

The Differential Diagnosis of Desquamative Gingivitis: Review of the Literature and Clinical Guide for Dental Undergraduates

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Abstract:

Background: Desquamative gingivitis is an elucidating term used to demonstrate epithelial desquamation, erythema, erosions, and/or vesiculobullous lesions of the gingiva. Detection and differentiation between conditions that manifest desquamative gingivitis have been almost a continuing problem for dental undergraduates. Several studies have described the association between desquamative gingivitis and other relevant conditions. This study aimed to review the current literature on desquamative gingivitis and to formulate a clinical guide for the differential diagnosis of desquamative gingivitis designated as a teaching aid tool for dental undergraduates.

Materials and Methods: A search strategy based on the key words “desquamative gingivitis, guidelines, diagnosis, undergraduate, teaching” was performed in Medline and Google Scholar. Papers published between 1932 and December 2014 were scrutinized. Only articles that describe the terminology and classification of DG-associated disorders or the diagnostic procedures of DG were selected, then obtained in full text and analyzed.

Results: 47 studies were included and reviewed narratively.

Conclusion: The clinical signs and symptoms of desquamative gingivitis are insufficient to make a definitive diagnosis. We proposed a clinical flowchart aimed to help dental undergraduates achieving their goal in making an accurate and easy diagnosis. However, this guideline needs further evaluation.

Key Words: Clinical guide, oral medicine, teaching, undergraduate

Introduction

Learning how to make a good oral diagnosis is one of the main competencies that dental undergraduates should attain. There are several guidelines and flowcharts to help students in acquiring the required oral diagnostic skills. In fact, the currently adapted system used with classifying periodontal

diseases and conditions that involve nonplaque-induced gingival lesions “gingival manifestations of systemic conditions” is too complicated for dental undergraduates.¹ Furthermore, several mucocutaneous lesions, e.g., lichen planus, pemphigoid, pemphigus vulgaris (PV), erythema multiforme (EM), lupus erythematosus (LE), drug-induced lesions, and allergy due to application of dental material or food additive are included in this subgroup.¹ The most common features of all these lesions and conditions are “desquamative gingivitis” (DG) and immunomediated pathogenesis.^{1,2} Smooth erythema, desquamation, and erosion of the gingiva are common signs of DG, irrespective of the etiopathogenesis.^{2,3} DG is considered as a clinical disorder that can be easily recognized by the examiner on the dental chair. DG has no association with loss of attachment and alveolar bone destruction.^{2,3} Nevertheless, varied range of DG’s oral and gingival signs can considerably compromise the patient’s attitude to ideal oral hygiene. This could denote a possible risk factor for long-standing periodontal health.⁴ Moreover, the systemic involvement of DG with oral and extra-oral manifestations can cause high morbidity and occasionally lethal complications.⁴ Hence, knowledge and understanding of DG and associated conditions and disorders is pivotal in the clinical practice.²⁻⁶ DG has a wide range of manifestations, which may imitate other conditions.² This complicates the diagnosis and constitutes a difficulty at dental undergraduate teaching.⁷ In this task, disorders and conditions associated with DG have been reviewed. In addition, a clinical effective flowchart was designed to advance further the teaching and learning of dental undergraduates.

Materials and Methods

A search strategy based on the key words “DG, guidelines, diagnosis, undergraduate, teaching” was performed in Medline and Google Scholar. Papers published between 1932 and December 2014 were scrutinized. Only articles that describe the terminology and classification of DG-associated disorders or the diagnostic procedures of DG were selected, then obtained in full text and analyzed. Based on the review findings, a clinical flowchart was developed (Chart 1).

Results and Discussion

Definition

DG is considered as descriptive term, in 1932 Prinz was the first to compose a definition,⁸ which included the occurrence of erythema, desquamation, erosion, and blistering of the attached and marginal gingiva with the possibility that marginal gingiva to

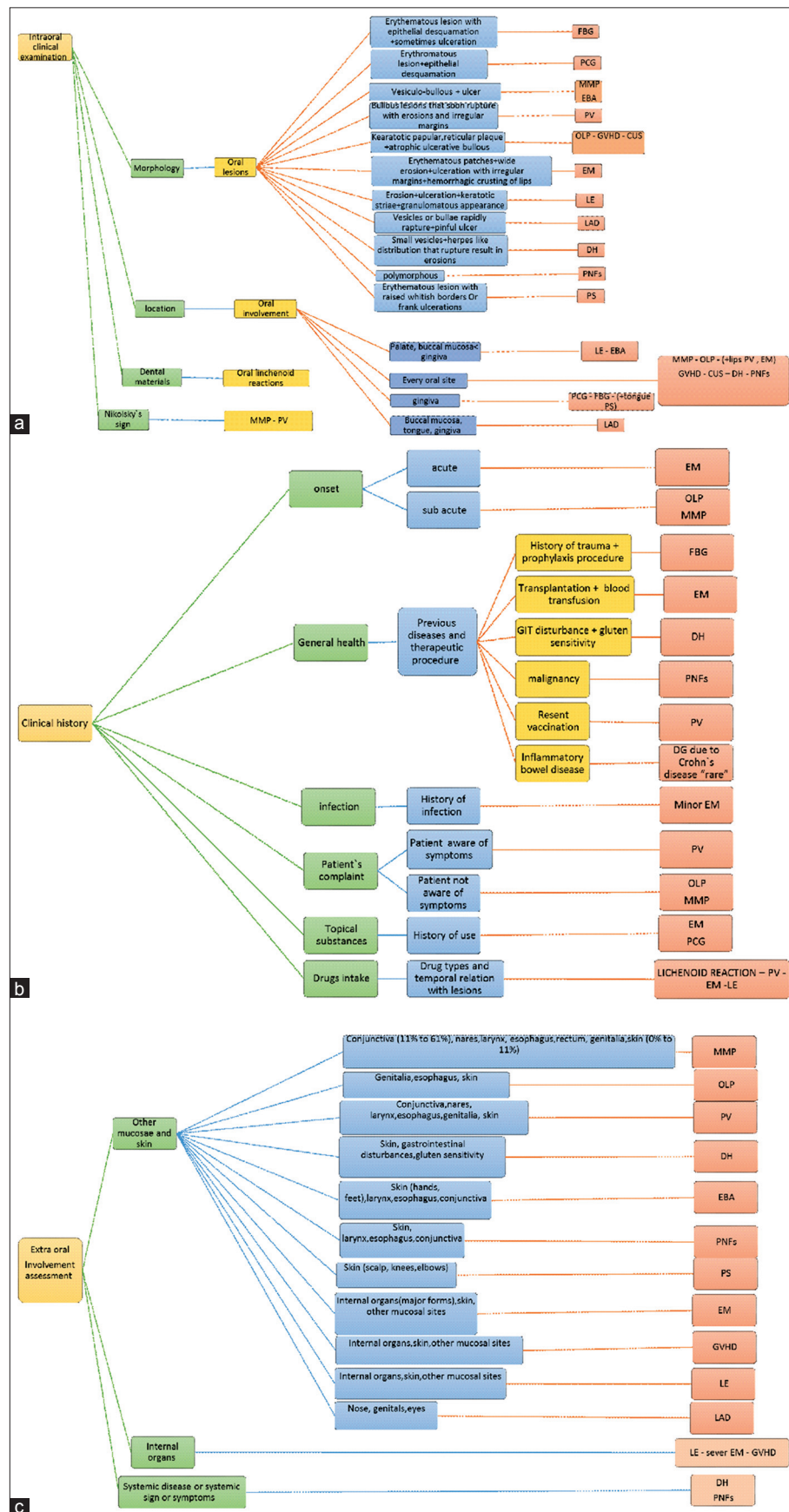


Chart 1: This chart is a simple guide that aims to help dental undergraduates to establish a differential diagnosis of desquamative gingivitis.

be unharmed. In 1964, Glickman and Smulow pointed that DG is not a definitive diagnosis due to it is a clinical association with several disorders.⁹ The latter was confirmed recently by others.⁴

Widespread desquamation and/or erosion of the buccal side of attached gingiva of anterior teeth is considered as the chief characteristic feature of DG.² Nevertheless, DG can be confined to a limited multiple areas and these lesions can be more extensive gingival lesions with oral/and or extra-oral involvement, in the primary phases or in disease recurrence.

Classification

The classification of DG was based on the etiological, histological, and immunological findings.²

The classification has been divided into the following categories: dermatological diseases, endocrine disorders, aging, atypical response to bacterial plaque, idiopathic agents, and chronic infections.¹⁰

Dermatological diseases enlist cicatricial pemphigoid, lichen planus, pemphigus vulgaris (PV), psoriasis (PS), bullous pemphigoid, epidermolysis bullosa, and contact stomatitis.^{2,3,10} Endocrine disorders include estrogen deficiencies following oophorectomy and in postmenopausal stages, testosterone imbalance, hypothyroidism.^{2,3,10} Chronic infections include Tuberculosis, chronic candidiasis, and histoplasmosis.^{2,3,10} However, the most commonly recognized causes of DG are Mucous membrane pemphigoid (MMP), oral lichen planus (OLP), and PV with the first two responsible for the highest of cases.^{2,3,10}

In this mucocutaneous disorder, the unique gingival involvement necessitates careful history taking and diagnosis by dentist, hence denoting the role of dentists in such mucocutaneous disorders.³

Causes

DG can be caused by numerous conditions. They can be dermatoses such as lichen planus, MMP, pemphigus, dermatitis herpetiformis (DH), linear immunoglobulin A disease (IAD), and epidermolysis bullosa.² DG have been most commonly caused by lichen planus and pemphigoid. Unlike lichen planus and pemphigoid pemphigus rarely seen as a cause of DG.³

Local hypersensitivity responses to various substances such as mouthwashes, dental materials, drugs, cosmetics, chewing gum, cinnamon, sodium lauryl (a usual ingredient of toothpaste) may also play a role as causative agents in some patients.² Other likely causes of DG that present erythematic and ulcerative lesions include plasma cell gingivitis (PCG), systemic LE, discoid LE, chronic ulcerative stomatitis (CUS), and granulomatous disorders for example, orofacial granulomatosis, Crohn's disease, and sarcoidosis.^{2,3,10}

Systemic diseases may cause gingival lesions as an indicative to an underlying condition. Thus, a thorough examination is necessary to formulate an appropriate diagnosis.^{2,3,10} Dental plaque is a crucial aggravating factor to whatever is the underlying cause.^{2,3,10}

Epidemiological features

Several case series found that DG is counted as 35-48% of all cases of MMP.¹¹⁻¹⁵ In addition, DG was found in 24-45% and 3-15% of cases were caused by OLP and PV, respectively.^{12,14,16} Such a proportion could represent the result of a recruitment bias because PV is a rare disease.¹⁶ The advances in the diagnostic immunological techniques and tools has efficiently reduced the number of cases previously classified as idiopathic.² Overall, the most common causes of DG are MMP, PV, and OLP accounting for about 80% of cases.^{2,11,14,15,17} Considering the limitation of published reports and case series of the following conditions; EM,^{18,19} LE,^{20,21} graft-versus-host disease (GVHD),²²⁻²⁴ CUS,^{25,26} PCG,²⁷ IAD,^{28,29} DH,^{30,31} epidermolysis bullosa acquisita,³² paraneoplastic forms,^{33,34} foreign body gingivitis (FBG),³⁵ and PS,³⁶⁻³⁸ the exact prevalence of DG in these lesions was hard to determine. Moreover, DG has been linked with a small list of nonimmunomediated disorders that involve endocrine imbalance disorders.³⁹

In general, conditions associated with DG have the highest incidence between the 4th and 6th decade of life. In children and adolescents cases have been reported, but are very rare.⁴⁰⁻⁴² It is seen that there is a tendency for females, with EM being the only exception.⁴⁰⁻⁴² Gingival lesions manifest the onset of the condition or arise very early during its clinical course (mainly in MMP, PV, EM, and GVHD) in many cases.⁴³⁻⁴⁵ DG occasionally represents the only long-term clinical feature, as noted in many cases with MMP. Up to 10% of OLP cases were observed to have exclusive gingival involvement. However, gingival lesions often have a polymorphous clinical appearance,⁴⁶ with DG existing alone or more frequently in combination with other lesion morphologies. Some conditions mainly affect the gingiva and spare other mucosal sites, i.e., PCG and FBG. DG can mimic plaque-related gingival inflammation and cause a delay in diagnosis in all cases in which the gingiva is the only site of involvement.⁹

Clinical features

Almost all of the disorders associated with DG (except for FBG) can affect various sites in the oral cavity and have involvement of extraoral regions.^{2,35} Skin, scalp, nails, and mucosae with squamous differentiated epithelium, such as laryngeal, esophageal, nasal, genital, and conjunctival, represent possible locations.² There is a variation of gingival features from erythema to erosive and/or visibly ulcerated areas. Intact vesicles/bullae may occur but often rupture quickly in the oral cavity. Diagnosis cannot be made on a clinical basis, when DG is the only clinical feature: histopathologic and

immunopathologic studies are required. However, typical and distinctive oral and/or skin lesions, sometimes with a characteristic location, can be observed and represent a valuable aid in guiding the differential diagnosis.

Differential diagnosis

We proposed a clinical chart to help students in making a good differential diagnosis of cases presented with DG. It is based on three steps:

Step A (Chart 1a), it focuses on the intra-oral examinations that should be obtained by taking the clinical history. This includes examination mainly of the morphology, location, dental materials existence, and Nikolsky's sign occurrence of gentle pressure.

Step B (Chart 1b), after intra-oral examinations, at this stage, the clinical history should be taken meticulously. This involves checking out of the following points: Date of onset of any existing lesions, general health condition, any current infection, if the patient is aware of symptoms or not, any history of topical substances use and drugs taking history.

Step C (Chart 1c), it is the final stage and based on an examination of the extraoral involvement. The other mucosa, skin, internal organs, and systemic disease involvement either together or solely should be assessed meticulously.

After performing Steps A, B, and C, dental undergraduates should be able to establish their differential diagnosis of the studied case.

A group of 12 dental undergraduates at the 5th year level who attend oral medicine clinic participated in a pilot study to assess the efficacy of this proposed clinical flowchart. Six students of this group were randomly assigned to use the flowchart. The other six were unknowledgeable on this flowchart and were asked to do their daily activities in the oral medicine routinely. The both two groups of students were asked to review the same five cases of DG. At the end of clinical sessions, a questionnaire was distributed to assess their level of satisfaction on the accurate diagnosis of these DG cases. The results were favorable for the use of the clinical flowchart. All students who have used the flowchart commented that it is straightforward, simple, and easy to use. In addition, they were accurate in their diagnosis as they reached the correct diagnosis. Whereas, the control group failed to diagnose correctly the studied cases as they were able to reach the correct diagnosis of 3 cases out of 5.

We believe that this flowchart will help students to further their knowledge and understanding of the clinical spectrum of DG. It will also help them to formulate correctly a differential diagnosis and finally reach working/final diagnosis. However, further research and assessment of this flowchart in clinical setting using randomized controlled trials is needed.

Conclusion

Desquamative gingivitis is a complex term that needs a clear definition. Further research is needed to help dental undergraduate students understand the differential diagnosis of this term.

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