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Research Article

EVALUATION OF ORAL CAVITY FOR AGE INDUCED CHANGES IN GERIATRIC POPULATION

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A B S T R A C T

The oral cavity is a matter to specific changes with increasing age. Till the old age most of the individual face lots of health and psychosocial challenges, which reflect in the oral cavity as well. The health professionals should, however, have a distinct approach towards the geriatric patients. The reactions of the oral structures to the advancing age may be attributed to various effects of foreign bodies such as prostheses and of other agents in particular drugs, smoking, trauma etc. Age related effects include sensory changes as loss of sensitivity to thermal, chemical and mechanical stimuli, declined gustatory ability and atrophic, thin oral mucosa. The study is designed to evaluate the oral cavity for age induced changes amongst geriatric population of Puducherry.

INTRODUCTION

Geriatric population needs immense emotional as well as physical and medical care for a quality life. Increasing proportion of the population is aged 65 or older. The terms older, geriatric, and senior refer to the persons older than age 65 Years. Geriatric subjects are classified as young old (65-74 years), Old-Old (75-84 years), and Oldest-Old (>85 years)(Kumar TS *et al* 2009, Kumar S *et al* 2008, Vandana KL, Reddy MS 2007). Physical changes are brought about mainly by arteriosclerotic processes, the continuous obliteration of the capillaries and the altered cell metabolism. Nerves and end organs in the oral mucosa may also be affected by age (Breustedt A 1983). Oral health is an important aspect of general health, but maintaining oral health is certainly difficult and different in old age. In order to attain quality life and good health, it is must to know every aspect of old age. Ageing results harder body tissues, collection of waste products in body cells and loss of lubrication which leads to impaired functioning of various systems (P Abdul Razak *et al* 2014).

Although altered status of the oral cavity in all age groups is normal, older individuals characteristically present with certain changes in their oral cavity (Pugliese S., Kashi A.R 2011). There has been increasing attention in recent years to the oral health and periodontal disease diagnosis, management and prevention in geriatric patients (Col S. K. Rath, P. C. Das 2014).

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As individual ages, many changes occur in both physical appearance and metabolic processes. Physiologically every cellular organism has a finite length of life. It is thought that this process reflects the inability of individual cells to replicate themselves beyond a certain point and have diminished metabolic cellular activity as well (Anuradha KP *et al*. 2002, Thomas S *et al*. 2000, Robert GH, Barry C 1994). Oral tissues react in a fashion similar to other organs with respect to aging and the oral cavity is subjected to specific changes with aging (Greene. J.C 1960, Ramfjord S.P 1968). Oral mucosa becomes more permeable, dry and smooth with thin epithelium and loss of elasticity. Hard tissue changes include atrophy of alveolar bone and wearing of dentition. Periodontium is compromised and prone to trauma. There is altered sensitivity to thermal, chemical, mechanical stimuli and declined gustatory ability (Sanjana M.K *et al*. 1956, Clark CA, Vanek EP 1984, Meurman J.H. & P. Hamalainen 2005, Russell A. L 1956). Salivary changes include hypo salivation. Over all old individuals need potent dental care to maintain the functional status of the oral cavity with increased age (Dye, Bruce A *et al*. 2005, Holm-Pedersen P, Russell S.L 2006). The dentist should, however devote particular attention to the reactions of the oral structures when it has undergone age- induced changes. With this background the aims and objectives of our study were to evaluate the oral cavity status at old age, to evaluate the age related changes in different tissues/structures of oral cavity and to identify the dental care need in older age.

MATERIALS AND METHODS

Individuals above the age of 65 were included in the study. We excluded the patients with debilitating diseases, patients receiving any medication, chemotherapy or radiotherapy and

individuals with previous history of trauma or with known harmful habits.

A prospective clinical, ethically approved study was done in the department of Oral Medicine and Radiology, M. G. P. G. I. Puducherry. Patients above or the age of 65 Years were included in the study. Patient consent was taken prior to inclusion in the study. Patients were examined clinically for the various lesions/conditions of oral structures. Different structures of oral cavity were assessed clinically according to a standardized proforma [TABLE 1]. Obtained data were analyzed with chi square test.

RESULTS

Obtained data were analyzed with chi square test. Percentage of different recorded conditions and lesions was calculated. Results of our study showed that compromised dentition and Periodontium were the most prevalent conditions followed by lingual changes. Palatal changes were the least common (TABLE-2). Among mucosal changes mucosal lesions/pigmentation was the most common (32 %) condition. Decayed teeth (51.0 %), hypo salivation (50.0 %) and altered taste sensation (40.5 %) were the other common conditions (TABLE-3). Vague pain was the most common (39.5 %) condition among sensory changes (TABLE-3). Mucosal changes (64.04%) and sensory changes (64.04%) were most common conditions in old males where as other conditions were more in female individuals (TABLE-4).

DISCUSSION

Oral cavity is the mirror of individual's body, advancing age also reflects in a same manner. Age induced changes includes altered physical and metabolic processes, which causes inability of individual cell to replicate beyond a certain point. Aged individual report dry mouth, altered sensation, burning mouth, and inefficient dentition commonly.

The prevalence of xerostomia increases with age and is approximately 30% in those aged 65 years and older. It could be due to the acinar destruction and hyalinization, ductal obstruction and atrophy, dehydration due to impaired fluid intake, emesis, diarrhea or polyuria (Anurag Gupta, Joel B *et al*. 2006). In our study 50% of individuals (age >65 years) were found to have hypo salivation. Changes in mucosal membrane are most apparent after age 70. The tissue appears shiny with stretched appearance due to loss of resiliency, elasticity and underlying edema. Sometime keratinization or parakeratosis may occur but mostly epithelium is thin and prone to injury and ulcers. In our study group oral mucosal changes were 61.1% (mucosal ulcers 30.5% where as other lesion like keratosis, pigmentation, carcinoma etc.were in 32.5%). Sadeq Ali Al-Maweri *et al* reported oral mucosal changes in 70.1% cases (Sadeq Ali Al-Maweri, Aisha Ahmed Al-Jamaei *et al* 2015). Tongue is a frequent site of soft tissue changes in old age. Changes range from slight reddening to fissuring, atrophy of filiform papillae and completely lacquered tongue. We found 74.5 % of individuals with various changes in tongue like altered papillary changes (28.0%) and other lesions (18.5%) and sensory changes (40.5%). Heleen R.Hoogeveen *et al* observed that perception of intensity of various oral stimuli varied with age (Heleen R.Hoogeveen, Jelle R.Dalenberg *et al*. 2015). Our study group showed altered taste sensation in 40.5% of individuals.

In various epidemiologic studies the prevalence of periodontal disease was found to be 60% to 97% with an average loss of alveolar bone in 40% of cases (Holm-Pedersen P, Russell S.L 2006). The primary cause is lack of oral hygiene care associated with other factors like senile atrophy of alveolar bone. We found compromised periodontal status in 84.5% of individuals with 40.0% of individuals having alveolar bone loss. Changes in the dentition with increased age are attributed to normal physiologic processes and to pathologic changes in response to functional and environmental stress. Overall 84.5% of individuals were found to have compromised dentition among them 51.5% were having decayed teeth, 41.0% were with missing teeth and 39.5% were with filled teeth. Thomson WM reported caries prevalence in elderly was 22%, with 20% of 75–84-year-olds showing active root decay (Thomson WM 2004).Though high caries prevalence is not associated with old age, in our sample group it was found to be high as most of the patients were from lower socioeconomic groups who do not visit the dentist and have lack of knowledge about dental caries. Females were found to have more compromised dentition, Periodontium, salivation, alveolar and lingual status. Whereas mucosal changes and altered sensory changes were more prevalent in males. This gender based difference could be attributed to higher harmful habits in male and lack of self-care in females. Overall both male and female geriatric individuals need dental care for improved oral health. As the present study was based on patient history and clinical examination, recall bias and lack of specific investigations for the various conditions can be considered as draw backs of our study. Multicentric studies using standard diagnostic methods to assess various age related changes are required to set parameters for age induced changes.

CONCLUSION

The dentist must be aware of possible age-induced morphological and functional processes. Constant care of the mouth, regular examinations and prompt therapeutic measures can provide the individual healthy and fully functional oral cavity even in very old age. Geriatric group is the most rapidly growing segment of population. In the absence of major medical problems and intervention, aging is associated with few dramatic and deleterious consequences to the health and function of the oral cavity. The dentist must be aware of every possible age-induced morphological and functional processes, so that he can adopt a preventive strategy and draw the right conclusions for therapy, even in very old patients. Constant attention to both the mouth and the body will provide an elderly a healthy and quality life.

Table 1 Proforma for Assessment of Oral Structures

Steps	Symptoms		
Mucosal changes	Ulcer	Mucosal growth	Mucosal lesion/pigmentation
Dentition	Decayed	missing	Filled
Salivary status	Normal	Hypo salivation	Hypo salivation
Lingual changes	Taste sensation	Papillary changes	Other (red, fissure, candidiasis etc.)
Palatal changes	Growth	Swelling	Local trauma
Alveolar changes	Resorbed	Bony spicule	Other lesion
Periodontal changes	Gingival recession	Bleeding on probing	Periodontal pockets
Sensory changes	Vague pain	Burning sensation	Others pain (tactile, temperature pressure

Table 2 Assessed Status of Oral Cavity in Elderly

Oral Structure Changes	Prevalence	
	N	%
Mucosal changes	123	61.5
Dentition	169	84.5
Salivary status	121	60.5
Lingual changes	149	74.5
Palatal changes	109	54.5
Alveolar changes	139	69.5
Periodontal changes	169	84.5
Sensory changes	139	69.5

Table 3 Assessment of various changes in Oral structures of Elderly

Oral Structure Changes		Prevalence	
		N	%
Mucosal changes	Ulcer	61	30.5
	Mucosal growth	41	20.5
	Mucosal lesion/pigmentation	64	32.0
Dentition	Decayed	102	51.0
	Missing	82	41.0
	Filled	79	39.5
	Normal	79	39.5
Salivary status	Hypersalivation	100	50.0
	Hypersalivation	21	10.5
Lingual changes	Taste sensation	81	40.5
	Papillary changes	56	28.0
	Other (red, fissure, candidosis etc.)	37	18.5
Palatal changes	Growth	32	16.0
	Swelling	18	9.0
	Local trauma	69	34.5
Alveolar changes	Resorbed	80	40.0
	Bony spicule	52	26.0
	Other lesion	44	22.0
Periodontal hanges	Bleeding on probing	72	36.0
	Periodontal pockets	90	45.0
	Gingival recession	88	44.0
Sensory changes	Vague pain	79	39.5
	Burning sensation of mouth	45	22.5
	Others - Pain, taste, touch	25	12.5

Table 4 Sex Predominance of different changes in Oral structures of Elderly

Oral Structure Changes	SEX				Chi-Square	p-Value
	Male		Female			
	Prevalence		Prevalence			
	N	%	N	%		
Mucosal changes	73	64.04	50	58.14	0.72	0.3963
Dentition	95	83.33	74	86.05	0.28	0.5997
Salivary status (altered)	66	56.74	75	83.33	1.36	0.2443
Lingual changes	84	73.68	65	75.58	0.09	0.7606
Palatal changes	60	52.63	49	56.98	0.37	0.5413
Alveolar changes	78	68.42	61	70.93	0.15	0.7028
Periodontal changes	95	83.33	74	86.05	0.28	0.5997
Sensory changes	73	64.04	50	58.14	0.72	0.3963

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