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PHARMACOLOGICAL MANAGEMENT of caries and periodontal disease

Caries and periodontitis are diseases of civilisation, the severity of which depends largely upon dietary and lifestyle choices. With the notable exceptions of small amounts of fluoride in toothpastes and reticulated water supplies to reduce caries and the topical application chlorhexidine to reduce gingival inflammation, the management of caries and periodontal disease has traditionally relied upon the mechanical removal of bacterial plaque (and dietary modification for caries).

The problems with dietary control and mechanical plaque removal are they require behaviour modification by susceptible individuals that is often difficult to implement, especially inter proximal cleaning where mucopolysaccharides accumulate between the teeth and prevent saliva washing bacterial toxins and acids that predispose to gingival inflammation and caries.

Ageing 'baby boomers' (whose parents were often edentulous in their 30s and whose children are relatively caries free) are struggling to hold onto compromised dentitions that were heavily restored in their earlier years. Currently, these individuals provide dentists with most of their clinical challenges and workload. The advent of reduced saliva flow due to ageing, medication or both increases their susceptibility to caries and periodontitis adding to the management problems of ongoing treatment.



Fig 1.

Oral bacteria are adversely affected by levels of fluoride over 2,000 ppm. Further increasing fluoride concentrations increase toxicity to both oral bacteria and the human host. Obviously, there is a fine balance in achieving fluoride levels in the oral cavity that are effective in controlling bacteria but below concentrations that are toxic for humans. Fluoride does not accumulate in the body and any excess is flushed out through the kidneys.

Toothpastes with fluoride levels of 5,000 ppm (1.1% ww) are minimally toxic to humans and when used in prescribed ways are able to dramatically reduce bacterial plaque, eliminating the onset and progression of caries and dramatically improving periodontal health.

Figures 1 and 2 are photographs of patients who had high plaque levels associated with ongoing caries and chronic periodontal disease. Both have been using a high fluoride toothpaste for over a year. Both mouths are virtually plaque free, existing caries have been arrested and there has been a marked improvement in periodontal health.

High fluoride toothpastes enable dentists to give patients the means to self manage caries and periodontal disease without requiring major behavioural changes.



Fig 2.

Because of the relatively low concentrations of fluoride in the toothpaste it is essential that patients follow the prescribed cleaning technique otherwise there are few therapeutic benefits.

- The toothpaste must be applied twice daily (one application just prior to retiring).
- Many patients see rinsing out as part of their daily cleaning process and they should be encouraged to do their interdental cleaning and rinse before applying the therapeutic toothpaste.
- Apply an increment of toothpaste about the size of a pea to a tooth brush and thoroughly clean the upper and lower teeth.
- Expectorate some of the paste and then brush the dorsum of the tongue as far back as comfortable to avoid gagging.
- Finally, expectorate the rest of the toothpaste but do not rinse any remaining toothpaste from the mouth.
- Avoid eating or drinking for at least half an hour after application.
- Stress to patients that if the directions are not followed implicitly there is minimal therapeutic benefit.

Currently, the only therapeutic toothpaste containing 5,000 ppm (1.1% ww) fluoride available in Australia is marketed by Colgate under the name NeutraFluor 5000 Plus. It is an 'under the counter' product only available at pharmacies. Patients have to ask for it and they may be asked by the pharmacist or assistant, if they are purchasing it at the suggestion of a dentist or dental hygienist.

3M ESPE's medicated toothpaste with 5,000 ppm fluoride (Clinpro 5000) is available in the USA. 3M ESPE are currently seeking TGA accreditation to have the toothpaste available in Australia.

Recently, dentists have recognised that the toxicity of fluoride is a potent means of managing both periodontal disease and caries. Because of the constraints regarding the possible toxic effects on the human host, levels of fluoride must be kept to a minimum and require a strict protocol of application if there is to be any therapeutic effect on oral pathogens.

Notwithstanding this, it has been the author's observation that after 45 years of dental practice, the prescribed application of 5,000 ppm fluoride toothpaste has been the most effective tool available in combating both caries and periodontal disease in general practice.

DISCLOSURE

The oral hygiene technique described in this article is attributed to Professor Laurence Walsh, The University of Queensland with his kind permission.

The author has no financial or other interest in any of the products mentioned in this article.

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Sample instructions for patients as to the effective use of this toothpaste may be downloaded as a PDF from the author's website www.dentalk.com.au