KRONICLE OF DENTAL SCIENCE.
Volume 2 Issue 1 Jul - Dec 2017.Pages:55-62

Original Study

Desquamative Gingivitis - A Diagnostic Sign Of Systemic Diseases

Dr Latha Mary Cherian, MDS [1]; Dr Sreela Jayakumar, MDS [2]; Dr Santhosh Kumar, MDS [3]

Associate Professor, Department of Oral Pathology and Microbiology,
Professor, Department of Oral Medicine and Radiology,
Associate Professor, Department of Periodontics,
1, 2, 3, Government Dental College, Kottayam

Correspondence: drlathamarycherian@gmail.com

Keywords: Desquamative gingivitis, Pemphigus, Lichen planus, Pemphigoid,

ABSTRACT

Background and Settings: Desquamative gingivitis (DG) is an erythematous, atrophic or eroded blistering, and painful, non-plaque-induced, condition that commonly affects the entire thickness of the labial aspect of the attached gingiva of the anterior teeth which is found to desquamate easily with minimal trauma. It is frequently seen in females around 50 years of age and is usually an indication of an oral or systemic disease. Its clinical appearance is not majorly altered by traditional brushing or conventional therapy.
Aims and Objectives: The large majority of desquamative cases have a dermatologic origin and represent oral manifestations of one of the following dermatoses (mucocutaneous diseases); in particular lichen planus, pemphigoid and pemphigus. It is not considered as just another clinical entity, but a clinical manifestation of varied disorders.
The aim of the study is to identify the disorders, where the desquamation of the gingiva as a clinical manifestation, could be used as a diagnostic tool to identify uncommon systemic disorders.
Materials and methods: Twenty random patients with clinical diagnosis of desquamative gingivitis were selected for the study; and their clinical presentations, histopathological features, and any co-existing systemic illnesses, were studied
Results: Of the majority of the patients with clinical diagnosis of Desquamative gingivitis, 12 showed histopathological features of Lichen planus. Fifteen of the 20 patients were females, and 15% of the patients suffered from Hypertension, Diabetes or both.
Conclusion: Desquamative gingivitis is not a diagnosis per se. It is a clinical sign of myriad of diseases such as the pemphigus, linear IgA disease, pemphigoid and erythema multiformae. Invariably, many of these lesions go undiagnosed or are wrongly diagnosed. The erosive or bullous forms of lichen planus are particularly painful. Hence, it is of paramount importance to correctly diagnose and treat the cases in order to ensure an optimum patient care.

INTRODUCTION

Desquamative gingivitis was first described in the 19th (1894) century by Tomes and Tomes. First used by Prinz (1932) the term "Desquamative gingivitis" is a descriptive term that is synonymous with the presence of blistering, erythema and erosion of the attached and marginal gingiva. Glickman and Smulow identified that the desquamative gingivitis might be a clinical feature seen in a wide number of dermatologic and systemic disorders. [1] According to Robinson and Wray 2003, desquamative gingivitis is not a clinical entity, but a clinical manifestation of several different disorders.
As compared to plaque induced gingivitis, desquamative gingivitis is more common in the middle aged to elderly females. It is painful, frequently spares the marginal gingiva, but can involve the whole thickness of attached gingiva and its clinical appearance is not greatly altered by traditional oral hygiene measures or conventional therapy alone. [2]

The large majority of desquamative cases have a dermatologic origin and represent oral manifestations of one of the following dermatoses (mucocutaneous diseases) in particular lichen planus, pemphigoid and pemphigus. [3].

A classification was proposed based on etiologic considerations, together with histologic and immunologic findings.

A. Dermatological diseases

- Cicatricial pemphigoid
- Lichen planus
- Pemphigus
- Psoriasis
- Bullous pemphigoid
- Epidermolysis bullosa acquisita
- Contact stomatitis.

B. Endocrine disturbances

- Estrogen deficiencies following oophorectomy and in postmenopausal stages
- Testosterone imbalance
- Hypothyroidism.

C. Aging

D. Abnormal response to bacterial plaque

E. Idiopathic

F. Chronic infections

G. Tuberculosis

H. Chronic candidiasis

I. Histoplasmosis.

This research study was undertaken in order to find out the various pathologic conditions that present with clinical manifestations of desquamative gingivitis, by which it could be diagnosed.

MATERIALS AND METHODS

Twenty random cases of desquamative gingivitis, any age and sex, that reported to the Government Dental College were studied for their history, clinical presentation and co-associated systemic illness. Under strict aseptic conditions, the biopsy was taken from the most representative site on the gingiva for all these cases to study the histopathological features of the cases. Any co-associated systemic illness was also taken into consideration.

OBSERVATIONS AND RESULT

Of the 20 cases, 6 were males and 14 were females who were included in the study. The age of the patients ranged from 25 to 71 years, with a mean age of 51.4 years. The co-association of systemic illness and the histopathologic diagnosis are listed in the table below.

Sl No.	Age	Sex	Site	Systemic Illness	HPR
1.	62	M	Generalised marginal and attached gingival	DM	Plasma Cell Gingivitis
2.	63	M	Anterior maxillary region and posterior mandibular gingiva more on the labial/buccal aspect	DM + HTN	Lichen Planus
3.	25	F	Either side of mandibular posterior gingiva on the buccal aspect	Nil	Erosive Lichen Planus
4.	41	F	Extensive generalized	DM	Lichen Planus
5.	69	M	Mandibular & Maxillary posterior gingiva on either side	HTN	Lichen Planus
6.	40	F	More on the maxillary gingiva	DM	Erosive Lichen Planus
7.	57	F	Posterior & Buccal aspect of Maxillary gingival	HTN	Pemphigus Vulgaris
8	45	F	Generalised throughout the	Nil	Plasma Cell Gingivitis

			maxillary & Mandibular Gingiva		
9	55	F	Extensive generalized involvement of gingiva	Nil	Paraneoplastic Pemphigus
10	57	F	Maxillary and Mandibular Labial Gingiva Anterior region	DM + HTN	Erosive Lichen Planus
11	40	F	Maxillary Posterior Gingiva	Nil	Bullous Pemphigoid
12	56	F	Maxillary and Mandibular Gingiva more on the Buccal aspect	DM	Pemphigus Vulgaris
13	71	F	Extensive Generalised	Nil	Lichen Planus
14	40	F	Maxillary anterior region labial aspect	Nil	Erosive Lichen Planus
15	65	M	Buccal aspect of maxillary and mandibular posteriors	DM+HTN	Lichen Planus
16	55	F	Buccal and labial aspect mandibular	DM	Lichen Planus
17	58	F	Localised to the marginal and attached gingiva of 46	Nil	Lichenoid reaction
18	44	F	Maxillary posterior buccal aspect right side	Nil	Erosive Lichen Planus
19	50	M	Mandibular and maxillary gingiva more on the anterior region	Nil	Pemphigus
20	35	F	Extensive generalized	HTN	Erosive Lichen Planus

Abbreviations: *Where DM= Diabetes Mellitus; HPN=Hypertension; HPR= Histopathological report and Nil= Absent*

Table 1: The age, sex, site, co-associated systemic diseases and histopathological diagnosis are tabulated

Results (TABLE 1 and TABLE 2): The mean age of patients was 51.4 years, and the median was 48 years. There were five males (25%), and 75% of the patients were females with an M: F ratio of 1:3.

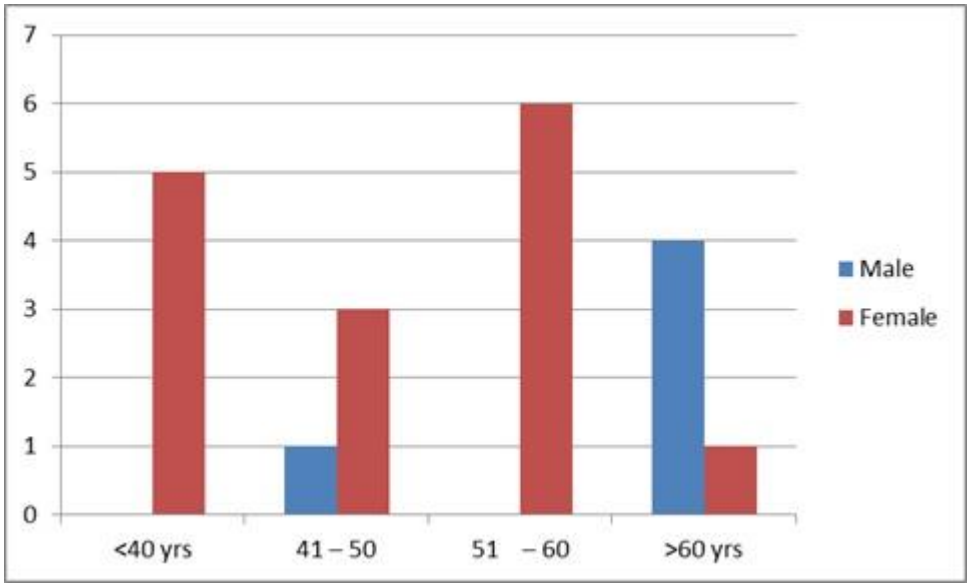
TABLE 2

Age group (Years)	**Male**	**Female**
<40	**0**	**5**
41 – 50	**1**	**3**

51 – 60	**0**	**6**
>60 yrs	**4**	**1**

Table 2: *Age and Sex distribution of patients with Desquamative gingivitis*

Graph 1: *Distribution of the age and sex of patients with Desquamative gingivitis*
GRAPH 1

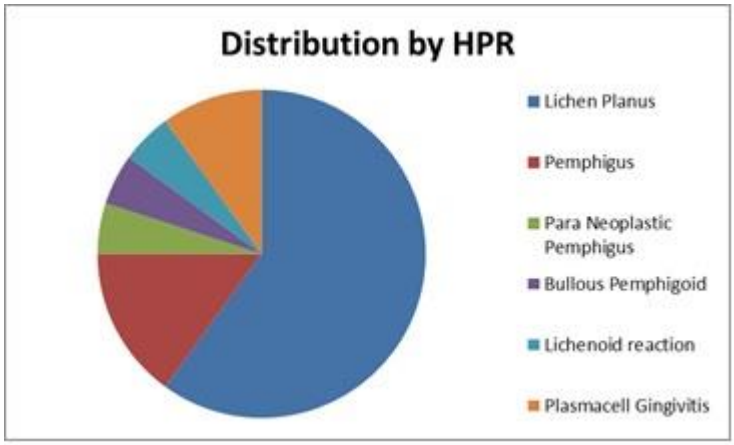


Results: The male patients with desquamative gingivitis were above 60 years of age whereas the female patients belonged to the 51-60 years age group. The maximum number (30%) of female patients was in the 51-60 years age group and the least (1) was in the < 60 years age group. Among the males, the maximum number (20%) of patients belonged to the <60 years age group.

Diagnosis by Histopathology report: (HPR)

Results: There were 12 (60%) cases diagnosed as Lichen Planus, of which, 6 (50%) were specifically diagnosed as erosive Lichen planus. The other lesions included Pemphigus (3)(15%), Para neoplastic pemphigus (1)(5%), Bullous pemphigoid (1)(5%), Lichenoid reaction (1)(5%) and 2(10%) cases showed a histopathological finding of Plasma Cell Gingivitis.

Graph 2: *Distribution of cases based on their histopathological findings*
GRAPH 2

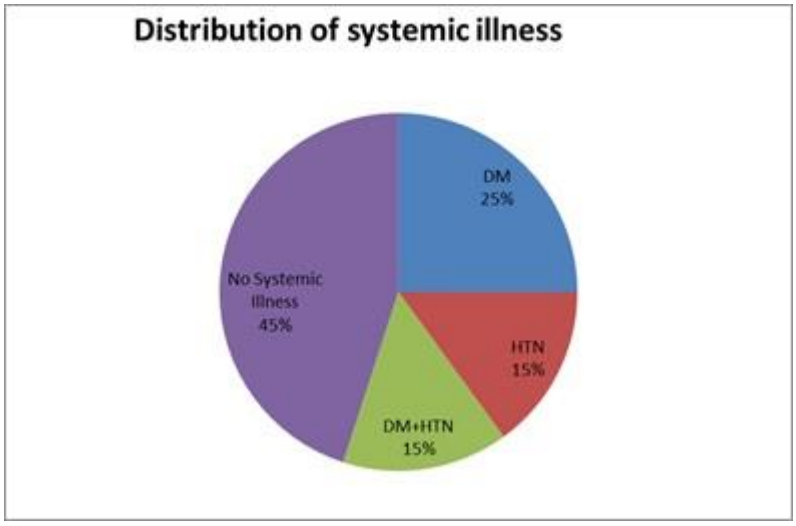


Distribution of cases in relation to the Systemic Illness

Results: Five (25%) of the patients were Diabetic, 3 Hypertensive and 3 (15%) had both Hypertension and Diabetes. All the rest were free from systemic illness. The three patients with Diabetes mellitus and Hypertension had a histopathological diagnosis of lichen planus hence the due to the combination of Diabetes Mellitus, Hypertension and Lichen planus they suffered from the Grinspan Syndrome.

Graph 3: *Distribution of cases based on the presence or absence of a systemic illness*

GRAPH 3



DISCUSSION

Desquamative gingivitis is a clinical manifestation of various disorders, most of which are immunologically mediated, and affecting the skin and mucosa. Desquamative gingivitis could be a manifestation of:

Oral lichen planus (LP)

Desquamative gingivitis as a clinical feature is most frequently noticed in oral lichen planus which is a very common immunologically mediated mucocutaneous disease of unknown aetiology. Several forms of lichen planus are described intraorally; reticular, papular, plaque like atrophic, bullous and erosive forms. The predominant features of oral lichen planus are its chronicity, symmetrical appearance and multiple site involvement [4]

Frictional factors play a major role in determining the location of the lesion. The most common site of involvement is the buccal mucosa in relation to the occlusal plane of the teeth followed by a lateral border of the tongue and the labial and buccal surfaces of attached gingiva, hard palate and lower lip. The disease commonly occurs in middle aged and older people, and the morbidity of women is higher than that of men [5, 6].

Only the gingiva may be involved in about 10 percent of cases. The atrophic form of oral lichen planus often presents on the gingiva, giving the classical appearance of desquamative gingivitis. The whole thickness of the gingiva from the attached to the mucogingival junction may be affected. The gingival tissues appear erythematous and erosive with the possibility of white striae at the periphery. Patients may manifest persistent soreness of the gums which is made worse by spicy food or while carrying out daily oral hygiene procedures. The latter may be restricted to the point that plaque induced gingivitis and periodontitis sets in; confusing the picture.

The immunological reaction that occurs in lichen planus is not the cause for the clinical attachment loss and periodontitis. Diagnosis of the oral lichen planus can be difficult if gingiva is the only site of involvement. [7, 8] Careful examination of the erythematous gingiva may reveal faint keratotic lines. The patient should be questioned and examined for the presence of any cutaneous lesion.There have been reports of coincidental involvement of the gingiva and the genital mucosa, especially in females. This combined involvemenplanust of the vulva, vagina and the gingiva by the lichen planus, presents as a classical desquamative gingivitis and is termed as vulva vaginal syndrome. [9, 10]

The exact cause of LP remains unclear. Primary focus is on the role of the epithelial antigenic processing of

macrophage, Langerhans cells, mast cells and their abundant T cell population accumulated in the underlying connective tissue [10, 11]

An incisional biopsy is necessary to confirm the diagnosis of LP. The tissue specimen should be divided; one piece should be prepared for light microscopic examination and the other for immunofluorescent staining. These tests help in identification of the auto antibodies and other inflammatory proteins within the tissue.

In the present study, 60% of the patients were diagnosed as Lichen planus and of this 50 % were of the erosive type.

Mucous Membrane Pemphigoid (MMP):

MMP is a heterogeneous group of auto immune, sub epithelial blistering disease that predominantly affects the mucous membrane. Most of the patients are in the 5th or 6th decades of life and majority are women [12]. Oral lesions were frequent in almost all cases, and the primary lesion often appears in the oral cavity [13]. The gingiva appears erythematous along with a diffuse and patchy distribution.Vesiculobullous lesions on the gingiva break easily and form erosions with irregular margins. Other sites include the buccal mucosa, palate, alveolar ridge, tongue, lip, etc. [13]. Extra oral mucous membranes including the conjunctiva, skin, pharynx, external genitalia, nose, and oesophagus may also be affected. [14]. Scarring and associated loss of function are the major sequelae of some forms of MMP. Life threatening airway obstruction and sight threatening ocular scarring may occur.

An extensive clinical history and a thorough clinical examination help in the accurate diagnosis of MMP. In some cases, the gingiva may be the only involved site of MMP, and this results frequently, in delayed diagnosis, as the patient is put through repeated sessions of periodontal therapy and/or prescribed various antimicrobials. Definitive diagnosis depends on the histological examination of gingival tissue. The main histological features are sub-epithelial bullae formation, no acantholysis, chronic inflammatory infiltrate in lamina propria and linear deposition of IgG, IgA or C3 along the basement membrane. Recent evidence suggests that serial titers of IgG, as well as IgA, detected on Salt split human skin correlate with disease severity and activity. [15, 16, 17]

Pemphigus

Pemphigus is one of the very few fatal, mucocutaneous diseases that shows an intraepithelial bullous formation. It is a rare condition, and commonly affects females in their fourth and fifth decades of life. The most important subtype of Pemphigus to occur in the oral cavity is the Pemphigus Vulgaris, and it can be the primary site of presentation in 50 percent of the cases [18]. The intercellular junctions between the spinous cells are broken resulting in a suprabasal bullae formation. Oral pemphigus vulgaris presents as bullae that break down rapidly to leave persistent irregular ragged edge painful erosion. Any site subjected to trauma like the palate, tongue and buccal mucosa may be involved. Gingival involvement manifests less commonly than in the case of the pemphigoid. When involved, there is severe desquamation of gingiva, more so, than other vesiculobullous diseases. Gentle pressure on the epithelium may result in its separation; and normal activities like oral hygiene procedures and consuming meals, become extremely painful. Use of steroids has reduced the mortality, which was 30 percent earlier; as a result of electrolyte loss and sepsis.

Accurate diagnosis depends on removing the lesion having an intact epithelium. This is difficult since the epithelium is very friable. Direct immunofluorescence showed the deposition of IgG and C3 intercellularly in the fishnet pattern. Specific Elisa test is available for detecting desmoglein 3 and desmoglein1 auto antibodies. Conventional histology demonstrates acantholysis, suprabasal bullae formation with free floating acantholytic cells (Tzanck) cells, intact basal cell layer still attached to the basal lamina and mild inflammatory infiltrate.

Hypersensitivity reactions as cause of Desquamative Gingivitis

Localized or generalized epithelial desquamation, erythema, ulceration, and/or vesiculobullous lesions of the gingiva is sometimes elicited by contact hypersensitivity reactions to various foodstuffs, preservatives, oral hygiene products and dental restorative materials [19].The reactions may appear identical to desquamative gingivitis, and therefore difficult to differentiate from mucocutaneous diseases. Non-specific histopathologic findings with submucosal perivascular inflammatory cell infiltration should raise suspicion of a contact hypersensitivity aetiology [19, 20]. Patient maintenance of a 1 to 2-week food diary is often beneficial in identifying the causative agent. It is also recommended that the patients record the use and frequency of oral hygiene products. Patients are said to have allergic reactions to a relevant allergen if their patch test results are positive. Eliminating causative agents leads to the disappearance of gingival lesions in most contact hypersensitivity cases. [20]

Other possible causes of gingival ulceration and erythematous patches- are plasma cell gingivitis, systemic lupus erythematosis (SLE), discoid lupus

erythematosis (DLE), chronic ulcerative stomatitis and granulomatous disorders, such as orofacial granulomatosis, Crohn's disease and sarcoidosis.

In the present study, it was noticed that the most common cause (more than 60%) for desquamative gingivitis was Lichen planus which is by previous studies [2]. Other vesiculobullous lesions and rare, uncommon pathologies can also present clinically, as desquamative gingivitis. Proper investigations like immunologic studies or use of instruments like the confocal microscopy are recommended for further confirmation of the histological diagnosis before arriving at the penultimate diagnosis of the condition.

CONCLUSION

Gingival lesions may be the presenting symptom of a more generalized oral or systemic condition, and the rigorous investigation is necessary to elucidate a diagnosis. The presence of dental plaque is an important exacerbating factor whatever maybe the underlying cause. Hence the role of the periodontist and periodic dental/periodontal consultation in maintaining the systemic health or diagnosing systemic illness remains to be highlighted.

Acknowledgement

We would like to acknowledge the contribution by the staff members of our department for their constant support and guidance.

FOOTNOTES

Conflicting Interests: The authors have no conflicting interest regarding the study
Source of Funds: No funding has been obtained for the study

REFERENCES

1. Shamimul Hasan. Desquamative gingivitis - A clinical sign in mucous membrane pemphigoid: Report of a case and review of the literature. J Pharm Bioallied Sci. 2014 Apr-Jun; 6(2): 122–126.

2. Yih. WT, Maier T, Kratochivil F and Zieper MB. Analysis of desquamative gingivitis using direct immunofluorescence in conjunction with histology. J Periodontal. 1998; 69: 678-685

3. Lo Russo L. Fedele S, Guiglia R, Ciavarella D, Lo Muzio L, Gallo P, Di Libestip C and Campisi G. Diagnostic pathways and clinical significance of desquamative gingivitis. J. Periodontal. Jan 2008; 79(1):4-24

4. Robinson NA and Wray D. Desquamative gingivitis; A sign of mucocutaneous disorders- A Review, Aust. Dent J. 2003, 48(4): 206-211

5. Scully C and EI-Kom M. Lichen planus review and update on pathogenesis. J. Oral Pathol. 1985; 431-458

6. Camacho- Abnso F, Lopez-Jornet P and Bermejo-Fenoll A. Gingival involvement of Oral lichen planus. J, Periodontol. April 2007; 78(4):640-4

7. Eisen D. The clinical features, malignant potential and systemic associations of oral lichen planus; A study of 723 patients. J Am Acad Dermatol. Feb 2002; 46(2): 207-14

8. Jandinski JJ, and Shklar G, Lichen planus of the gingiva. Periodontal. 1976; 47: 724-727

9. Pelisse M. The vulvo–vaginal-gingival syndrome.A new form of erosive lichen planus. Int J Dermatol. 1989; 28: 381-384

10. Eisen D. The evaluation of cutaneous, genital, scalp, nail, oesophagal and ocular involvement in patients with oral lichen planus. Oral Surg Oral Med Oral Pathol Oral Radiol Endod. 1999; 88: 431-436

11. Eversole LR. Immunopathology of oral mucosal ulcerative, desquamative and bullous diseases. Oral Surg Oral Med Oral Pathol. 1994; 77: 555-71

12. Chan LS, Ahmed AR, Anhalt GJ, et al. The First International Consensus on Mucous membrane pemphigoid: Definition, diagnostic features, medical treatment and prognostic indicators. Arch Dermatol. March 2002; 138(3): 370-9

13. Fleming TE and Korman NJ. Cicatricial pemphigoid. J Am. Acad Dermatology. October 2000; 43(4): 571-91, 591-4

14. Higgim GT, Allan RB, Hall R, et al. Development of ocular disease in patients with mucous membrane pemphigoid involving the oral mucosa. J Ophthalmol. August 2006; 90(8): 964

15. Setterfield J, Shirlaw P.J, Kerr-Muir M, et al. Mucous membrane pemphigoid, or dual circulating antibody response with IgG and IgA signifies a more severe and persistent disease. Br. J. Dermatol. 1998; 138; 602-610.

16. Setterfield J, Shirlaw PJ, Bhopal BS et al. Cicatrical pemphigoid, serial titters of circulating antibodies with disease activity. Br. J. Dermatol. 1999; 140: 645-650

17. Weinberg MA, Insler MS, Campen RB. Mucocutaneous features of autoimmune blistering diseases; Oral Surg Oral Med Oral Radiol Endod. 1997; 84; 517-534

18. Throne JE, Anhalt GJ & Jabs DA. Mucous membrane pemphigoid & Pseudo pemphigoid. Ophthalmology. Jan 2004; III (I): 45-52

19. Lo Russo L, Fedde S, Guigler R, Compilato D, Testa NF, Lo Muzio L and Campsi G. Diagnostic pathways & clinical significance of desquamative gingivitis. J. Periodontol. Jan 2008; 79(1): 4-24.

20. Endo H and Rees TD. Clinical features of cinnamon-induced contact stomatitis. Compend Contin Educ Dent. July 2006; 76(7): 403-9, 410, 421