International Journal of Science and Research (IJSR)
ISSN: 2319-7064
Impact Factor 2024: 7.101

Shared Immunological Pathways in Psoriasis and Vitiligo: Insights from a Case Study

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Abstract: ***Psoriasis is a chronic inflammatory skin disease characterized by well demarcated erythematous plaques covered with silvery white scales, present chiefly on extensors. Vitiligo is autoimmune disorder that causes patchy loss of skin pigmentation. In some cases the two disorders can be present concurrently. Very few case reports of co existing psoriasis and vitiligo are there in literature, though immunological pathways of both diseases overlap. We present a case of 36 year old male presenting with coexisting psoriasis and vitiligo. Most case reports cite development of psoriasis in preexisting vitiligo lesions whereas in our case, patient developed psoriasis long before the onset of vitiligo. Material and methods: 36 year old male presented to skin OPD with depigmented macules on lips, palms and soles since 3 years. He also had scaly erythematous plaques on extensors since 17 years which was diagnosed as Psoriasis and he was being treated for it. Diagnosis of psoriasis coexistent with vitiligo was made based on clinical examination and skin biopsy. Conclusion: Association of psoriasis with vitiligo has been described but very few cases are reported from India. The diseases can be present concurrently due to their pathogenesis involving inflammation and autoimmunity.***

Keywords: Psoriasis, Vitiligo, Concurrent, Immunological

1. Introduction

Psoriasis is a chronic, immune-mediated, inflammatory skin disorder that affects approximately 0·1–3% of the general population worldwide. (1, 2). Vitiligo is an autoimmune disorder that causes the patchy loss of skin pigmentation by attacking melanocytes. Its prevalence is 0.5 -1% worldwide (3). These disorders are commonly seen in the Indian population but very few case reports are there where they are present concurrently. This case report is presented to highlight the uncommon occurrence of vitiligo affecting a patient who is known case of psoriasis. Both these diseases have inflammatory mediators affecting their pathogenesis.

2. Case report

A 34- year old male presented to dermatology OPD with depigmented macular lesions on lips fingers, palms and soles since 2 years. He also had scaly plaques on extensors (elbows and knees) since 17 years previously diagnosed as Psoriasis. {fig1} No history of arthralgia/ joint stiffness of small joints. There was no family history of vitiligo or psoriasis or other autoimmune diseases. Auspitz sign was positive, done on scaly plaque present on elbows. Vitiligo developed on plaques of psoriasis on extensors as well as on palms and lips Nails were not affected. He had taken topical treatment for psoriasis. There was no history of being treated by methotrexate in the past. Diagnostic workup included haematology, thyroid profile, X ray of hands to rule out arthritis. Skin biopsy was done. Skin biopsy from a colocalized lesion revealed hyperkeratosis, parakeratosis, and elongation of rete ridges with suprapapillary thinning of the epidermis. Special staining (Fontana -Masson) showed an absence of melanin in the basal cell layer, consistent with vitiligo. Perivascular lymphocytic infiltration was noted in the dermis. **Laboratory Tests**: Haematology and thyroid function tests were all normal. **X**-ray hand AP and lateral view was normal. **Diagnosis** of coexistent psoriasis and vitiligo was made. **Treatment and Outcome Pharmacological Treatment**: Since the PASI score was under 10 and vitiligo involved less than 10 percent of body surface area, Treatment done was topical corticosteroids and calcipotriol ointment applied to psoriatic lesions and vitiligo lesions. Antioxidants were supplemented orally. **Follow-up**: Significant improvement in psoriatic and vitiligo lesions over two months

Figure 1: Coexistent Psoriasis and vitiligo on elbow / vitiligo on lips

3. Discussion

The prevalence of psoriasis in India among adults varies from 0.44 to 2.8 percent [4]. The prevalence of vitiligo in India has been invariably reported between 0.25% and 4% of dermatology outpatients across studies from India and up to 8.8% in Gujarat and Rajasthan. (5) The co-occurrence of psoriasis and vitiligo was first reported by Selenyi in 1955 (6). Psoriasis has a strong tendency to co-occur with other autoimmune/immune-mediated diseases, and research indicates that psoriasis patients may have a 25% chance of developing vitiligo during their lifetime (6). Psoriasis is the second most common comorbidity in vitiligo patients (7). Psoriasis and vitiligo is more frequent in individuals in Western countries than in Asian children. Until now, only six cases in which psoriasis co-occurred with vitiligo have been reported in Asian patients. These comprised four Korean patients, one Japanese patient, and one Chinese patient; (8, 9,

10, 11). Four case reports of coexistence of psoriasis and vitiligo have been documented from India. In all these cases psoriasis developed on patches of vitiligo and one case was of 9 year old female with coexistent vitiligo, psoriasis and lichen planus. (12, 13, 14, 15). Very few studies indicate occurrence of psoriasis and subsequent development of vitiligo. Both are disorders with overlapping immunopathogenic mechanisms, including the involvement of T-helper 1 (Th1) and Th17 cells, and cytokines such as TNF-α and IL-17. Vitiligo and psoriasis share a common genetic susceptible locus (rs9468925 in *HLA-C/HLA-B*) (12). Yen et al. previously reported that psoriasis and vitiligo have similar pathogenic backgrounds. They are both cell-mediated Th1 diseases in which elevated TNF-α and interferon (INF) levels and the activation of the Th17 pathway are observed. (13). Li et al. summarized three possible mechanisms of the co-occurrence of vitiligo and psoriasis: (a) isomorphic reaction, (b) shared genetic basis of autoimmunity and inflammation, and (c) shared cellular immune pathways and related cellular molecules. (14,15,16) Cytokines such as IFNγ and TNFα induce melanocyte detachment and decrease the distribution of E-cadherin in melanocytes TNF -α and cytokines are increased in psoriasis, thus can predispose to vitiligo. (17,18,19.20)

4. Conclusion

This case highlights the importance of considering the coexistence of psoriasis and vitiligo. A thorough clinical examination, histopathological evaluation, and appropriate treatment can lead to favorable outcome. The link in their pathogenesis needs to be investigated further to help formulate optimum management of both disorders with a single drug.

Conflict of interest – nil

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