Treatment of periodontal disease with dental curing light – could it be that simple?

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Editor

Besides their role in the periodontal attachment loss and subsequent loss of teeth, periodontal pathogens such as *Aggregatibacter actinomycetemcomitans* have been associated with systemic diseases.¹ Some recently published data² brings to our attention an interesting approach to treating periodontal disease – the dental halogen or LED curing lamp. The authors showed that strains of *Aggregatibacter actinomycetemcomitans*, *Fusobacterium nucleatum*, and *Porphyromonas gingivalis* cultivated in vitro in planktonic state were almost completely killed after exposure to “blue light” for a duration of 15 (*P. gingivalis*) to 60 (*F. nucleatum*) seconds. However, the same study showed that only *P. gingivalis* strains were susceptible to this phototoxicity while in biofilm state. The authors’ conclusion was that the dental halogen curing light was “effective in reducing periodontal pathogens in planktonic state”² and that this method could be used for the treatment of periodontal disease.

These results could be very encouraging, if it weren’t for the fact that the periodontal pathogens mainly organize themselves in vivo in the form of biofilm – the main reason why systemic antibiotherapy alone is ineffective in the treatment of periodontal disease. As a recent

literature review article³ pointed out, systemic administration of amoxicillin and metronidazole combined with scaling and root planning (SRP) of the teeth yielded better results than SRP alone. However, there isn’t a clear opinion on whether the better outcomes for combined SRP and amoxicillin treatment are due to the antimicrobial effects of amoxicillin, or to its role in upregulating cytokine expression, as another study⁴ has pointed out.

To support the theory of Song et al.,² it would be interesting to determine how many patients undergoing yearly in-office dental bleaching procedures accelerated with LED lamps later develop periodontal disease.

The study hypothesis that Song et al.² propose is very interesting and may be worth pursuing. In my opinion, there is need for further randomized controlled studies to assess the efficacy of this method combined with SRP and systemic antibiotherapy. However, caution is advised. A recent study⁵ by Yoshida et al. showed that blue light emitted by LED light sources induces reactive oxygen species (ROS), which could have adverse effects on human gingival fibroblasts. In the light of this information, one might question whether exposing the gingival sulcus after SRP – a minimally invasive, but nonetheless invasive procedure – to a light source capable of inducing ROS is a good therapeutic choice or not.

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