

Original article:

Association between Psoriasis and periodontitis: A Clinical study

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Abstract:

Background : Psoriasis is a skin disorder characterised by abnormal epidermal hyperproliferation affecting 2-3% of world's population. Periodontitis on the other hand is a chronic destructive bacterial infection affecting the gingiva, periodontal ligament and alveolar bone. The aim of the study is to evaluate an association between psoriasis and periodontitis.

Material and Methods : A group of 30 patients were selected and divided into 2 groups, Group A with psoriasis and periodontitis and Group B with systemically healthy patients and periodontitis.

Results: A statistically significant association between psoriasis and periodontitis ($p < 0.05$) in relation to RPI, probing depth and oral hygiene index.

Conclusion: The study indicates that there is an association between psoriasis and periodontitis.

Keywords: Psoriasis , periodontitis, clinical study.

Introduction:

Psoriasis is derived from Greek word "psora" which means "itch". Psoriasis is a disease characterised by non-contagious, dry, inflammatory skin disorder, which can involve entire system of person. It is mostly inherited and characterized by sharply margined scaly, erythematous plaques which develop in a relatively symmetrical distribution. This autoimmune-type inflammation of the skin has a strong genetic background, but may also be influenced by environmental factors. Streptococcal infections can precipitate psoriasis. Other disease-modifying factors may be trauma, drugs, alcohol, smoking, sunlight and metabolic and psychogenic factors.¹ Plaque type of psoriasis is the most common form of the disease, affecting 80-90% of the patients. The microscopic picture of the plaques include an infiltration of immune cells in the epidermis and dermis, dilatation and an increase in the number of blood vessels in the

dermis, and a massively thickened epidermis with atypical keratinocyte differentiation. It has been suggested that the immune system plays an important role in the pathogenesis of psoriasis.²

Chronic destructive periodontal disease is a family of bacterial infections characterized by immunologically motivated destruction of periodontal supporting tissues. The main pathogens are thought to be a group of Gram-negative, anaerobic microorganisms. However, Gram-positive bacteria, including beta-hemolytic Streptococci, also constitute a significant proportion of this biofilm.³

Both psoriasis and periodontal diseases are characterized by an exaggerated immune response against the microbiota residing within epithelial surfaces. Dendritic cells (DCs) play an important role in driving an exaggerated immune response, and are crucial for the initiation and regulation of both innate and adaptive immunity.³

Material and methods:

The present study was carried out to investigate the association between psoriasis and periodontitis. The study was conducted in 30 patients, aged 25-60 years suffering from psoriasis who reported in the outpatient department of Dermatology department in Civil hospital , Ahmedabad.

The subjects were divided into two groups,

Group- A consisting 15 patients suffering from psoriasis and

Group- B consisting of 15 medically healthy patients.

Inclusion criteria were - 30 patients in each group with age group of 25 to 45 years with chronic generalized periodontitis, patient free from systemic illness(except psoriasis). Exclusion

criteria were pregnant and nursing patients, patient with habit of smokeless and smoking tobacco and patients receiving concurrent antibiotic treatment for any other purpose. Parameters noted were- Oral hygiene index(Greene and Vermillion,1964), Russels periodontal index(1956) , gingival index(Loe and Silness,1963) and probing pocket depth.

Results:

The mean gingival index between the two groups i.e. group- A and group –B is not statistically significant but the probing depth(5.3),periodontal index(5.11),oral hygiene index(7.6) in group –A (mean =5.3) and PD(4.4),RPI(4.8)and OHI-S(5.9)in group-B was statistically significant.(p<0.05).

Table 1:

Comparison of Mean value in gingival index between Group A and Group B

Gingival index	Group A	Group B
Mean value	2.21	2.06
P value	>0.05	>0.05

Table 2:

Comparison of Mean value in oral hygiene index between Group A and Group B

Oral hygiene index	Group A	Group B
Mean value	7.6	5.9
P value	<0.05	<0.05

Table 3:

Comparison of Mean value in periodontal index between Group A and Group B

periodontal index	Group A	Group B
Mean value	5.11	4.8
P value	<0.05	<0.05

Table 4:

Comparison of Mean value in probing pocket depth between Group A and Group B

Probing pocket depth	Group A	Group B
Mean value	75.3	4.4
P value	<0.05	<0.05

Discussion:

It is established that the pathogenesis of psoriasis⁴ and the aggravation of periodontitis is linked to altered T- lymphocyte - mediated immunity⁵. Periodontal disease progresses when B-cell/plasma cell responses become dominant in the periodontal inflammatory process, which is often preceded by the oligoclonal expansion of Th2 lymphocytes. They stimulate B-cells and induce humoral immune responses by secreting interleukins like IL-4, IL-5 and IL-10. It is to be noted that Th1 cells are capable of stimulating B/plasma cells by secreting INF-c. This is an alternative way of shifting the immune response toward B cell dominance, especially in the context of suppressed T cell responses. Th1 cells are stimulated by IL-6, IL-8, IL-12, IL-18, TNF-a and INF-c, the levels of all of which were found to be elevated in the serum of patients with chronic plaque psoriasis.⁶

Recent studies have reported that psoriasis is associated with both physical and psychological comorbidity, and may therefore have a confounding impact on the educational and work activities of the patients.⁷ Also patients suffering from psoriasis have an impaired quality of life, which may lead to unhealthy lifestyle behaviours such as smoking, alcohol consumption, decreased physical activity and obesity.⁸ Several of these are also risk factors risk of periodontitis.⁹

One prospective study (Nakib et al)among nurses in USA , showed that periodontitis patients

showed more incidence of psoriasis and vice-versa.¹⁰ Other clinical studies reported that patients suffering from psoriasis have a significantly increased number of missing teeth, severe periodontitis and more clinical attachment loss than controls.^{11,12}

Our study showed a statistically significant difference in the clinical parameters between healthy and psoriasis affected patients.

Other explanation for the association between these two diseases is thought to be associated with polyclonal and mitotic factors which triggers autoimmune antibodies which in turn causes skin lesions and vice-versa.¹⁰⁻¹³

Both psoriasis and periodontitis are characterised with is an exaggerated immune response to the microorganisms residing on the epithelial surface.¹⁴ Evidence shows dendritic cells (DC) are responsible for the initiation and regulation of innate and adaptive immunity and forming a bridge between systems by trafficking and controlling from the epithelial barriers to the regional lymph nodes.^{15,16}

Conclusion:

Within the limits of the present study,results does shows an increased prevalence of periodontitis amongst patients suffering from periodontitis.thus further measures should be taken to increase the awareness of preventing periodontitis in patients suffering from psoriasis.



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