

INCIDENCE OF DENTO-PERIODONTAL PATHOLOGY IN GERIATRIC PATIENTS

Mihaela Monica Scutariu¹, Corina Ciupilan², Mihaela Salceanu^{3*}, Anca Melian³,
Doriana Agop Forna⁴, Ioana Sioustis⁵, Oana Ciurcanu⁴

¹“Grigore T. Popa” U.M.Ph. - Iași, Romania, Faculty of Dentistry, Department of Implantology, Removable Restorations, Technology

²“Grigore T. Popa” U.M.Ph. - Iași, Romania, Faculty of Medicine, Department of Morpho-Functional Sciences I

³“Grigore T. Popa” U.M.Ph. - Iași, Romania, Faculty of Dentistry, Department of Endodontics

⁴“Grigore T. Popa” - Iași, Romania, Faculty of Dentistry, Department of Oral and Maxilo-Facial Surgery

⁵PhD Student “Grigore T. Popa” U.M.Ph. - Iași, Romania, Department of Periodontology

Corresponding author; e-mail : mihaelasalceanu@yahoo.com

ABSTRACT

In the context of increasing life expectancy and hence the aging demographic, dentists are increasingly put in the situation of diagnosis and treatment of geriatric patients. **Aim of the study** is to determine the frequency and type of dento-periodontal lesions in geriatric patients. **Material and methods:** consist of the clinical examination of a group of 50 patients aged between 55 and 85 years. **The results** of the research show that a large number of elderly patients exhibit dento-periodontal disease and their diagnosis and treatment is a challenge of the contemporary era. **Conclusions:** Changes in dental structures are factors that increase the frequency and intensity of carious processes in these patients. Caries lesions are less painful, but they evolve much faster

Key words: *geriatric dentistry, parodontal pathology*

INTRODUCTION

In the context of global demographic aging by increasing life expectancy, the problem of the elderly dental patient has changed. [1] At the same time, there is an improvement in dental hygiene, which allows old-aged patients to preserve their teeth. The geriatric dental patient is characterized by polypathology, multidiagnosis and plurimedication. [2,3]

Management of this particular patient category is thus fundamentally different from adult patients and requires a multidisciplinary, biomedical, psychological, social, socio-demographic, administrative, legal, economic, ethical and affective approach. [5,6]

The principles of modern treatment

for this category of patients respect the minimally invasive vs maximum preventive concept, which requires minimal biological sacrifice. At the same time, consideration should be given, as much as possible, to the emotional and social comfort of these patients, by restoring the quality of mastication, phonation and orofacial aspect [7].

The aim of this study is to highlight the oral health of elderly patients in our area, the possibilities of early detection of the factors favoring the dental pathology. [8,9] Prophylactic treatment remains the key to "active aging" from a stomatologic point of view.

MATERIAL AND METHODS

The study was conducted on a number of 50 subjects, ages 55-85, who presented themselves for various dental accusations or just a routine check. The study method consisted in corroborating thorough clinical

RESULTS AND DISCUSSIONS

The gender distribution of subjects in the study group is 52% female and 48% male. Of these, 24% are between 55-65 years of age, 42% between 66-75, 32% between 76-85 and 2% over 85.

We have customized the patients' medical history by grouping them into various types of diseases: cardiovascular, locomotor, hematopoietic, digestive, neuropsychic, respiratory, metabolic, endocrine and genito-urinary. Any of these comorbidities have been proven by a letter from the GP (fig.1).

We also quantified the number of patients with one or more chronic diseases. Thus, 8% had only one chronic condition, 28% had 2 chronic conditions, and 64% had 3 or more chronic conditions. For all these associated pathologies, patients have already received a medication. We emphasize that all patients in the study group had at least one chronic condition.

We took into account the calculation of the caries frequency index (CFI), which we calculated as follows: (number of patients with caries) x100 / (number of examined subjects) (fig.2).

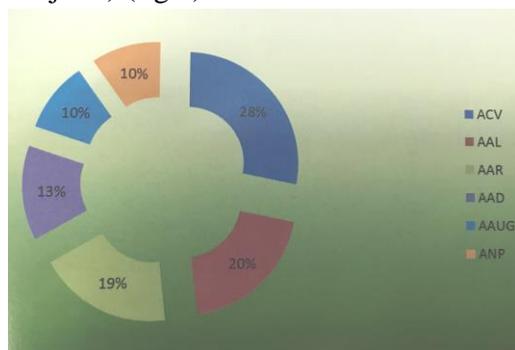


Figure 1. ACV = cardiovascular disease,

examination with a specific anamnesis of the group of geriatric patients. Here we give some examples in order to illustrate the aspect of a printed paper.

AAL = locomotor system disorders, AAR = respiratory diseases, AAD = digestive system disorders, AAUG = urogenital disorders, ANP = neuropsychiatric disorders

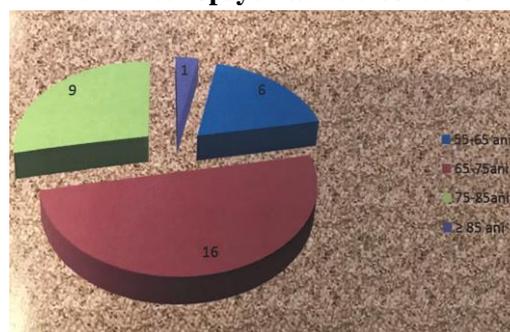


Figure 2. Calculation of the caries frequency index

We calculated the caries intensities index by formula $IIC = (\text{number of decayed teeth}) \times 100 / \text{number of examined subjects}$ (fig.3).

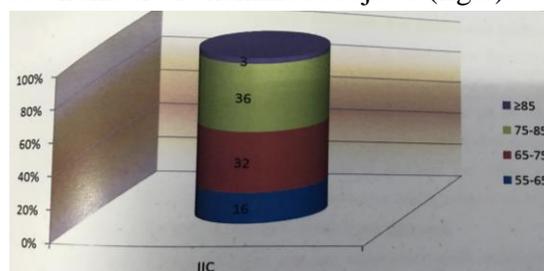


Figure 3. Calculation of the caries intensities index

Dental caries have peculiarities in the elderly: it appears as a deep cavity, frequently with the opening of the pulp chamber due to a low level of pulp innervation. Of the types of caries discovered, the root ones are more in number than the coronary ones (75.86%).

In the studied group, the most commonly encountered abrasion rate was II, 42%, followed by Grade III, 36%. 18% of patients had a degree of abrasion I, but

associated with severe forms of marginal parodontopathy.

4% of patients had advanced, non-uniform and age-related abrasion with old, partial, untreated edentations or incorrect prosthetics, due to the association of 3-4 chronic diseases with systemic involvement and history of neoplastic digestive tract (fig.



Figure 4. A - Grade 3 dental abrasion; B - severe dental abrasion

Grade III and advanced abrasives primarily affect the front, maxillary and mandibular dental groups and lead to exposure of dentin islands. All subjects with remaining teeth exhibited inflammation of the marginal parodon after the increased of retention spaces, due to multiple chronic systemic disorders. 87% of patients had gingival retraction on the background of involutive tissue changes maintained by overloading the reduced number of restant dento-periodontal units (fig.5).



Figure 5. A - severe abrasion of mandibular frontal teeth; B - Inflammation

of the marginal periodontium; C - exposure of dentine islands

Patients in the first age group (55-65) had arcades with partial edentation (42%), subtotal (2%) and total (4%). 66-75 year old patients had partial edentation (50%), subtotal (18%) and total (10%). Subjects aged between 76-95 had partial edentation (44%), subtotal (10%) and total (10%). Patients over the age of 85 were 4% with partial edentation.

We found that subtotal edentation is more common at the maxillary level and the total one, at the mandibular level.

We find that the data obtained in this study is partly the same with the data described by the literature. We report similarities in the prevalence of root caries in the elderly, which in the study group ranges between 50-80% of the literature [10,11]. This is explained by the decrease of the incidence of root caries with the age and the rate of edentation, by the tendency to preserve as long as possible the dento-periodontal units. For this reason, the number of exposed root surfaces will increase as a result of the gingival retraction and risk factors [12,13,14].

Congenital disorders that alter the masticatory function have repercussions on the dental device. One of the examined subjects, who had advanced dental abrasion and strong gingival retraction, suffered from left facial nerve atresia. In this context, the aforementioned dental conditions were at a much advanced stage on the homoleteral side of the congenital pathology [15].

Also, the high frequency of root caries in elderly coupled with dental abrasion and parodontal disease in patients in our study group is similar to that in the literature [16].

We noticed a higher frequency of maxilar subtotal and mandibular total edentation in patients in our study group, compared to the literature, that shows that the last teeth that are lost are the lower frontal

ones.

The frequency of tooth loss is the following: mandibular molars, followed by maxillary molars, then maxillary and mandibular premolars, incisors, superior canines, and then inferior incisors and canines.

At the present time, it has been shown that caries are an extremely complex process with multifactorial and heterogeneous determinants, but with peculiarities that depend on patient age and that need to be known. Among the known factors to promote dental decay are: food (carbohydrates and sweets), oral hygiene, salivary disease, bacterial biofilm, socioeconomic standard, hereditary factors and geographical area.[17,18]

CONCLUSIONS

1. Our study shows that periodontal disease has an increased incidence among elderly patients.
2. Changes in dental structures are factors that increase the frequency and intensity of carious processes in these patients.

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REFERENCES

1. Carausu EM, Dascalu GC, Zegan G, Burlea LS, Lupu IC, Antohe I. The general and oral health status in older adults from rural environment of Iasi County, Romania. *Rev. Cercetare si Interventie Sociala*, 2017; 59: 187-208.
2. Botnariu EG, Popa AD, Nechifor IE, Antohe I, The main barriers to insulin treatment in elderly diabetic population: the role of therapeutic education. *Rev. de Cercetare și Intervenție Sociala*, 2017, 56: 70- 78
3. Sufaru IG, Solomon SM, Pasarin L, Martu-Stefanache MA, Oanta AC, Martu I, Ciocan-Pendefunda A, Martu S. Study regarding the quantification of RANKL levels in patients with chronic periodontitis and osteoporosis. *Rom. J. Oral Rehab.*, 2016, 8(4):42-46.
4. Carausu ME, Paris L, Burlea LS, Tucmeanu AI, Antohe I. The crisis impact on the Romanian health system and population health. *Rev. de Cercetare și Intervenție Sociala* 2017, 57:120-37 (ISSN 1583-3410 (print); ISSN 1584-5397
5. Martu S, Nicolaiciuc O, Solomon S, Sufaru I, Scutariu M, Rezus C, Popescu E. The evaluation of the C reactive protein in the context of periodontal pathogens presence in cardiovascular risk patients. *Rev. Chim. (Bucharest)* 2017, 68(5):1081-1084.
6. Solomon S, Pasarin L, Ursarescu I, Martu I, Bogdan M, Nicolaiciuc O, Ioanid N, Martu S. The effect of non-surgical therapy on C reactive protein and IL-6 serum levels in patients with periodontal disease and atherosclerosis. *Int. J. of Clinical and Experimental Medicine*. 2016, 9(2): 4411-4417.

Three of the patients aged 66-75 had a history of colorectal neoplasia. In these cases, we noticed subtotal (2 cases) and total (one case) edentations, with significant gingival retraction. This demonstrates systemic damage of paraneoplastic syndrome and adjuvant oncology treatment [19-20].

1. The systemic characteristics of the pathology of the elderly personalize the oral pathology by changing the local terrain on which they intervene [21-24]. Careful observations of elderly patients show structural, functional and behavioral differences compared to those of youth and mature age [25-27].

3. Caries lesions are less painful, but they evolve much faster.
4. The aging of the marginal periodontium favors the occurrence of periodontitis.
5. Edentation causes dental migrations and malocclusions.

7. Francu LL, Hinganu D, Hinganu MV, Anatomical evidence regarding sustentaculum facies. *Rom J Morphol Embryol* 2013; 54(3 Suppl):757–761.
8. Sufaru IG, Solomon SM, Pasarin L, Martu-Stefanache MA, Oanta AC, Martu L, Ciocan-Pendefunda A, Martu S, Study regarding the quantification of RANKL levels in patients with chronic periodontitis and osteoporosis. *Rom. J. Oral Rehab.*, 2016, 8(4):42-46.
9. Solomon SM, Matei MN, Badescu AC, Jelihovschi I, Martu-Stefanache A, Teusan A, Martu S, Iancu LS, Evaluation of DNA Extraction Methods from Saliva as a Source of PCR- Amplifiable Genomic DNA. *Rev. Chim. (Bucharest)*, 2015, 66(12):2101-2103.
10. Gershen J.A., Geriatric Dentistry and Prevention: Research and Public Policy, *Advanced in Dental Research*, 1991; 5(1): 69–73.
11. Steele JG, Sheiham A, Marcenes W, Fay N, Walls AWG, Clinical and behavioural risk indicators for root caries in older people, *Gerontology* 2001; 18(2): 95–101.
12. Solomon SM, Iovan G, Pasarin L, Sufaru GI, Martu I, Luchian I, Martu MA, Martu S. Risk predictors in periodontal disease, *Rom. J. Oral Rehab.*, 2017, 9(3): 89-96
13. Ryan M.E., Ramamurthy N.S., Golub L.M., Tetracyclines Inhibit Protein Glycation in Experimental Diabetes, *Advanced in Dental Research*, 1998: 152–158.
14. Laguna L, Aktar T, Ettelaie R, Homes M, Chen J, A comparison between young and elderly adults investigating the manual and oral capabilities during the eating process, *J. Texture Stud.* 2016;47: 361–371.
15. Hinganu MV, Stan CI, Țaranu T, Hinganu D, Morphological changes in support mechanism of superficial face layers in Moebius syndrom. *Rom J Morphol Embryol* 2017; 58(3): 851-855.
16. Ashwini M, Namasivayam-MacDonald, Carly EA, Barbona C, Steele CM, A review of swallow timing in the elderly, *Physiology & Behavior* 2018; 184:12–26.
17. Barlean L, Coman M, Bobu L, Aungurencei O, Baci D, Balcos C, Scutariu MM, Leata R. Comparative evaluation of a glassionomer cement and a resin composite used as dental sealants *Rev. Materiale Plastice*, 2015; 52(4):542-545
18. Barlean LM, Aungurencei A, Aungurencei O, Scutariu MM, Balcos C, Moisei M. Latex Glove Allergy Among Dentists in Iasi, Romania, *Rev. Chim. (Bucharest)*, 2015; 66(11):1877-1880.
19. Hinganu MV, Hinganu D, Frâncu LL, Microanatomic aspects of arterial blood supply in rectal carcinomas – predictive models. *Rom J Morphol Embryol* 2013, 54(3): 561–565.
20. Hinganu D, Eva I, Stan C, Hinganu MV, Morphological aspects of the rectal neovascularization in colorectal cancer – anatomical-surgical and imaging implications. *Rom J Morphol Embryol* 2016; 57(1): 161-165.
21. Britton D, The impact of aging and progressive neurological disease on swallowing: a concise overview, *J. Texture Stud.* 2016;47:257–265.
22. Gafton B, Porumb V, Ungurianu S, Marinca MV, Cocea C, Croitoru A, et al. Hepatocellular carcinoma: insight in the biological treatment beyond sorafenib. *Journal of BUON* 2014; 19(4).
23. Kappenberg-Nitescu DC, Mihai C, Oanta C, Martu I, Volovat SR, Solomon SM, Martu S. Evaluation of cumulative effects of chemotherapy and bevacizumab (Avastin[®]) in oncological patients with periodontal disease. *Rev.Chim.*, 2017, 68(3):549-552
24. Cobzeanu MD, Costinescu V, Rusu CD, Mihailovici S, Grigoras M, Miron L et al. Laryngotheal non-Hodgkin s lymphoma. *Chirurgia*, 2010; 105(1):131-136.
25. Cepoi V, Alexa ID, Ilie CA, Alexa O. Ethical dilemmas in treating elderly patients at risk of polypragmasy and polypharmacy. *Revista Romana de Bioetica* 2014; 12(3):12-18.
26. Costin H, Rotariu C, Alexa ID, et al: TELEMON – A Complex System for Real Time Medical Telemonitoring, *Proc. Of the World Congress on Medical Physics and Biomedical Engineering*, Munich, Germany, WC2009, Vol. 25, PT 5, pp. 92-95, 2009.
27. Cracana IM, Ștefaniu R, Mocanu V, Alexa ID. New developments in the approach and diagnosis of sarcopenia. *Rev Med Chir Soc Med Nat Iași* 2016; 120(3): 491-496.