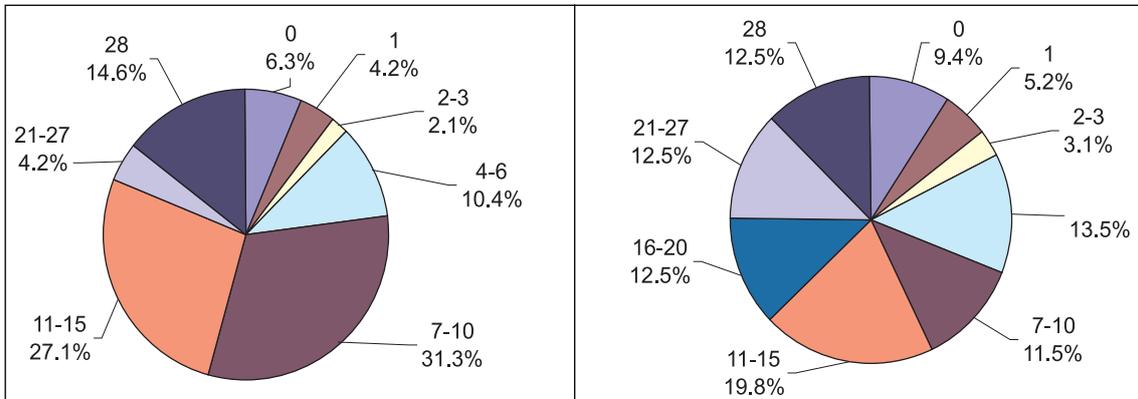


Figure 6. Distribution of IInd group individuals, according to the number of extracted teeth and by gender
IInd group, males: IInd group, females:



As to gender, a statistically significant difference in tooth loss is observed only in IInd group individuals – the higher percentage of males presents higher average number of missing teeth ($p < 0.01$). As to gender, a statistically significant difference in calcium antagonists induced gingival overgrowth occurrence and severity is not observed. Hence, the higher tooth loss level in males is not related to this therapeutic side effect but rather concerns the lower level of attention to individual dental health.

Tooth type presence and loss in dentition evince the following results (*Figures 7, 8*):

As to tooth types in dentition, most frequently the molars underwent extraction, followed by the premolars and lower incisors. Most frequently mandibular canines and maxillary incisors remain preserved. These observations almost coincide with other authors' data [6,7].

The graphical presentation of the frequency of different tooth type loss, for both jaws, in both groups, shows an interesting

Figure 7. Tooth loss in Ist group individuals, according to tooth types in dentition (in %)

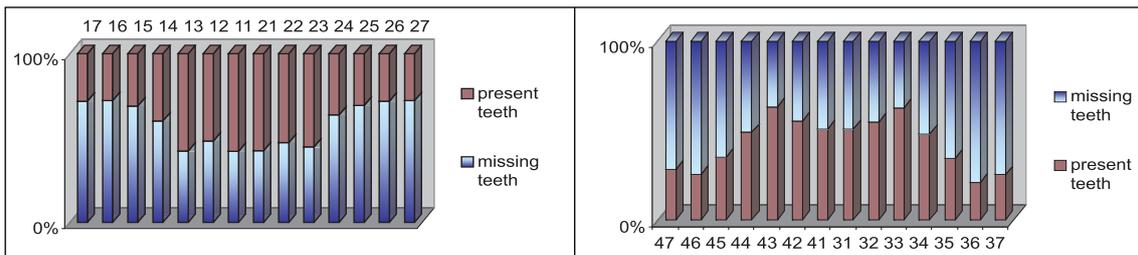
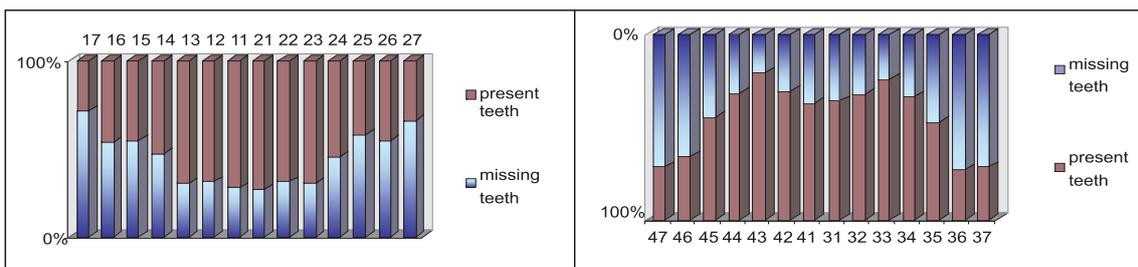


Figure 8. Tooth loss in IInd group individuals, according to tooth types in dentition (in %)



configuration at the borderline of the preserved and missing teeth. The red zone describes the positive component of dental health, relating to the number of preserved teeth; hence, it was accepted as a positive health zone. The blue zone (this of the missing teeth) describes the negative component of dental health; hence, it was determined as a negative health zone. The terms were introduced by Yolov, Ts. [1]. This kind of data presentation enables not only the quantitative and graphical evaluation of the preserved part of dentition but also its visualized image, similar to its schematic presentation in mouth. The diagram allows the dental arch contour comparison and the

monitoring of dynamics of tooth type loss. The differences between molar loss and incisor loss are statistically significant in both groups ($p < 0.05$).

The comparison of results, obtained in both groups, shows a similarity in dynamics and sequence of tooth loss, by age, gender, and tooth type.

Conclusion

Based on the obtained results, we may conclude that tooth loss is related to natural aging and calcium antagonists induced gingival overgrowth is not a factor in this process.

References

1. Yolov, Ts. Dental health of the elderly people in Bulgaria. Doctor's Thesis, Faculty of Dentistry, MU, Sofia, 2000, pp. 248.
2. Albandar J. et al. Cigar, pipe, and cigarette smoking as risk factors for periodontal disease and tooth loss. *J Periodontol* 2000; **71**(12): 1874-1881.
3. Bacic M, Plancak D, and Granic M. CPITN assessment of periodontal disease in diabetic patients. *J Periodontol* 1988; **59**(12): 816-822.
4. Bolyarova T. Gingival overgrowth in the elderly, treated systematically with calcium antagonists therapy. Social significance, risk factors, needs, and Thesis

Faculty of Dentistry, MU, Sofia, 2004, pp. 250.

5. Djemileva T, Yanchev I, Marina M, Bolyarova T, Zia D, and Vazharov D. Nifedipine-induced gingival overgrowth in patients with and without preceding periodontitis - clinical-epidemiological, radiographic, microbiological, and electron microscopic studies. Grant Project No. 22/1999, sponsored by the Council for Medical Sciences at the Medical University, Sofia.
6. Marcus SE et al. Tooth retention and tooth loss in the permanent dentition of adults: United States, 1988-1991. *J Dent Res* 1996; Spec. No 75: 684-695.
7. Papapanou P, Wennstrom J, and Grondahl K. Periodontal status in relation to age and tooth type. A cross-sectional radiographic study. *J Clin Periodontol* 1988; **15**(7): 469-478.

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