

Communicable Difficulties of Orthodontics in Ageing Patient

Patrick Avalose*

Department of Dentistry, Khesar Gyalpo University of Medical Sciences, Bhutan

Abstract

Caries and periodontitis become a permanent worry due to the retention of teeth into old age. Acidic oral streptococci metabolites destroy enamel and dentin, causing dental caries. Dissolution leads to cavitation, which develops into bacterial invasion of the dental pulp if left untreated and allows oral bacteria to enter the bloodstream. Infections of the endocardium, meninges, mediastinum, vertebrae, hepatobiliary system, and artificial joints have all been associated to oral pathogens. Dental plaque causes periodontitis, a pathogen-specific, lytic inflammatory response that weakens the tooth attachment. In persons with diabetes, periodontal disease is more severe and less easily managed; poor glycemic management may make the host response worse. The most common cause of pneumonia in nursing homes is aspiration of oropharyngeal infections; variables suggesting poor oral health closely correlate with higher risk of acquiring aspiration pneumonia. Periodontopathic organisms that are blood borne may contribute to atherosclerosis. The morbidity of oral infections and their non-oral aftereffects can be reduced in an economical manner by practising daily oral hygiene and receiving routine dental care.

Keywords: Periodontitis; Aspiration pneumonia; Dental plaque; lytic inflammatory

Introduction

The human mouth has more than 300 distinct cultivable types of bacteria, with an estimated 1014 distinct microscopic organisms living in the oropharynx and mouth at any given moment. Caries and periodontal disease, the two most common oral infectious illnesses, have historically been treated and diagnosed by dentists. However, these oral disorders frequently have systemic effects, especially in elderly persons. A primary cause of bacterial endocarditis and a contributing factor in late prosthetic joint infection is haematogenous seeding from an oral source (LPJI) [1]. Glycemic management is hampered by periodontal disease in patients with diabetes, and poorly managed diabetes may make the condition worse. The main cause of nosocomial pneumonia in elderly people is aspiration of oropharyngeal secretions. Atherosclerosis, coronary artery disease, and stroke have all been related to bloodstream-borne Periodontopathic bacteria.

This review is concerned with the rising prevalence of periodontal and dental diseases in the elderly. In the US, people over 75 years old made up about 70% of the population in 1957. 35% of Americans aged 75 and older are now toothless due to fluoridation of drinking water and toothpaste, preventive dental habits, and an expanding dentistry profession [2]. By doing so, the risk of developing dental and periodontal disease is increased into a stage of life where poor self-care is frequently present. The pathogenesis of these two oral infections in elderly people particularly their systemic effects will be covered in this paper.

Dental Aspiration Pneumonia Conditions

Nursing home acquired pneumonia is the most common cause of death and the second most common reason for hospitalisation in this demographic. Nosocomial pneumonia in general and nursing facility acquired pneumonia in particular are nearly entirely brought on by anaerobic gram-negative bacteria, in contrast to community-acquired pneumonia, which is mostly brought on by viral and pneumococcal pathogens. According to reports, individuals in nursing homes and intensive care units are more likely to have gram-negative rods colonise their oropharynx [3]. These rods have also been found in the dental plaque of patients in these facilities. As among the “anaerobic bacteria that are most important as causes” of aspiration pneumonia, Fine gold

listed several well-known periodontal pathogens. The presence of *S. aureus*, the periodontal pathogen *P. Gingivalis*, and the decay organism *S. sobrinus* were all significantly correlated with nursing home acquired pneumonia, according to a long-term prospective study of about 350 elderly veterans residing in a Department of Veterans Affairs nursing home [4]. It becomes clear that the same factors that contribute to periodontal breakdown—poor oral hygiene, plaque accretion, and weakened host defense also support the growth and subsequent aspiration of oral pulmonary infections.

The key clinical concern is whether pneumonia incidence would decrease if periodontal disease was controlled. In comparison to control participants, Japanese nursing home residents who received daily and weekly oral hygiene interventions had fewer cases of pneumonia, fewer fevers, and fewer hospitalisations. The results are fascinating and deserve independent confirmation as well as potential consideration for wider application.

Treatments

Without a doubt, diseases outside the mouth cavity are linked to oral microorganisms, especially in elderly persons. Serious cardiac and orthopaedic diseases are brought on by the haematogenous metastasis of infectious agents arising from dental caries and periodontal disease. Geriatric mortality, morbidity, and healthcare costs are dramatically impacted by aspiration of infections that inhabit the oropharynx [5]. In an individual with a full dentition, the total area of the inflammatory epithelial lining of periodontal pockets may surpass 25 cm². This size of a bleeding skin wound requires prompt medical and nursing care. However, a number of variables have made it possible for the majority

*Corresponding author: Patrick Avalose, Department of Dentistry, Khesar Gyalpo University of Medical Sciences, Bhutan, E-mail: avalose.patrick@gmail.com

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of the mainstream medical community, the population that provides care, and old people themselves to passively tolerate or simply overlook oral disease in advanced age [6]. These include the long-standing divide between dentistry and medicine, the high cost of dental care in the face of older Americans' relative lack of third-party dental coverage, people's acceptance of the dental deterioration associated with ageing, the aversion of most adults to having someone else brush their teeth, the aversion of most people to cleaning another person's mouth, and many adults' aversion to dental treatment due to unpleasant side effects.

The widely accepted methods for preventing dental caries and periodontal disease include using a toothbrush and fluoridated toothpaste at least twice a day, using a tool to clean in between teeth and along the gum line, getting regular dental exams with professional cleanings, and consuming less refined sugar [7]. People who experience reduced saliva production as a side effect of medicine are more likely to develop dental decay, thus they should definitely use concentrated sodium fluoride gel every day and visit their dentist more frequently. When cleaning non-anatomic surfaces, people who have had dental appliances installed to replace missing teeth may need to become skilled with 1 or more of a number of specialty brushes. When periodontal disease has caused significant bone loss, special care must be used to clean the exposed root surfaces [8]. Preventive dentistry may be less effective in older people due to the aforementioned three reasons, as well as others like economics, motivation, and social environment.

Daily oral hygiene maintenance is more than just a grooming concern. An older person who needs help with other care will likely have less of the physical dexterity, tactile acuity, and vision needed to use a toothbrush effectively. It is sense to urge frail old people to take part in their own daily hygiene procedures as much as feasible [9]. However, a carer must be able to tell when the bare minimum of oral hygiene is not being upheld. Unfortunately, nurse assistants rarely understand the value of preserving dental health for themselves and those in their care, and because they rarely face consequences for doing so, many view the task as being among the least important in their overloaded daily schedules.

Periodontal pathogens

Periodontopathic bacteria easily enter the bloodstream as a result of the edematous status of the diseased periodontal pocket and the strong population of pathogenic bacteria growing there. Patients with and without periodontal disease both developed cultivable anaerobic and aerobic bacteraemia in response to gentle tooth brushing and even chewing [10]. Increasing incidence and severity of bacteraemia after brushing are correlated with increased gingival inflammation. One group of microorganisms linked to both bacterial endocarditis and LPJI includes periodontal pathogens.

Correlations between indicators of dental health that shows the presence of caries and periodontal disease as well as cardiovascular and cerebrovascular diseases. Even after taking into account characteristics including age, blood lipid level, body mass index, smoking, and socioeconomic status, relationships for men continued to be important. Even after adjusting for the patient's sex, smoking, and socioeconomic characteristics, those with periodontal disease and tooth loss had a twofold increased risk for coronary heart disease among National Health and Nutrition Examination Survey (NHANES) II participants [11]. Significant multifactorial connections between periodontal disease and later cardiovascular disease were identified prospectively in about 51,000 healthcare practitioners. Cerebrovascular disease and periodontal disease were significantly correlated in around 350 senior

veterans. Even after adjusting for age, smoking, diet, and other obvious potential confounding factors, there are still significant correlations between bone losses.

Blood borne Periodontopathic bacteria's cell-wall lipopolysaccharides activate the conversion of fibrinogen to fibrin, which results in the production of thrombi. Cellular remnants from *P. Gingivalis*, *Prevotella intermedia*, *B. forsythias*, and *Actinobacillus actinomycetemcomitans* were found in 42% of specimens while DNA fragments from these organisms were found in 72% of specimens from atherosclerotic plaques recovered during endarterectomy [12]. An alternate explanation for the relationship between periodontitis and vascular disease was connected to the aforementioned mechanism and involved endothelial destruction brought on by inflammatory mediators produced by blood borne periodontopathic bacteria, such as C-reactive protein, IL-1, PGE2, and TNF.

No intervention trials have been published to far that suggest periodontal treatment has beneficial cardiovascular effects. The practise of performing premature full-mouth extractions, which was common at the beginning of the 20th century when the "focal infection" theory of oral disease spreading to other sites was accepted as a cause for inflammatory conditions, may be revived in light of reports linking periodontal and vascular diseases [13]. Studies linking periodontal and vascular disorders came to the conclusion that it was currently unwise to advise patients to have their periodontal compromised teeth extracted in order to improve their cardiovascular or cerebrovascular state.

Some chemotherapeutic methods for cleaning the oral cavity have been used in response to the endemically dirty mouths among dependent old people. Unfortunately, unless used in conjunction with regular daily dental hygiene, the medicines developed to date have little effectiveness against caries and periodontal disease. Chlorhexidine glucometer, a topical antiseptic, is offered as a 0.12% mint-flavoured oral rinse. Gingival inflammation is also decreased with twice-daily 60-second rinses, which also lower gingivitis pathogen counts and, to a lesser extent, cariogenic organism counts. To lessen the pathogenicity of oropharyngeal aspirates, swab the palate and oropharynx with a 10% providence-iodine solution before brushing your teeth.

Conclusion

Clean mouths would only be an aesthetic issue if poor oral health did not cause significant disease. However, if left untreated, dental and periodontal conditions can cause major morbidity, mortality, and high needless medical expenses. Unfortunately, until the public demands a higher standard of oral care for their dependent ancestors or until those in charge of allocating healthcare resources understand that the additional cost of daily oral care is less expensive than the cost of ignoring it, the avoidable but undeniable status quo of poor oral hygiene among frail elderly persons will persist.

Acknowledgement

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Conflict of Interest

None

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