

## Case Report

### An Overaction to Plaque disclosing agent : An Unusual case

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#### **Abstract :**

Dental plaque, colonies of harmful bacteria which form on tooth surfaces and restorations, cannot be flushed away by simply rinsing with water. Active brushing of the teeth is required to remove the plaque which adheres to tooth surfaces. It is a well-accepted fact that dental plaque, when allowed to accumulate on tooth surfaces, can eventually lead to gingivitis, periodontal disease, caries and calculus , so by methods like disclosing agents oral hygiene can be improved and supervised. Eczema is a chronic inflammatory skin disease characterized by impaired epidermal barrier function, inflammatory infiltration,

extensive pruritus and a clinical course defined by symptomatic flares and remissions. The mechanisms of disease exacerbation are still poorly understood. This case report will reflect an unusual response of a eczema patient who responded to a allergy by a disclosing agent .

#### **Introduction**

Dental plaque removal is an important issue when it comes to promoting oral health. Deposition of plaque leads to inflammatory changes on the periodontium which further leads to destruction of the tissues and attachment loss.<sup>1</sup>

Dental plaque is usually transparent and colorless and not easily visible, therefore it becomes desirable to use plaque disclosing solutions to identify the plaque buildup areas. The use of disclosing compositions motivates the person in the early removal of dental plaque by showing the presence and quantity of plaque. Certain agents (dyes) may be used to make plaque visible which therefore are referred as disclosing agents. There have been few studies quoting the relationship of oral allergy with the skin allergies for example link between periodontitis and Rosacea<sup>2</sup>. Severe eczema is associated with multiple comorbid chronic health disorders, impaired overall health and increased healthcare utilization. Further, some data suggest that children with eczema are at risk for decreased oral health.<sup>3</sup>

### History

In 1914, Skinner<sup>4</sup> used the first disclosing solution - iodine to teach home care of the mouth and recommended the use of a disclosing solution to ensure that all foreign substances were removed, long before Loe *et al.*<sup>5</sup> (1965) & Axelsson and Lindhe<sup>6</sup> (1974) confirmed in their studies that there is a positive correlation between the presence of dental plaque and both caries and gingivitis. In 1920, Berwick introduced a dye that was the combination of brilliant green and crystal violet, followed by Easlick (1935) who used bismark brown and Raybin (1943) used gentian violet and proved the advantages of non iodine dye. Soon after Skinner's iodine was superseded by organic dye solutions because of the objectionable features of iodine solutions.

Amim (1958, 1963) had been most instrumental in popularising the use of disclosing agents and introduced the use of FDC Red #3 (Erythrosin) dye and

like Raybin (1945) maintained that disclosing agents were bound to revolutionise the home care regimen. In 1971, Heffemen<sup>7</sup> and his colleagues noted that plaque, calculus and stains were more apparent under ultra-violet illumination, and the following year, Lang *et al.* (1972) examined the applicability of a fluorescent disclosing agent used with the Plaklite<sup>®</sup>. In the same year, Block *et al.* developed a two tone dye test which stained more mature plaque blue (FDC Green #3 and newly formed plaque red (FDC Red #3) thus providing a "colour guide" as to the age of the plaque<sup>8</sup>.

A disclosing agent is a selective dye in solution, tablet or lozenge form used to visualize and identify dental biofilm on the surface of the teeth.

### Types

- Disclosing solutions
- Disclosing tablets
- Disclosing wafers
- Disclosing lozenges
- Disclosing mouthrinses<sup>9</sup>

### Agents used for disclosing plaque:

- Iodine preparations
- Mercurochrome preparations
- Bismark brown
- Merbromin
- Erythrosine
- Fast green
- Fluoroscein
- Basic fuschin
- Two-tone solution
- Buckleys solution
- Herwicks solution
- Albot solution
- Allura red

This article will highlight an unusual side effect of using PLAKSEE-MD<sup>®</sup> as a disclosing agent in which the

after the patient swishes ,new plaque are stained red, Old plaque are stained blue. It containing 10mg Aryabhishek and Propyl paraben

### **Case description**

A patient named Vandana aged 40 years came to the department of Periodontics, kothiwal Dental College and Research Centre, Moradabad with the chief complaint of bleeding gums since 6 months. The history of present illness stated that there was occasional bleeding which was of short duration. No history of pain and trauma was reported. On further examination, no relevant dental history was reported. On medical examination, patient was on medication for Eczema. No relevant family history was recorded. On physical examination,

Further on intraoral examinations periodontal probing depths and gingival and plaque scores were recorded.

The diagnosis of chronic periodontitis was made. As per, treatment plan included scaling and root planing, oral hygiene instructions and respective flap surgeries wherever required.

As per treatment plan, the oral hygiene instructions

were given, patient was asked to swish with plaque disclosing tablet (PLAKSEE-MD<sup>®</sup> containing 10mg Aryabhishek and Propyl paraben) for 1 minute for 1 week followed by complete subgingival and supragingival scaling of both the arches.

After the scaling procedure was completed, the patient was recalled after one week for root planing. After the initiation of plaque disclosing tablet (PLAKSEE-MD<sup>®</sup>). The patient responded with unusual symptoms of allergy showing red ulcerated pin-point lesions both extra-orally and intra-orally. Extraorally, these pin-point lesions extended upto the neck region. Intra-orally, these painful lesions were present in the entire oral cavity. The patient responded with this complaint on subsequent visit but was not able to visit the dental office at the time of appearance of allergic reaction. Due to the discomfort during mastication, the patient discontinued the intake of Plaksee-MD<sup>®</sup>. The limitation of this article is that the patient did not turn up due to which the allergic response to Plaksee-MD<sup>®</sup> could not be quoted.



PLAKSEE-MD<sup>®</sup>



Black darkly pigmented rashes and scales over her feet, legs and arms.



Swish with plaque disclosing tablet (PLAKSEE-MD<sup>®</sup> containing 10mg Aryabhishek and Propyl paraben) for 1 minute



## Discussion

Eczema is a term for a group of medical conditions that causes the skin to become irritated or inflamed.<sup>10</sup> The term eczema is broadly applied to a range of persistent skin conditions which include dryness and recurring skin rashes that are characterized by one or more of symptoms like redness, swelling, crusting, flaking, blistering and cracking.<sup>11</sup> The eczema is an overactive response of the body's immune system to an irritant which is represented as above.

In eczema which is termed as an allergic reaction, its pathophysiology involves a reaction that more correctly corresponds to a type IV hypersensitivity reaction. The patient responded to the allergy third day after the application of PLAKSEE-MD<sup>®</sup>. Seeing the allergic response to this group, the patient was switched to other group of disclosing agent (Insta See<sup>®</sup>). The patient showed no symptoms of allergy, signifying that the patient was allergic to some specific components of PLAKSEE-MD<sup>®</sup>.

The proposed pathophysiology states that a primary

immune dysfunction results in IgE sensitization and a secondary epithelial-barrier disturbance. The second proposed pathophysiology is a primary defect in the epithelial barrier leading to secondary immunologic dysregulation and resulting in inflammation. The epidermal barrier dysfunction hypothesis suggests that eczema patients develop eczema as a result of skin barrier defects that allow for the entry of antigens, resulting in the production of inflammatory cytokines

12,13

### Conclusion

Effective management of allergic diseases relies on the ability to make an accurate diagnosis. Allergy testing can help to rule out allergies. Correct diagnosis, counseling and avoidance advice based on valid allergy test results reduces the incidence of symptoms and need for medications and improves the quality of life.

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