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RECENT TRENDS IN MANAGEMENT OF DENTIN HYPERSENSITIVITY: A REVIEW

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ABSTRACT Dentin hypersensitivity is becoming increasingly prevalent. Various forms of desensitizers like toothpastes, gels, mouthwash, etc. have been used with certain advantages. A variety of clinical approaches for both in office and at home treatment are available. Unfortunately, none of the methods has proven to be the best for treatment of dentine hypersensitivity. This review article focuses on the recent concepts in management of dentine hypersensitivity.

KEYWORDS : homeopathy, hypersensitivity, lasers, oxalates

INTRODUCTION

Dentin hypersensitivity is a dental condition presenting with painful symptoms of the exposed and innervated cervical pulp–dentin complex. It is mainly a diagnosis of exclusion. Thus, differential diagnostic aspects play a pivotal role and a thorough anamnestic evaluation is indispensable to identify etiopathogenic factors which ultimately decide treatment plan. Different materials and methods have been described to treat dentinal hypersensitivity [1].

Prevention is better than cure. Thus, primary prevention of dentin exposure as a result of recession formation and/or dental hard tissue damage by any prophylactic measures or erosive/abrasive diet is the best way to actually treat this phenomenon and its associated painful symptoms [2]. The treatment of dentin hypersensitivity whether in office or at home focuses on two goals: occluding the dentinal tubules and otherwise impeding the stimulation of pulpal nociceptors. A variety of clinical approaches for both in office and at home treatment are available. This article focuses on the recent concepts in management of dentine hypersensitivity. Some of these recent materials are as follows-

1. Aqueous glutaraldehyde-containing solutions
2. Plugging agents
3. Arginine-calcium carbonate
4. Lasers
5. Bioglass
6. Portland Cement
7. Casein-phosphopeptide-amorphous calcium phosphate (CPP)-(ACP)
8. Propolis
9. Nanohydroxyapatite Crystals
10. Homeopathy
11. Placebo effect

1. Aqueous glutaraldehyde-containing solutions-

Aqueous glutaraldehyde-containing solutions have shown to be effective in reducing dentin hypersensitivity [3]. They have been shown to close dentinal tubules by precipitative intratubular occlusion and thereby to a significant decrease of dentin permeability, even under clinical conditions [4]. Also, glutaraldehy de disinfects dentin in vitro and is compatible with adhesive systems. However, potential biocompatibility hazards should not be neglected.

2. Plugging agents-

Different plugging agents have been described in the literature. Among these, oxalates have been used most commonly to precipitate and occlude the tubules. However, a systematic review recently revealed that with the possible exception of 3 % monohydrogen monopotassium oxalate, available evidence does not currently support the recommendation of dentin hypersensiti vity treatment with oxalates [5].

3. Arginine-calcium carbonate-

A topical paste containing 8% arginine-calcium carbonate inhibits the hydrodynamic mechanism of dentine hypersensitivity by plugging patent tubules and has been shown to be clinically effective [6]. This product may help manage post-instrumentation discomfort in patients with a known history of dentin hypersensitivity.

4. Lasers-

Research findings vary regarding the effectiveness of lasers in the clinical treatment of DH. The body of evidence supporting their use, however, is growing. Low-level output lasers, such as helium-neon and diode types, may function by interfering with nerve transmiss ion.

5.Bioglass-

There are some reports which indicate the effectiveness of bioglass in mineralization and infiltration of dentinal tubules. Its main component is silicate which acts as a nucleus for precipitation of calcium and phosphate. Scanning electron microscopic (SEM) analysis has shown that the application of bioglass causes the formation of an appetite layer which further leads to the occlusion of dentinal tubules [7].

6. Portland cement-

Some researchers have shown that silicate cement which is derived from Portland cement can be effective in DH management and help the occlusion of tubules through Remineralization [8].

7. Casein-phosphopeptide-amorphous calcium phosphate (CPP)-(ACP)-

Recently, a remineralizing agent has been produced out of milk casein proteins and has appeared on the market under the name GC Tooth Mousse (GC Asia Pty. Ltd.; Japan). CPP containing phosphoseryl sequences can be helpful in attaching and stabilization of ACP. CPP-ACP remineralizes the early lesions of enamel subsurface [9].

8. Propolis-

Silvia Helena de Carvalho et al studied the effect of propolis and concluded that the application of propolis gels did not seem to reduce the hydraulic conductance of dentin in vitro, but it showed capacity of partially obliterating the dentin tubules. Authors also concluded from the studies that propolis can be a good option in the treatment of patients with dentin sensitivity [10].

9. Nanohydroxyapatite Crystals-

More recently, the toothpastes containing carbonated hydroxyapat ite nanocrystals are being studied. These have high reactivity by which they bind to enamel and dentine apatite producing a biomimetic coating on enamel, contrasting plaque formation. They also prevent tooth from decay, rebuild and revitalize the teeth and seal dentinal tubules, annulling hypersensitivity. In near future new products of this kind will be a breakthrough in the treatment of dentinal hypersensitivity [11].

10. Phytocomplexes-

In vitro studies have shown that phytocomplexes containing oxalates derived from rhubarb stalks (Rhubarb rhaponicum) and spinach leaves (Spinacia oleracia) promote occlusion of dentinal tubules by the formation of acid resistant calcium oxalate crystals on the dentin surface and inside its tubules, and may be effective for topical treatment of dentinal hypersensitivity [12]. An adequate commercial product formula for clinical application is being tested and it seems to be a promising alternative.

11. Homeopathy-

Homeopathical medicines may be suitable adjuncts to conventio nal medicines for management of dentinal hypersensitiv ity and many other dental conditions since it is affordable, effective and uplifting for patients [13].

12. Placebo effect-

Another aspect is the placebo effect, which is an important and potentially beneficial aspect when dealing with pain, and its treatment and management. Thus, improved psychological co-therapeutic strategies may one day become an important auxiliary aspect in dental hypersensitivity management, especially when it comes to changing patients' expectations of treatment outcomes and confidence. The psychological training of dental professionals still has some room for development. [14].

CONCLUSIONS

Although there are a wide variety of treatment options for dentin hypersensitivity which are conventionally used, newer materials developed for this purpose should also be considered and researched further. It should be combined with additional products for home and office use to overcome the pain. The novel technologies and materials in this article should be advised for patients' daily use to achieve successful outcomes in dentin hypersensitivity.

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