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DENTINE HYPERSENSITIVITY

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Resume. *Dentin sensitivity or dentinal hypersensitivity is one of the most commonly encountered clinical problems. The treatment strategy of the differential diagnosis should be begun with prevention, selfcare management and later may be supplemented with professional interventions depending on the severity of the case.*

Keywords: *dentine hypersensitivity, Brannstrom's hydrodynamic theory, odontoblast.*

Relevance. Dentin sensitivity (DS) or dentinal hypersensitivity (DH) is one of the most commonly encountered clinical problems. It is clinically described as an exaggerated response to application of a stimulus to exposed dentin, regardless of its location. DH is a painful clinical condition with an incidence ranging from 4 to 74%. The variations in the reports may be because of difference in populations and different methods of investigations.

Purpose of the study: To investigate the available literature data on the current state of the problem of dentine hypersensitivity.

Research tasks:

1. Based on current literature data to establish the basic etiological causes of dentine hypersensitivity.
2. Based on current literature data to establish the basic clinical manifestations of dentine hypersensitivity.
3. Based on the data of contemporary literature to learn how to carry out a differential diagnosis and treatment of dentine hypersensitivity.

Materials and methods. In the study all available sources of literature have been analyzed. Such issues were examined as a definition, etiology and pathogenesis of dentine hypersensitivity, the basic clinical manifestations, diagnosis and differential diagnosis of and treatment of dentine hypersensitivity.

Results and its discussion. Dentine hypersensitivity (DH) is characterized by 'pain derived from exposed dentine in response to chemical, thermal, tactile or osmotic stimuli which cannot be explained as arising from any other dental defect or pathology. A recent modification to this definition has been made to replace the term 'pathology' with the word 'disease' presumably with a view to avoid any confusion with other conditions such as atypical odontalgia. Traditionally, the term dentine hypersensitivity was used to describe this distinct clinical condition [1].

Females appear to suffer more than males presumably due to their overall health care and better oral hygiene awareness. The prevalence of the condition appears to peak at the end of the third decade and the beginning of the fourth.

Some Several theories have been proposed over more than a century to explain the mechanism involved in dentine hypersensitivity.

The odontoblast transducer theory proposed by Rapp et al. postulated that odontoblasts act as receptor cells, and transmit impulses via synaptic junctions to the nerve terminals causing the sensation of pain from the nerve endings located in the pulpodentine border. However, evidence for the odontoblast transducer mechanism theory is deficient and

unconvincing. This is because the majority of studies have shown that odontoblasts are matrix forming cells and they are not considered to be excitable cells, and no synapses have been revealed between odontoblasts and nerve terminals.

Neural theory advocated that thermal, or mechanical stimuli, directly affect nerve endings within the dentine tubules through direct communication with the pulpal nerve endings. Although this theory has been reinforced by the presence of unmediated nerve fibers in the outer layer of root dentine and the presence of putative neurogenic polypeptides, it is still considered theoretical with lack of solid evidences to support it.

The etiology of the condition dentine hypersensitivity is multifactorial and not completely understood, although it has been demonstrated (scanning and transmission electron microscopy) by several investigators that the structure of dentine in the affected (sensitive) areas of a tooth is altered, containing a larger number of patent dentine tubules with a wider tubular diameter than unaffected areas (non-sensitive). These observations would appear to be consistent with Brannstrom's hydrodynamic theory, which suggests that dentine hypersensitivity is due to hydrodynamic fluid shifts occurring across exposed dentine with open tubules and that in turn mechanically activates the nerves situated at the inner ends of the dentine tubules or in the outer layers of the pulp.

While diagnosis of dentine hypersensitivity and differential diagnosis in the clinical history investigation, a verbal screening is recommended during which the patient is asked about the time of the start of the disease, the site, the intensity, and the stability of the pain and about the factors that reduce or increase the intensification of the disease. Moreover, the patients should be asked if the symptoms are present during oral hygiene procedures or following previous dental therapies like professional tooth cleaning, scaling, and other periodontal treatments; vital tooth bleaching and restorative procedures. Also, the dental professionals should ask and look for personal behavior patterns such as extrinsic and intrinsic acids, consumption of high-acid drinks or food, and overzealous dental hygiene.

In patients with suspected dentine hypersensitivity due to positive findings in the screening and history, the thorough differential diagnosis is very important to eliminate all other forms of orofacial pain, including pulpal inflammation, periodontal pain, cracked tooth syndrome, insufficient margins of restorations, atypical odontalgia etc. All differential diagnosis must be excluded, before the diagnosis of differential diagnosis is definitely confirmed. This simple strategy should capture the majority of differential diagnosis sufferers, thus enabling the dental professional to manage the problem more thoroughly [3].

The clinical examination should include an accurate assessment to identify all sensitive teeth and to confirm clinical signs associated with the definition of dentin hypersensitivity such as dental erosion, gingival recession, and exposed cervical dentin.

The clinical management of dentine hypersensitivity depends mainly on identification and elimination of the causative and predisposing factors, which could lead to lesion localization and lesion initiation in order to prevent the occurring or even reoccurring of the condition.

Various studies suggested that the dental practitioner should advice his/her patient to follow certain preventive measures to reduce both the frequency and intensity of dentin hypersensitivity episodes. These measures are considered as self-care strategies. Avoid faulty tooth brushing to lower the risk of gingival recession and abrasion of exposed cementum and dentin. It includes:

1. Not to use a hard tooth brush use only a toothbrush with soft filaments.
2. Avoid using of an excessive pressure or force during brushing.
3. Brushing time should not be extended for prolonged period of time.
4. Excessive scrubbing at the cervical part of the tooth that damages to the supporting structures and causes gingival recession should be avoided.
5. Not to use large amounts of dentifrice or reapplying it during brushing.
6. Avoid using a highly abrasive tooth powder or paste.

The use of an additional aids, such as:

1. Desensitizing dentifrices containing an active agent potassium salts such as potassium nitrate, potassium chloride or potassium citrate, where the potassium ions can decrease the excitability of A fibers, which surround the odontoblasts resulting in a significant reduction tooth sensitivity.
2. Remineralizing toothpastes containing sodium fluoride and calcium phosphates.
3. Mouth rinses and chewing gums that contain potassium or sodium salts [2].

Conclusions:

1. Clinically, differential diagnosis is a relatively common and significant dental problem for which patients look for treatment and visit dental clinics. There are many treatment modalities for differential diagnosis which the clinician may find successful in relieving the pain of differential diagnosis. The dental practitioner should first identify the causative or predisposing factor after taking a thorough history before the treatment plan is designed. The treatment strategy of the differential diagnosis should be begun with prevention, selfcare management and later may be supplemented with professional interventions depending on the severity of the case.

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