CURRENT PROSTHODONTIC CARE FOR GERIATRIC PATIENTS

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Abstract: The global geriatric (elderly) population is growing as a result of increasing life expectancies. The decrease in edentulism cases showsed public awareness of the importance in maintaining the health, function and quality of life in the elderly as well as the necessity of preventive attitudes and interventions against disease. Dental services for geriatric patients are affected by the cost of dental services, dental insurance, dental clinics' access, debt and needs. The current prosthodontic treatment that improve of missing tooth replacements is in demand is an increasing interest in dental implant treatment. Losing tooth has a negative impact on mastication, aesthetic- and oral health-related quality of life. Excessive bone resorption can occur for many reasons, including age, infection, trauma, metabolic disorders and nutritional deficiencies. The resorption of the alveolar bone, especially in medically compromised patients, is caused by focal infections in the mouth and systemic diseases. The loss of bone support after a long period of extraction procedures is named residual ridge resorption (RRR). The best treatment for RRR is to avoid tooth extraction so that the loss of teeth and their supportive tissues can be prevented. The importance of periodic control, utilizing vitamins, oral rinse, topical gels or others, and the intake of nutrients greatly affect the good function of dentures and improve the health of the geriatric patient.
Keywords: alveolar bone resorption, geriatric patients, care, residual ridge resorption (RRR)

1. INTRODUCTION

Globally, the geriatric population is growing faster than other groups. Based on population projection data from 2016, the geriatric population comprised 22.4 million persons or 8.69% of the world's population. This has had an impact on medical and dental conditions. The amount of tooth loss in older people remains high due to caries, periodontal disease, and patients' lack of information regarding oral hygiene. [1-3] The medical professionals need to pay attention to several factors in diagnosing, planning care, and working with other scientific experts thus that holistic care can be provided. The studies show that the geriatric population with a higher educational level also has higher comorbidities. Medical conditions often include coronary heart disease, hypertension, cancer, arthritis, dementia and trauma (such as falling). [4,5]

There is scientific evidence that oral health conditions and systemic diseases are interrelated and affect each other. Those with poor general health conditions usually have poor oral hygiene conditions. Nationally and globally, health in the elderly population is a priority. Oral health is influenced by age, sex, education status, socio-economic status, race and health insurance. The main objective is to improve the health, function and quality of life in the elderly by increasing awareness of the importance of health, increasing understanding of and encouraging preventive attitudes and interventions against diseases, and reducing inequalities in accessing preventive efforts. [5,6]

This focuses on reducing mortality from oral-facial diseases, improving scientific evidence-based policies, developing cost-effective preventive programs, and reducing oral health inequalities. As we get older, the relationship between oral health and general health clearly possesses a positive correlation. Oral disease will manifest in chronic systemic diseases. Age influences the use of long-term drugs that can affect oral and systemic diseases. Furthermore, limited activity due to systemic diseases can be a complication for maintaining medical and oral health conditions. [4,6]

As the geriatric population increases, there is an increasing need for dental services. Some factors that influence the use of dental services are socio-economic status, education, health insurance, trust in medical personal and health needs. The elderly population has increased rates of tooth loss, dental caries, periodontal disease, xerostomia and oral diseases. The rate of tooth loss in patients (edentulism) increases with age. Tooth loss has psychosocial effects such as depression, anxiety and fear; therefore, loss of teeth can affect a person's quality of life. Tooth loss in the elderly influences speech, function, nutritional deficiencies, aesthetic and psychosocial aspects, and quality of life. [5,6]

2. DENTAL SERVICES FOR GERIATRIC PATIENTS

Dental services for geriatric patients are affected by dental service costs, dental insurance, access to dental clinic and other needs. The population aged ≥ 65 years is a diverse population that will continue to increase. There is an increasing need for prosthodontic treatment, especially dental crowns, both complete and partial dentures for geriatric patients. Current trends in prosthodontics practice show a slight decrease in permanent prosthodontics. The

practice trend in prosthodontics is fixed procedures improvement and replacement of missing teeth with an increase in patient interest in implants. For complete denture users, the ideal treatment is a 2-implant retained mandibular overdenture. The patient's quality of life can be improved through increased bite strength. With the decline in edentulism and the increasing geriatric population, prosthodontic needs will continue to increase. [7,8]

3. ALVEOLAR BONE RESORPTION

Alveolar bone is a part of the maxilla and mandible bone that forms and supports a tooth socket. Alveolar bone is formed when the teeth erupt to provide attachment of the bone to the periodontal ligament. The altitude and density of alveolar bone are regulated equally by local and systemic factors between bone formation and bone resorption. Bone formation is regulated by osteoblast cells, while bone resorption is regulated by osteoclast. If there is an imbalance between the formation and resorption of the bone causing excessive bone resorption, the formation of bone height, density or both becomes reduced.

Alveolar bone resorption most often occurs in the anterior and mandibular molar teeth, and it is most rare in premolar teeth. [9,10] [Figure 1.]

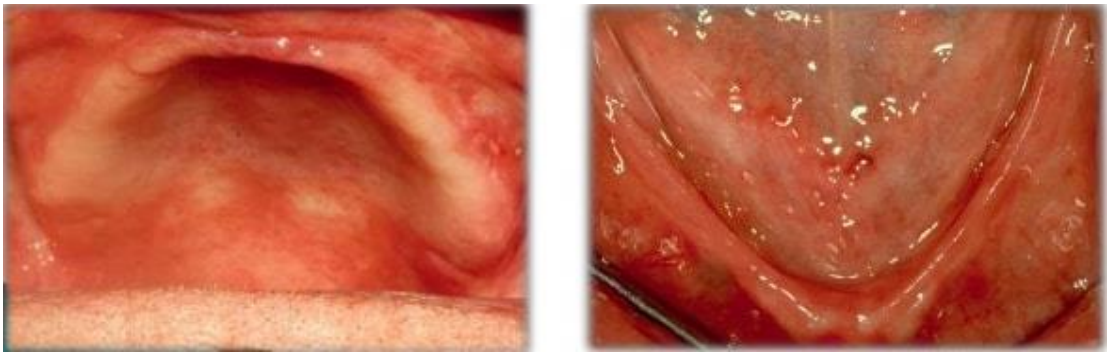

Fig. 1 Alveolar bone resorption (maxillar and mandibular)

Excessive resorption of bone can occur for many reasons, including age, infection, trauma, metabolic disorders and nutritional deficiencies. Some systemic diseases can also lead to the resorption of alveolar bone. However, more frequent resorption of bone in the oral cavity occurs after bacterial infections, such as periodontitis, or as a result of tooth loss (edentulous), where residual ridge resorption (RRR) will be faster and more progressive. [7,8]

Atrophy, trauma and infection, loss of periodontal tissue due to tooth extraction, hyperparatiroidism and hypogonadism, and bone resorption due to osteoporosis can cause alveolar bone resorption.

RRR is the resorption of alveolar bone that occurs after tooth extraction. This tooth loss has an impact on the loss of the orofacial structure, and a result, orofacial function will disappear in line with tooth loss. After a tooth is extracted, the alveolar bone resorption will occur, which further results in decreasing the face's vertical dimension. The amount of alveolar bone resorption is related to the length of time a person is without teeth and to the presence of chronic systemic conditions. Tooth loss has a negative impact on mastication, aesthetics and oral health-related quality of life. [7,11]

Many local and systemic factors are associated with RRR. The local factors are conditions after tooth extraction (quality, quantity and form of residual ridge, muscle attachment, etc.), bite stress from the denture on the edentulous ridge, and the length of the edentulous person. Systemic factors include age, gender, calcium (Ca) deficiency, metabolic disorders involving Ca and phosphate (P), osteoporosis, and hormonal imbalances. All of these factors cause changes in the resorption rate of the alveolar bone, which is chronic, progressive and cumulative. The best treatment for RRR is prevention. Avoidance of dental extraction is the best prevention, but many patients will continue to experience tooth loss and will become edentulous. In those cases, replacing teeth with dental implants or by using implant-supported bridges is necessary. The presence of alveolar resorption conditions will affect the ability and need for the use of dentures. Fast alveolar bone resorption will improve prosthodontic treatment in the form of periodic control; denture repair should add a liner material to increase retention so that the denture can function optimally. The frequency of visits to the dentist will also increase. [8,13]

4. TREATMENT PLANS

Health problems can emerge at any time and negatively impact one's quality of life. Education of patients regarding the health of the oral cavity must be done throughout life. The importance of educating patients about oral hygiene

and health in general cannot be underestimated. Preventing general health and oral cavity problems, as well as the habit of making regular visits to the dentist, are the keys to success in dental and general health care. [3]

Oral health is a part of the general health, so doctors need to work with dentists to understand more about the health of the oral cavity, especially paying attention to elderly patients. An understanding of geriatric patients' knowledge about their health is very important, both in the diagnostic and treatment planning stages. Dentists need to be more focused on understanding the functions and technical aspects of treating oral cavity problems and need to pay more attention to psychosocial factors. To be able to serve geriatric patients better, dentists need to provide education concentrated to economic, psychosocial and humanitarian conditions. [9,12]

Prevention is the main key to elderly oral health. Regular visits need to be planned in order to improve the cleanliness of the oral cavity of elderly patients. In particular, patients who use removable dentures have a high risk of tooth root caries.

The following are the health believes, behaviour and attitudes of the elderly population:

1. People seek dental care if they perceive the need is important and fear the condition will worsen without treatment
2. People must have confidence that treatment will improve their health
3. People with lower education attainment and income levels have lower expectation
4. Some elderly think dental problems are a part of aging
5. Some elderly believe teeth have social meaning and stigma
6. Many elderly have the desire to look and stay attractive
7. Many elderly think oral health is a psychological factor

5. CONCLUSION

The health of the elderly's oral cavity requires attention in various aspects and requires more information about geriatrics. An increase in the population aged 65 years and over is creating a greater demand for oral health services. Handling prosthodontia in the elderly is strongly influenced by personal beliefs, habits and the attitudes of patients towards health services. The importance of maintaining dental and oral health, which can improve general health status, should not be overlooked. Furthermore, nutritional intake greatly affects the function of the denture and improves the health of the geriatric patient. Selecting a balanced diet and adjusting to the oral conditions of geriatric patients will optimally improve prosthodontic treatment. Optimal oral health will improve the quality of life of the elderly.

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