Geriatric Oral Health: An Update

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ABSTRACT
The advances made in medicine and public health measures in the last half of the 20th century have substantially increased the lifespan of human beings. Elderly people above the age of 65 years have increased health problems as a result of aging process, which needs special attention. Along with general health problems, oral health problems also increased which are needed to be evaluated separately. Therefore, the branch of dentistry that emphasizes dental care for the elderly population is termed as geriatric dentistry. It primarily focuses upon patients with chronic physiological, physical, and/or psychological changes or morbid conditions/diseases.

Keywords: Bone, Geriatric, Oral health, Salivary glands.

INTRODUCTION
Aging is a natural process and old age should be regarded as a normal, inevitable biological phenomenon. It is expected that the proportion of the elderly in the world population will increase rapidly from 10.0% in 2000 to 15.0% in 2025 and 21.1% in 2050. According to the estimations, 70% of the world’s elderly population are and will be in developing countries. With respect to the quality of life the geriatric health problems are often neglected. Oral health plays a role both as a benchmark for and a determinant of the quality of life rather than the length of lifespan. The susceptibility of older adults to oral conditions or diseases increases due to an increase in chronic conditions and physical/mental disabilities. Therefore, there is a need for special knowledge, attitudes, and skills to provide oral health care to the elderly.

ORAL HEALTH PROBLEMS IN ELDERLY
Aging not only affects the general health, but the effect of aging on oral health can also be seen that includes effect on oral mucosa, lips, teeth, and other associated structures. Due to the hypo functioning of these structures, reduced activity can be seen that may lead to impaired speech, mastication, swallowing, and pain leading to anxiety and depression. Oral tissues not only include the teeth and supporting structures but also salivary glands, temporomandibular joint (TMJ), orofacial/mastication muscles, oropharyngeal mucosa, and oral sensory/motor nerve systems.

EFFECTS ON ORAL MUCOUS MEMBRANE

Oral Ulcerations
With the advancement of age, the oral mucosa becomes thin, shiny, dry, appears stretched, and becomes more susceptible to injury. Because of thinning of epithelium, the tissue becomes prone to injury and eventually people tend to avoid hard foods and subsequently all too often have a protein deficiency, which leads to further injury. If the epithelium is examined microscopically, the thinning of the tunica propria, loss of elastic fibers, and blunting of the rete pegs may be seen. The decreased number of capillaries further contributes in reduced capacity to regenerate. These events may lead to traumatic ulcerations, inflammatory, or degenerative processes preceded by mechanical trauma.

Fungal Infections

Denture Stomatitis
The mechanical trauma caused by ill-fitting dentures along with mucosal changes and superadded infections, a condition may be developed which is known as denture stomatitis or denture sore mouth. This condition is characterized by various degrees of erythema, and also may be associated with petechial hemorrhage which is localized to the maxillary denture bearing areas (palate). Whether it is an actual infection by Candida albicans or host tissue response remains controversial.
Angular Cheilitis

It typically occurs in older persons with reduced vertical dimension of occlusion and accentuated folds in the corner. There is increased pooling of saliva in these areas which keeps it moist and thus, favors a fungal infection. It is characterized by erythema, fissuring, and scaling. Contributing factors also include iron and riboflavin deficiency. This condition is primarily seen along with denture stomatitis.7

For treatment and prevention of denture stomatitis and angular cheilitis, the denture should be left out of oral cavity at night and denture cleansing agents, such as alkaline peroxides and alkaline hypochlorites should be used. The mucosal infection should be removed using brush on the palate, and antifungal agents, such as miconazole, nystatin, amphotericin, or fluconazole should be used for up to 4 weeks.8

Oral Lichen Planus

A common mucosal problem of old age is oral lichen planus (OLP). It is a chronic inflammatory disorder affecting stratified squamous epithelia. The lesions of OLP usually have recognizable and distinctive clinical features and a characteristic distribution. Mainly three clinical forms of OLP are seen, i.e., reticular, erythematous (atrophic), and erosive (ulcerated, bullous). The reticular lesions are the most common form of OLP, which is characterized by network of connecting and overlapping lines, papules, or plaques known as Wickham’s striae.9 The erythematous and erosive types are less common and show large shallow erosions covered with yellow fibrin sloughs and surrounded by connecting white striae with a lacy appearance.5

Reticular lesions that are asymptomatic generally do not require therapy. The treatment should be aimed at eliminating atrophic and ulcerative lesions, alleviating symptoms, and potentially decreasing the risk of malignant transformation. Mechanical trauma or irritants, such as sharp filling margins or rough surfaces or badly fitting dentures should be corrected along with a complete drug history. The most commonly employed and useful agents for the treatment of LP are topical corticosteroids, such as triamcinolone, potent fluorinated corticosteroids, such as fluocinolone acetonide and fluocinonide, and super potent halogenated corticosteroids, such as clobetasol. Systemic corticosteroids should be used in cases of recalcitrant erosive or erythematous LP, where topical approaches have failed. Prednisolone in the range of 40 to 80 mg is usually sufficient to achieve a response.9

Pemphigus

Pemphigus is a potentially life-threatening autoimmune mucocutaneous diseases characterized by epithelial blistering affecting cutaneous and/or mucosal surfaces. There are several variants of pemphigus out of which pemphigus vulgaris is most common. Pemphigus vulgaris begins with blister formation occurring in mouth and on scalp. These are vesiculobullous, but ruptures readily and forms ulcerations which are irregular, initially red with a whitish surround but becomes yellow. The lesions are seen mainly on soft and hard palate, buccal mucosa, and lips.10

Systemic corticosteroids remain the mainstay of therapy for patients with oral lesions but intralesional or topical steroids may suffice for the time. Systemic corticosteroids, such as prednisolone in the dosage of 60 to 80 mg is used. The dose can be tapered once the relief is achieved. The adjuncts or alternatives include azathioprine, cyclosporine, and rituximab.8,10

Burning Mouth Syndrome

Burning mouth syndrome (BMS) is a disabling, spontaneous, continuous, and often intense burning sensation that occurs primarily in postmenopausal women.11 This condition is characterized by a sensation described by the patient as stinging, burning that primarily affects the oral mucosa, when no clinical or laboratory signs are present to justify these symptoms. It is a chronic orofacial pain, which is not associated with mucosal lesions or other evident clinical signs upon examination.12 According to the International Association for the Study of Pain, the diagnosis of BMS is made if a pain last for at least 4 to 6 months duration located on the tongue or other mucosal membranes in the absence of clinical or laboratory findings.13 The other terminologies, such as orofacial pain, stomatodynia, glossodynia, neuropathic pain, glossopyrosis, and scalded mouth syndrome can also be used to address BMS. The etiology of BMS is still unclear but various factors, such as local factors, systemic factors, nutritional factors, allergic or immunological factors, psychological factors, iatrogenic factors, infections, hormonal imbalances seem to play an important role.14

For the treatment of this multifactorial disease, a multidisciplinary approach should be used. The most-used medications to treat this syndrome are antidepressants, antipsychotics, antiepileptics, analgesics, and oral mucosa protectors. The tricyclic antidepressants, such as amitriptyline and nortriptyline at low doses are useful in BMS.15

EFFECTS ON SALIVARY GLAND

Xerostomia

Xerostomia is defined as dry mouth resulting from reduced or absent salivary flow. Saliva plays an important role in the preservation of oropharyngeal structures and its
dysfunction may affect quality of life of patients. According to a study 30% of the affected patients are above the age of 65 years. Xerostomia is a common complaint associated with several conditions, which include side effects of wide variety of medications. The other causes include therapeutic radiation to head and neck, systemic diseases, and diseases involving the salivary glands. Xerostomia contributes for both minor and serious health problems. It can also affect nutrition as well as psychological health. Individuals with xerostomia complain of dry mouth and problems with eating, speaking, and swallowing along with oral burning or soreness and a sensation loss or altered taste which is known as dysguesia.

The management of xerostomia depends upon the underlying cause. Salivary stimulation may be helpful in patients with difficulty in chewing, swallowing, and other functional activities. This can be achieved by use of sugar-free chewing gum, candies, mints, and artificial saliva substitutes. Systemic sialogogues like pilocarpine hydrochloride and cevimeline hydrochloride are commonly used drugs for salivary stimulation and produce clinically significant increase in salivary flow in xerostomic patients.

**EFFECTS ON TONGUE**

**Lingual Varicosities**

Varices are referred to as abnormally dilated and tortuous veins. This condition is rare in children and most commonly seen in adults, which suggests that the development of varices may be an age-related degeneration, in which there is a loss of connective tissue tone that supports the vessels. The most common type of oral varicosities is sublingual varix, which classically manifest as multiple, blue-purple, elevated, or popular blebs on the ventral and lateral borders of tongue. Usually, they are asymptomatic. For the patients with lingual varices, treatment is not indicated.

**Benign Migratory Glossitis**

Benign migratory glossitis is a psoriasiform mucositis of the dorsum of the tongue. The primary characteristic feature is constantly changing pattern of serpiginous white lines surrounding the areas of smooth depapillated mucosa. The etiology of benign migratory glossitis remains unknown but is most commonly seen during condition of psychological stress and has increased frequency in psoriasis of skin and in elderly individuals. No treatment is usually necessary. Symptomatic lesions can be treated with systemic corticosteroids or systemic antifungals can be tried if a secondary candidiasis is suspected.

**EFFECTS ON BONE**

**Periodontal Bone Loss**

Periodontal disease in the elderly does not appear to be specific disease, although age-related changes have been documented in the periodontium of elders. These changes do not appear to be the cause of periodontal disease in the elderly. The increased severity of periodontal diseases with age depends on the duration, periodontal tissues have been exposed to the dentogingival bacterial plaque, and reflects the individual’s oral history. However, the susceptibility of the periodontium to plaque-induced periodontal breakdown may be influenced by the aging process or by a specific health problems of the aging patient. The host response to plaque microorganisms may be altered because of changes in structure and function during aging and it may influence the rate of periodontal destruction in older people. The gingival recession aids in larger area for plaque retention, which explains the greater amount of plaque recovered from elderly subjects. Also, exposed cementum on root surface and dental enamel are two types of hard dental tissues that harbors microorganisms and may influence the plaque formation rate differently. Differences in dietary habits, increased flow of gingival exudate from the inflamed gingiva, and possible age-related changes in salivary gland secretions may also alter the conditions for growth and multiplication of the plaque microorganisms.

**Bisphosphonate-related Osteoradionecrosis of Jaw**

Bisphosphonates are a group of drugs that are used to treat osteoporosis and the complications associated with malignant bone metastases. The use of this drug has dramatically increased over the past few years as new indications for their use have arisen. The bisphosphonates standard role for treatment of moderate to severe hypercalcemia is associated with malignancy and metastatic osteolytic lesions are associated with breast cancer and multiple myeloma in conjunction with antineoplastic chemotherapeutic agents. Bisphosphonates act as a potent suppressors of osteoclast activity, thereby slowing the remodeling process and increasing bone mineral density and reducing the risk of fracture in women with osteopenia and osteoporosis. Despite these benefits, osteonecrosis of the jaws is a significant complication associated in patients receiving these drugs. Although the exact mechanism of bisphosphonate-induced osteonecrosis of the jaw (BRONJ) is not known, several hypotheses have been proposed. It has been proposed that pathogenesis of this process is consistent with a defect in jawbone physiologic remodeling or wound healing. Dentoalveolar...
Temporomandibular Joint Arthritis

Rheumatoid arthritis (RA) is a heterogeneous group of systemic disorders that manifests mainly as synovial membrane inflammation in several joints. The TMJ gets involved in at least half of affected patients. It can occur at any age but incidence increases with increasing age and is more common in elderly females. Usually the small joints of the hands, wrists, knees, and feet are affected in a bilateral and symmetric fashion, whereas TMJ involvement is variable. The common complaints of patients with the TMJ involvement are swelling, pain, tenderness, stiffness on opening, limited range of motion, and crepitus. The chin may appear receded, and an anterior open bite is generally present because of the bilateral destruction and anterosuperior positioning of the condyles. The TMJ involvement usually is bilateral and symmetric. On radiographic evaluation, erosion of the anterior and posterior condylar surfaces at the attachment of the synovial lining may be seen which result in a “sharpened pencil” appearance of the condyle. The severity of erosive changes may destroy entire condylar head, with only the neck remaining as the articulating surface. The treatment is directed toward pain relief using analgesics, reduction, or suppression of inflammation using nonsteroidal anti-inflammatory drugs, gold salts, corticosteroids, and preservation of muscle and joint function by physiotherapy. In severe cases, joint replacement surgery may be necessary.26

EDENTULISM

Old age is accompanied by numerous health problems, out of which edentulism is the most common and experienced by most of the geriatric population. The increasing age accentuates the possibilities of dental caries and periodontal bone loss, which further leads to the destruction of teeth and tooth supporting structures, thereby eventually resulting in loss of teeth from oral cavity. Edentulism can be divided as partial or complete edentulism, depending on number of teeth absent from oral cavity. Problems, such as reduced vertical dimension, increased alveolar ridge loss also result due to loss of teeth. Also, the patients are unable to take food adequately, thereby nutritional deficiencies take place and manifestations, such as vitamin and iron deficiencies can be seen. Edentulism can be treated by the fabrication of dentures.27

DENTAL CONSIDERATIONS

For the treatment of geriatric patients in diseased state, special considerations have to be taken, some of which are as follows:

- The elderly patients may be easily stressed because of advanced age, systemic disease, or out of behavioral problems. Such patients may precipitate a cardiovascular events. To avoid such events, the patients should be given short morning or early afternoon appointments and sedative oral medication should be used when necessary.28
- The assessment of blood pressure is necessary in all new dental patients, including those already identified as hypertensive, and at all recall appointments.29
- The patients on anticoagulant therapy have an increased risk for excessive bleeding during surgical procedures, therefore, patient’s physician must be consulted before the procedure. The surgery may be performed if international normalized ratio (INR) is 3.5 or less. Higher values of INR usually require reduction in the anticoagulant dosage before surgery.30
- In elderly patients with previous endocarditis, a prosthetic valve or implant or valvular heart disease prophylaxis for infective endocarditis is essential. The standard prophylaxis for dental procedures is to give 2 gm amoxicillin 1 hour prior to the procedure, or if the patient is allergic to penicillin, 600 mg clindamycin may be used.31
- For the patient taking antihypertensive, antidepressant, antipsychotic, or other medications can cause xerostomia which further increases the risk for dental caries, periodontal disease, fungal infection, and mucositis. The physician should be asked whether the medication can be changed. To avoid complications, topical fluoride, saliva substitutes, and saliva stimulants should be used.
- The severity of disease in angina patients should be assessed. Patients should not undergo elective outpatient dental care until at least 6 months after a myocardial infarction (MI) because of the increased risk for angina, arrhythmias, or another MI while in the dental chair.32,33
Older patients should be advised and assisted in support of their continued efforts to adequately maintain good oral hygiene. It is crucial to offer oral health education in a manner that respects the patient’s autonomy and is not embarrassing.31

- Elderly patients suffering with dementia, physical disability, and advanced illness may have difficulty in following directions, sitting still during appointment and rendering effective home care. In such patients, it might be necessary to apply sedation, making short appointments.

- Advanced age leads to poor eyesight which may become a problem in filling the health and dental questionnaire. In such cases, the spouse or relatives should be asked to fill the questionnaire or dentist should take oral history from the patient.

- Elderly patients encounter multiple health problems for which they take multiple medications, and this can lead to possible drug overdose, drug interactions, and potential problems with medications that the patient may need to use. In such conditions, patients may be referred to the physicians for reevaluation of the drugs and the dentist should use the lowest effective dose and avoid drug interactions.

- Any mucosal lesion persisting for 3 to 4 weeks despite all attempts to remove suspected etiologies (e.g., ill-fitting denture flange) must be thoroughly investigated with higher investigations, such as biopsy to determine a diagnosis.3

- Patients diagnosed with any type of cancer should have a comprehensive clinical and radiographic dental examination completed prior to any surgical and/or chemotherapeutic treatments.34

**CONCLUSION**

As the number of geriatric population and their associated oral and general health problems are considerably increasing with time, there is a need for clear understanding of correlation of systemic health with oral health and providing support and treatment for the same. Geriatric dentistry demands a specialized course in the form of fellowship or advanced education program to the trained oral medicine specialists who can plan and govern oral health care delivery, education, and research in India.

**REFERENCES**


