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Full Length Research Paper

Pemphigus vulgaris associated with significant periodontal findings: A case report

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The purpose of this article is to report a case of *Pemphigus vulgaris* (PV) associated with periodontitis and role of dermatologist and periodontist in its management in the routine practice. Periodontitis is a plaque induced inflammation involving and destroying the supporting alveolar bone, cementum and periodontal ligament. Pemphigus is a group of bullous diseases that affect the oral mucosa and the skin, leading to acantholysis that causes painful oral ulceration, making ineffective oral hygiene which allows for the accumulation of more plaque, a causative factor for the periodontitis. A 47 year-old male, a known case of PV presented with a complaint of oral ulceration and burning sensation of mouth and ulcerative skin lesions over the skin, since 3 years. A clinical examination revealed the existence of poor oral hygiene status, bleeding on probing, significant clinical attachment loss and probing pocket depth. Radiograph showed combination of horizontal and vertical alveolar bone loss. This case reaffirms the fact plaque control is the most important procedure in preventing periodontal infection in PV patients. These patients should be informed about the risk of periodontitis, and encouraged to pursue long-term periodontal follow up by the dental professionals to prevent their periodontal disease progression.

Key words: *Pemphigus vulgaris* (PV), periodontitis, plaque.

INTRODUCTION

Pemphigus is a term derived from the Greek Pemphix (bubble or blister) for a group of potentially life threatening autoimmune mucocutaneous diseases characterized by epithelial blistering affecting cutaneous and/or mucosal surfaces (Ahmed et al. 1980; Becker and Gaspari, 1993). It has world wide distribution affecting 0.1–0.5 patients per 100 000 population per year (Amagai et al., 1992). Pemphigus is divided into *Pemphigus vulgaris* (PV), with suprabasal acantholysis causing separation of basal cells from keratinocytes of the stratum spinosum, and pemphigus foliaceus (PF), with acantholysis in the granular layers of the epidermis (Harman et al., 2000a).

The discovery of IgG autoantibody production in the pathogenesis of pemphigus by Anhalt et al. (1982) was based on studies on circulating auto-antibodies in which antibody fractions from pemphigus patients were isolated and passively transferred into mice. The mice developed cutaneous blisters and erosions with histological, ultrastructural and immunofluorescence features similar to *Pemphigus*. However, the pathological changes depended on the antibody titre, demonstrating that circulating antibody titre is correlated to disease severity (Anhalt et al., 1982). A genetic predisposition for PV is recognized. HLA serologic studies have demonstrated a strong association between the presence of HLA-DR4 (Dw10) and HLA-DR6 (DQw1) haplotypes and PV (Gazit et al., 2004; Miyagawa et al., 2002).

The distribution and expression of desmoglein (Dsg) 1 and Dsg 3 can be responsible for the characteristic distribution of lesions. Dsg 3 is expressed throughout the oral mucosa, but only in the basal and immediate suprabasal layers of epidermis. Conversely, Dsg 1 is expressed throughout the epidermis, more intensely in the superficial oral mucosa but weakly in the deep layers (Cheng et

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al., 2002). Recent studies have shown that pemphigus-like blisters can form in absence of anti- Dsg 3 auto-antibodies but their formation is closely related antibody reaction to keratinocytes receptors for acetylcholine (Ach), with loss of cholinergic regulation of cellular adhesion and destabilization of the desmoglein-desmoplakin bond (Femiano, 2007).

The mucosa of the cheeks and the palate are frequently involved; other mucosal surfaces include the vulva, conjunctiva, pharynx, larynx, esophagus, urethra, vagina, cervix, penis, and anus (Sami et al., 2002). Any area in the oral cavity can be involved; the soft palate, buccal mucosa and lips are predominantly affected. Gingival lesions are very common and, when solitary, are often first recognized by periodontists (Mignogna et al., 2001).

Periodontitis is a multifactorial disease and defined as plaque induced inflammation involving and destroying the supporting alveolar bone, cementum and periodontal ligament (Francisco et al., 2006). Patients with PV are affected by the long-term use of topical and systemic steroids or other immunosuppressive drugs may have an impaired ability to perform efficient and effective oral hygiene practices and may make individuals less liable to visit their dentists regularly for checkups and cleanings. Persistent lesions are painful, thereby limiting effective tooth brushing. This leads to lack of effective oral hygiene and plaque accumulation may increase the risk of long-term periodontal disease.

Till date there is not a single case report in the literatures that shows periodontal findings in PV patients. This case presents a case of PV having clinical and radiological periodontal findings of periodontitis. This report also revises the management and related oral and periodontal care for these patients.

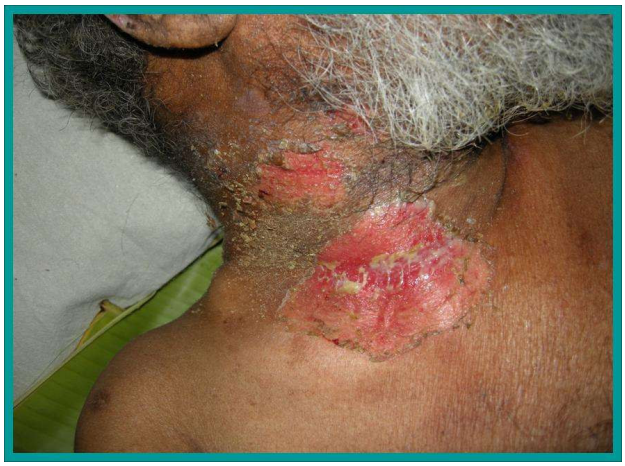

Figure 1. Irregular scaly lesions on the right side of the neck.

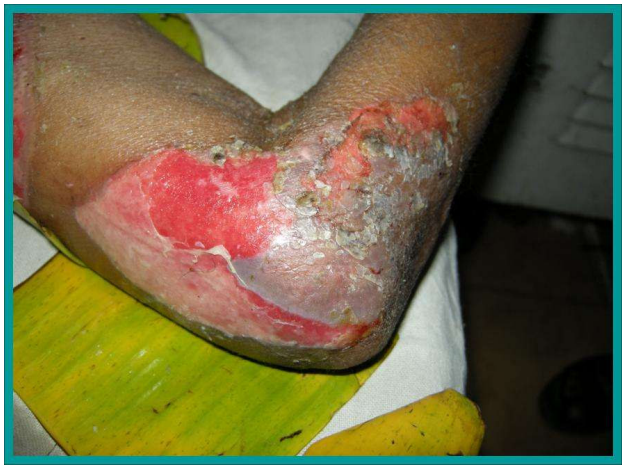

Figure 2. Irregular scaly lesions on the extensor surface of the left elbow joint region.

A case report

A 47 years old male patient was reported to the Department of Periodontics, with chief compliant of oral ulcerations and burning sensation of mouth since 3 years. This patient was referred by the Department of Dermatology, Bangalore Medical College, Bangalore. The patient presented with a complaint of oral ulceration and burning sensation of mouth and ulcerative skin lesions over the skin, since 3 years. He was not able to eat or drink adequately. He was not able to brush his teeth daily and had reduced the frequency of brushing since 1 year. The patient had not visited a dentist during the past three years.

A detailed family history was obtained and was not contributory. Medical history revealed that he was a known case of P. vulgaris (PV) and was under the topical and systemic corticosteroid therapy since 3 years.

On extra-oral examination there were irregular scaly lesions over the right side of the neck and over the extensor surface of the left elbow joint region (Figures 1 and 2). Nikolky's sign (loss of epithelium occasioned by rubbing apparently unaffected skin), a characteristic of PV, was positive. On intraoral examination there were multiple irregular shaped erosions involving buccal mucosa (Figure 3), palatal mucosa (involving part of the soft palate) and upper-lower lips (Figure 4). The plaque and calculus indices showed the poor oral hygiene status.

A periodontal examination was done. Gingiva was generalized as reddish blue, soft and oedematous and showed bleeding on probing. Also, there was generalized attrition of teeth and gingival recession. Overall probing pocket depth was ≥ 6 mm and clinical attachment loss was ≥ 5 mm (Figure 5).

Orthopentamogram (OPG) showed a combination of horizontal and vertical bone loss (Figure 6). Biopsy of the skin lesion was performed by the dermatologist. At scanning magnification there was intraspinous separation, which was predominantly in the suprabasal region ('suprabasilar split'). The stratum corneum was intact and showed a basket weave pattern (Figure 7).

Direct immunofluorescence showed that there was cell

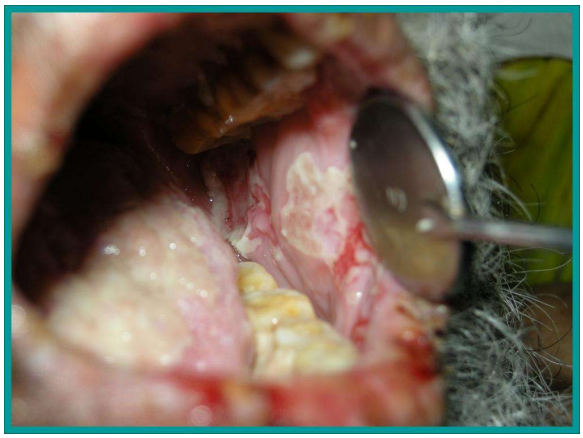

Figure 3. Multiple irregular shaped erosions involving buccal mucosa.

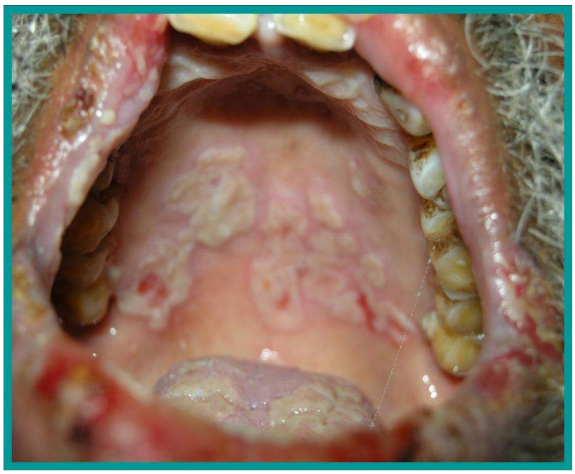

Figure 4. Palatal mucosa involving part of the soft palate and upper-lower lips.

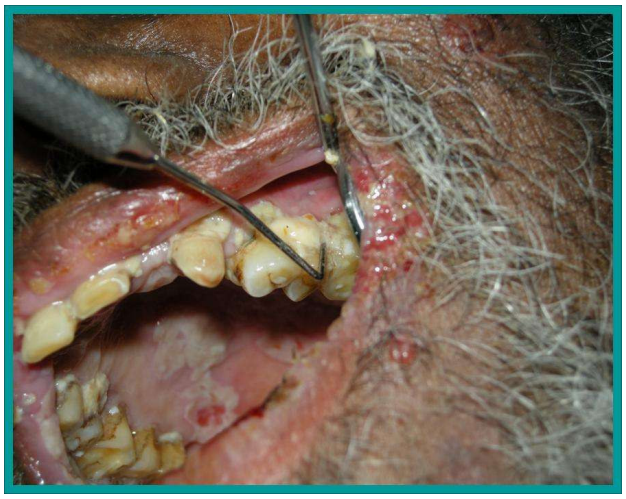

Figure 5. Probing pocket depth, ≥ 6 mm; and clinical attachment loss was ≥ 5 mm.

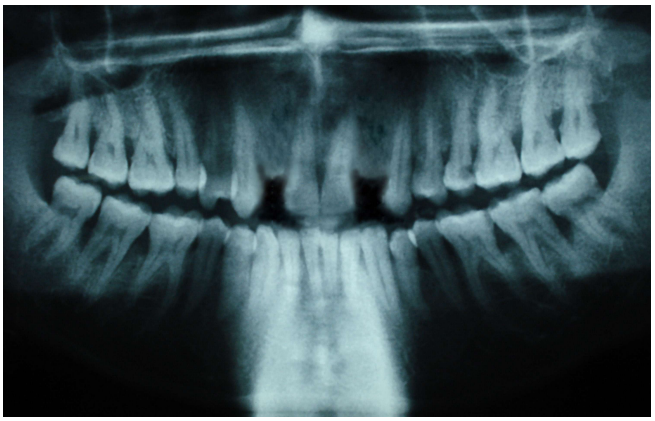

Figure 6. Orthopentamogram (OPG) showing a combination of horizontal and vertical bone loss.

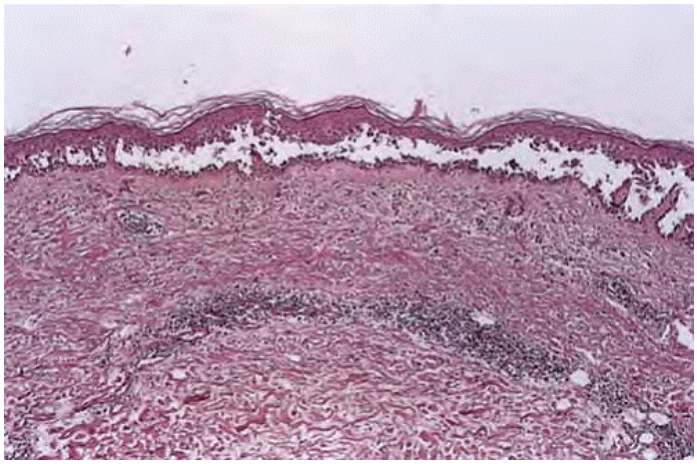

Figure 7. The stratum corneum was intact, showing a basket weave pattern.

surface (intercellular) IgG and C3 deposition (Figure 8).

Differential diagnosis of PV includes erythema multiforme bullosum, bullous lichen planus, epidermolysis bullosa and bullous pemphigoid. PV can be easily differentiated from the other entity clinically (Nikolky's sign), histologically (suprabasilar split) and by direct immunofluorescence technique (intercellular IgG and C3 deposition). Based on the above clinical features and investigations, the final diagnosis was PV.

DISCUSSION

Periodontitis is a multifactorial disease having various etiological factors. It has been hypothesized that periodontitis- induced inflammatory mediators and acute-phase proteins may play a major role in the development of a variety of systemic diseases and conditions including diabetes mellitus, preterm birth and cardiovascular diseases (Grossi and Genco, 1998; Desvarieux et al. ,2003;

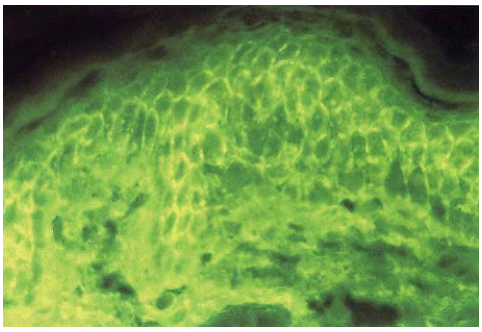

Figure 8. Direct immunofluorescence showing that there was cell surface (intercellular) IgG and C3 deposition

Mitchell-Lewis et al.,, 2001). Pemphigus is a group of bullous diseases that affect the oral mucosa and the skin, leading to acantholysis that causes painful oral ulceration, making ineffective oral hygiene which allows for the accumulation of more plaque, a causative factor for the periodontitis. Mignogna et al. (2001) observed that patients with PV showed generally extensive involvement of the oral mucosa and most of these were localized to gingiva at the onset (Mignogna et al., 2001). Study by Tricamo et al. (2006) also showed that patients with mucous membrane pemphigoid exhibit more gingival inflammation (had higher plaque index) than controls (Tricamo et al., 2006). Recent study by Akman et al. (2008) also showed that there was impaired oral health in PV patients and higher CPITN (Community Periodontal Index and Treatment Needs) score compared to control group. It was documented that long term immunosuppressive therapy alters the host defense which may affect the oral health negatively in these patients (Mumcu et al., 2004). Our case also showed that there were higher plaque and calculus index score, extensive oral lesions that made him to have difficulty in eating and drinking. Also, OPG showed a combination of horizontal and vertical alveolar bone loss showing active periodontal tissue destruction.

Since the oral lesions are painful and it is not possible to maintain a meticulous oral hygiene for these patients, this becomes a challenge to the periodontist on how to arrest the periodontal disease.

Management of PV patients with periodontitis

In the absence of systemic treatment, oral lesions of PV are almost invariably followed by skin involvement or occasionally lesions in other epithelia such as the oesophagus (Mignogna et al., 1997). Systemic corticosteroids remain the mainstay of therapy for patients with oral lesions, transforming invariably fatal disease into one whose mortality is now below 10% (Nguyen et al., 2004). Alternative treatments to corticosteroids include other drugs like Azathioprine chlorambucil, or cyclophosphamide. Other agents used with variable benefit include gold, dapsone, etretinate, prostaglandin E2, minocycline, mycophenolate mofetil, and tacrolimus.

Recently new drugs being tried are cholinergic agonists, which are a promising possibility (Nguyen et al., 2004), or to be more specific modulate the autoimmune response which requires autoreactive helper T cells that regulate immunoglobulin isotype switching. And Rituximab (anti- CD20 monoclonal antibody) appears to be promising (Dupuy et al., 2004). Plasmapheresis (Turner et al., 2000) and extracorporeal photophoresis have also been reported to be of benefit in these patients. Intravenous immunoglobulins have proved successful and safe in steroid-resistant PV (Herzog et al., 2004).

Oral and periodontal care

Topical corticosteroids may suffice for a time if there are only localized oral lesions, with low titre serum antibodies, but otherwise systemic immunosuppressants (e.g. prednisolone) are essential (Scully and Porter, 1997) and patients should be closely monitored. Oral lesions of PV may respond poorly to systemic immunosuppression and topical or intralesional corticosteroids or other immunosuppressants may help. The periodontal care consists of improving the oral hygiene by means of frequent professional oral prophylaxis, 0.2% chlorhexidine mouth rinse, the powered tooth brushes for home care and minimizing irritation of the oral lesions by removing local irritating factors such as sharp cusps of the teeth.

Conclusion

PV is the commonest clinical subtype, chronic and life-threatening autoimmune blistering disease. Tissue specific autoimmunity could be the probable mechanism involved in the pathogenesis of the development of periodontitis as a sequel to PV. It is possible that information regarding the periodontal health status of patients with PV would lead to a more comprehensive understanding of the disease and facilitate development of a successful method of treatment. Therefore dematologist should inform these patients about the risk of periodontitis, and be encouraged to pursue long-term periodontal follow up by the dental professionals to prevent their periodontal disease progression.

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