

Incidence of Uveitis in Patients with Psoriasis: A Cross Sectional Study in Indian Population

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Abstract

Background: Psoriasis is associated with cause specific ocular involvement, uveitis being the most serious. Severity of skin disease, presence of arthritis and HLA B27 positivity may be associated with higher incidence of uveitis.

Objectives: This cross sectional prospective observational study was undertaken to assess the incidence of uveitis in psoriasis patients in a tertiary care teaching hospital in northern India.

Methods: A cross sectional study of 50 psoriasis patients with detailed history and examination including joint involvement was recorded. Routine blood investigation and skin biopsy was done (Table 1). A detailed history of ocular involvement was recorded. A slit lamp examination, Fundus examination and retinoscopy were performed. All patients were tested for HLA B27 by flow cytometry.

Results: In our study 3 patients (6%) had evidence of anterior uveitis which was insidious and unilateral. Out of these 2 patients had Psoriatic arthritis. A total of 6 patients of 50 (12%) were HLA B27 positive. In the 3 patients with uveitis 2 were HLA B27 positive. Interpreting it in another way 33% of HLA B27 positive patients had uveitis while only one of 44 (2.5%) HLA B27 negative patients had uveitis.

Conclusion: Patients with psoriasis have a small but definitely increased risk of uveitis and the risk further increases in presence of Psoriatic arthritis and HLA B27 positivity. We recommend a detailed ophthalmological evaluation in psoriasis patients especially those with psoriatic arthritis and consider HLA B27 as independent risk factor for anterior uveitis.

Keywords: Psoriasis; Psoriatic; Arthritis; Uveitis; H B27

Background

Psoriasis is a chronic inflammatory disease affecting primarily skin, nails and joints. Psoriasis affects nearly 2-3% of the world's population [1]. The prevalence of psoriasis in India ranges from 0.8-2.8% in general population [2].

Psoriasis is associated with an increased risk of comorbidities and mortality. Comorbidities commonly associated are inflammatory bowel disease, cardiovascular diseases secondary to metabolic changes associated with psoriasis which include diabetes, obesity, dyslipidaemia, hypertension, and coronary artery disease [2]. The association of psoriasis and psoriatic arthritis with comorbidities of cardiovascular system, liver, renal, and metabolic syndrome has been well studied in literature [3].

Ocular involvement in psoriasis includes blepharitis, dry eyes, episcleritis, chronic conjunctivitis, cataract, keratitis, xerophthalmia, corneal involvement, orbital myositis retinal abnormalities and

uveitis. Anterior uveitis is the most severe ocular complication associated with psoriasis and psoriatic arthritis [2].

Uveitis has been reported to occur in 7-20% of the patients with psoriasis [4] which tends to be anterior, bilateral, chronic (mean duration 11.2 weeks), recalcitrant and begins later (at a mean age of 48 years) [5].

Both Th1 and Th17 T cells are involved in the pathogenesis of psoriasis. TNF- α is a key inflammatory mediator that is produced by both Th1 and Th17 immune response. HLA B27 is considered a genetic marker for a pro inflammatory cytokine milieu specially IL 17 which predispose to psoriatic arthritis and anterior uveitis. HLA B27 is considered an independent marker for anterior uveitis [6]. The prevalence of HLA B27 varies among general population and ethnic groups worldwide ranging from 0% in African Bantu and Australian Aborigines to 50% in Native Americans. The prevalence of HLA B27 in India has been variably reported as

Table 1: Master chart of the study.

Name	Age	Sex	age of onsetgp	Age of onset	Duration (years)	duration_group	Variant	Biopsy	pasi	pasi_grp	BSA %	bsa_group	Nails	Joints	Scalp	Treatment History	uveitis	HLA B27
Patient 1	28	1	2	18	10	2	1	Consistent with Psoriasis	24	3	75	3	1	3	1	1	1	1
Patient 2	52	1	5	46	6	2	1	Consistent with Psoriasis	4.2	1	11	3	0	0	1	1	0	0
Patient 3	19	1	2	16	3	1	1	Consistent with Psoriasis	11.8	3	20	3	0	0	1	1	0	0
Patient 4	60	2	6	56	3	1	1	Consistent with Psoriasis	17.6	3	82	3	1	0	1	1	0	0
Patient 5	45	1	3	30	15	3	1	Consistent with Psoriasis	16	3	20	3	0	0	1	1	0	0
Patient 6	27	1	2	20	7	2	1	Consistent with Psoriasis	14	3	10	2	1	0	1	1	0	0
Patient 7	53	2	4	40	13	3	1	Consistent with Psoriasis	20	3	30	3	1	1	1	3	0	1
Patient 8	40	1	4	38	12	3	1	Consistent with Psoriasis	3.8	1	8	2	1	0	1	1	0	0
Patient 9	45	2	5	42	3	1	1	Consistent with Psoriasis	4.5	1	10	2	1	0	1	1	0	0
Patient 10	26	1	2	12	15	3	2	Consistent with Psoriasis	59.6	3	85	3	1	0	1	1	0	0
Patient 11	60	1	6	59	1	1	2	Consistent with Psoriasis	32	3	70	3	1	0	1	1	0	0
Patient 12	40	1	3	30	10	2	1	Consistent with Psoriasis	12	3	20	3	1	0	1	2	0	0
Patient 13	60	1	6	55	5	1	1	Consistent with Psoriasis	15.8	3	22	3	1	0	1	1	0	0
Patient 14	45	1	4	35	10	2	1	Consistent with Psoriasis	15.4	3	15	3	1	2	2	1	0	1
Patient 15	40	1	4	35	5	1	1	Consistent with Psoriasis	15	3	60	3	0	0	1	1	0	0
Patient 16	50	1	4	38	12	3	1	Consistent with Psoriasis	18.6	3	20	3	1	0	1	1	0	0
Patient 17	50	1	5	45	5	1	1	Consistent with Psoriasis	6.5	2	15	3	1	0	1	1	0	0
Patient 18	67	1	5	50	17	3	1	Consistent with Psoriasis	14	3	8	2	1	0	0	1	1	0
Patient 19	40	2	4	39	1	1	1	Consistent with Psoriasis	8.8	2	10	2	0	0	1	1	0	0
Patient 20	40	2	3	30	10	2	4	Consistent with Psoriasis	8.2	2	12	2	0	0	1	3	0	0
Patient 21	142	1	4	35	5	1	1	Consistent with Psoriasis	5.8	2	8	2	0	0	1	1	0	0
Patient 22	20	1	2	17	3	1	1	Consistent with Psoriasis	4.8	1	10	2	1	0	1	1	0	0
Patient 23	48	1	5	47	1.5	1	2	Consistent with Psoriasis	36	3	75	3	1	1	1	2	0	0
Patient 24	32	2	3	22	10	2	3	Consistent with Postular Psoriasis	10.9	3	10	2	1	0	1	1	0	0
Patient 25	60	1	6	58	2	1	1	Consistent with Psoriasis	4.2	1	12	3	1	0	1	1	0	0
Patient 26	39	1	3	24	15	3	1	Consistent with Psoriasis	18	3	20	3	1	0	1	1	0	0
Patient 27	21	1	2	18	3	1	1	Consistent with Psoriasis	14	3	17	3	0	0	1	0	0	0
Patient 28	20	2	2	14	6	2	1	Consistent with Psoriasis	8	2	15	3	1	0	1	1	0	0
Patient 29	17	1	2	12	5	1	4	Consistent with Psoriasis	12	3	15	3	0	0	1	3	0	1
Patient 30	40	1	3	22	18	3	1	Consistent with Psoriasis	11.9	3	55	3	1	0	0	1	0	0
Patient 31	60	2	6	57	3	1	1	Consistent with Psoriasis	12	3	10	2	0	0	1	1	0	0
Patient 32	38	1	3	22	15	3	1	Consistent with Psoriasis	5.6	2	15	3	1	0	1	1	0	0
Patient 33	50	2	4	40	10	2	1	Consistent with Psoriasis	16	3	20	3	0	0	0	0	0	0
Patient 34	35	1	2	20	15	3	4	Consistent with Psoriasis	7	2	10	2	1	0	1	1	0	0
Patient 35	18	1	2	16	2	1	1	Consistent with Psoriasis	3.2	1	5	1	0	0	0	1	0	0
Patient 36	25	2	3	21	4	1	1	Consistent with Psoriasis	4.5	1	12	3	0	0	1	0	0	0
Patient 37	30	1	2	20	10	2	1	Consistent with Psoriasis	7.2	2	20	3	0	0	1	3	0	0
Patient 38	70	1	5	46	24	3	1	Consistent with Psoriasis	20	3	17	3	1	0	1	2	0	0
Patient 39	48	1	4	38	10	2	1	Consistent with Psoriasis	24	3	20	3	1	0	0	1	0	0
Patient 40	23	1	2	20	3	1	1	Consistent with Psoriasis	18	3	10	2	0	0	1	1	0	1
Patient 41	18	1	2	17	2	1	1	Consistent with Psoriasis	18	3	40	3	1	3	3	1	1	1
Patient 42	54	1	5	48	6	2	1	Consistent with Psoriasis	14.4	3	20	3	1	0	0	1	0	0
Patient 43	32	1	3	31	1	1	2	Consistent with Psoriasis	50	3	12	3	0	0	1	2	0	0
Patient 44	30	1	2	20	10	2	1	Consistent with Psoriasis	15	3	35	3	0	0	1	1	0	0
Patient 45	45	1	3	30	15	3	1	Consistent with Psoriasis	18	3	60	3	1	0	1	3	0	0
Patient 46	50	2	4	45	5	1	1	Consistent with Psoriasis	15	3	20	3	0	0	1	1	0	0
Patient 47	60	1	6	59	1	1	1	Consistent with Psoriasis	20	3	25	3	1	0	0	2	0	0
Patient 48	35	1	4	34	1	1	1	Consistent with Psoriasis	15.2	3	30	3	0	0	1	0	0	0
Patient 49	34	1	3	29	5	1	1	Consistent with Psoriasis	20	3	30	3	1	2	1	3	0	0

8.3% from Western India and 1.7% from Mumbai and 12.5% from Punjab [7].

The prevalence of HLA B27 in PsA patients ranged from 20 to 35% while it is 5% in psoriasis patients without arthritis [8]. In psoriatic arthritis patients HLA B27 is positive in only 13-20% of the cases of peripheral arthritis and in 50-70% of patients with sacroiliitis and axial involvement [9]. Thus patients with Psoriasis and/or Psoriatic arthritis who are HLA B27 positive may have increased frequency and severity of anterior uveitis.

There is a paucity of literature on uveitis in patients with psoriasis from India. The association and interplay between psoriasis and/or psoriatic arthritis, uveitis and HLA B27 has not been studied.

Materials and Methods

This was a Cross-sectional descriptive study of 50 patients of age 18 to 60 years with psoriasis and/or psoriatic arthritis of different morphological types and varying degrees of severity. For all included patients, a detailed history was taken including the age of onset of the skin disease, its duration and severity, any history of joint involvement in form of early morning stiffness, pain and swelling of digits, pain and swelling over the joints, low backache and history of heel pain. A detailed history of ocular involvement in form of pain and redness of eyes, blurring of vision, and floaters was taken with emphasis on onset, duration and recurrence of symptoms. This was followed by a careful general physical examination including calculation of body mass index, waist hip ratio, blood pressure and cardiovascular system to look for any associated comorbidities in the patients. A detailed mucocutaneous examination was recorded to categorize the variant of psoriasis and the grading of severity of skin disease by calculation of Psoriasis Area and Severity Index (PASI) and Body surface area and other sites were examined to look for involvement of the flexure, scalp and nails. A thorough joint examination was done to look for the number of joints involved, tenderness of the spine, evidence of dactylitis and enthesitis. X-rays of spine and peripheral joints to see the changes seen in psoriasis which include erosions, sacroiliitis, periosteal reaction, joint space narrowing, and ankylosis and sclerosis.

A comprehensive ophthalmological examination was conducted by an Ophthalmologist including extraocular movements, visual acuity using Snellen's chart, colour vision, slit lamp examination, fundus examination by using indirect ophthalmoscope, and intraocular pressure measurement using Goldmann applanation tonometer. To confirm anterior uveitis a Slit lamp examination was done to look for anterior chamber cells and flare and was graded as per The SUN Working Group Grading Scheme. For any evidence of posterior uveitis indirect ophthalmoscopy was done to for grading of vitreous opacities. All baseline investigations were done to rule out comorbidities associated with psoriasis. Subsequently HLA B27 was done in all patients by flow cytometry using BD HLA B27 kit.

Results

Dermographic profile

A total of 50 patients were recruited as cases, out of which 39 were males (78%) and 11 were females (22%) with male to female ratio of 3.5:1. The age of study group ranged between 18 to 70 years with mean age of 40.52 ± 14.08 years. Most of the patients reported disease duration of <5 years (48%) followed by disease duration of 5-10 years and >10 years each contributing 26% of the patients. Table 2 shows the demographic details of the patient. Majority of patients had onset of disease between 11-20 years of age i.e. 28 patients (56%). The least common age of onset was found to be 51-60 years with only 6 patients.

Clinical variants of psoriasis

The most common clinical variant of psoriasis was chronic plaque psoriasis affecting 42 patients (84%) followed by erythroderma seen in 4 patients (8%) and guttate psoriasis seen in 3 patients (6%) (Table 3). The PASI score of the patients ranged from 3.2 to 59.6 with a mean of 15.25 ± 10.64 . Maximum number of patients (58%) had PASI score ranging from 11 to 20 and BSA ranged from 5-90% with a mean of 25.36. Maximum number i.e. 38 patients (76%) had BSA >10% followed by 12 patients BSA between 2-10%.

Psoriatic arthritis

A total of 6 (12%) patients out of 50 had joint involvement. Of these 5 were males and one was female. Two patients had asymmetrical oligoarthritis (Distal Interphalangeal Joint), 2 patients had axial arthritis while 2 patients had both peripheral (DIP) as well as axial arthritis (Figure 1).

Nail changes

Nail changes were seen in 30 (60%) of the 50 patients. Among psoriatic arthritis patients 5 out of 6 patients had nail changes like pitting, Beau's lines, onycholysis and subungual hyperkeratosis and nail crumbling.

HLA B27 in psoriasis

Out of 50 patients, 6 had HLA B27 positivity contributing to 12%, among them 1 was female while rest 5 were male (Figure 2). Four out of six HLA B27 positive patients had psoriatic arthritis with 2 patients having axial as well as DIP involvement, one had DIP and one had axial.

Uveitis in psoriasis

Uveitis was seen in 3 patients i.e. 6% of psoriasis patients had uveitis, which was anterior and unilateral and all were male with 2 patients having HLA B27 positivity (Figure 3). Among them two patients had psoriatic arthritis involving the axial as well as peripheral joints (DIP).

Association of uveitis with HLA B27 positivity in psoriasis patients

Two out of 6 HLA B27 positive patients had uveitis i.e. 33% patients of psoriasis in presence of HLA B27 positivity had uveitis, while out

Table 2: Demographic details of the patients.

Mean	Male (39)	Female (11)	Total (50)
Age	39.77 ± 14.37	43.18 ± 13.31	40.52 ± 14.08
Duration	7.80 ± 5.13	6.18 ± 3.73	7.45 ± 4.90
Age of onset	31.79 ± 13.70	36.90 ± 13.24	32.92 ± 10.64
PASI	16.33 ± 11.53	11.40 ± 4.96	15.25 ± 10.64
BSA	26.46 ± 11.53	21 ± 4.96	25.36 ± 10.64

Table 3: Distribution of patients according to variant of psoriasis.

Clinical variant	No. of patients (n=50) (%)
Chronic plaque	42 (84%)
Erythroderma	4 (8%)
Guttate	3 (6%)
Generalised Pustular	1 (2%)
Total	50 (100%)

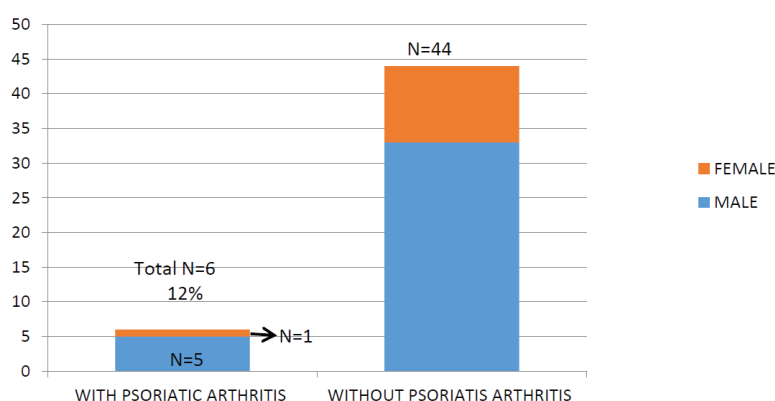
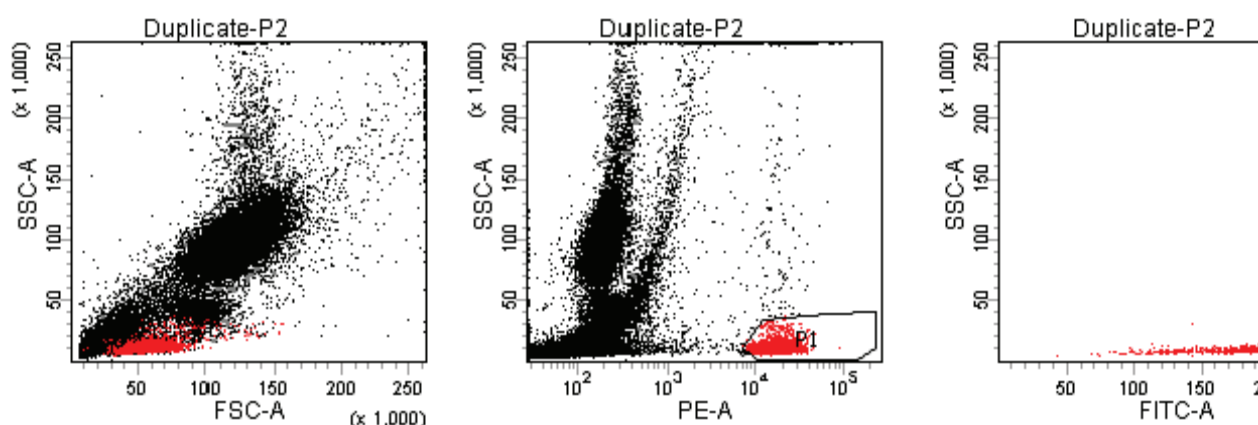


Figure 1: Gender distribution of patients with and without psoriatic arthritis.



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Specimen Name: Duplicate
Tube Name: P2
Record Date: Feb 22, 2017 12:51:01 PM
Operator: Administrator
GUID: 8333d351-c7d6-4f4b-b914-a0a...

Tube: P2

Population

All Events

P1

Population	#Events	%Parent	FITC-A Mean
All Events	50,762	###	154,855
P1	3,214	6.3	242,229

Figure 2: Flow cytometry of blood samples positive for HLA B27.

of rest 44 psoriasis patients who were HLA B27 negative only one had uveitis i.e. only 2.5% patients of psoriasis in absence of HLA B27 positivity had uveitis (Figure 4).

Discussion

The prevalence of uveitis in psoriasis and its characteristics is relatively less explored especially in Indian setup. The present study aims at evaluating the frequency of uveitis in patients of psoriasis and attempts to study its characteristics and association with HLA

B27 in these patients. Detailed ophthalmological examinations in form of slit lamp examination to see anterior chamber and indirect ophthalmoscopy to see posterior chamber was done. HLA B27 was tested by flow cytometry on blood samples.

Psoriatic arthritis

Six patients out of 50 of psoriasis had joint involvement contributing to 12% of the total, which is slightly higher than the reported prevalence of 8.7% in Indian patients by Kumar R, et al. [10]. Among these 6

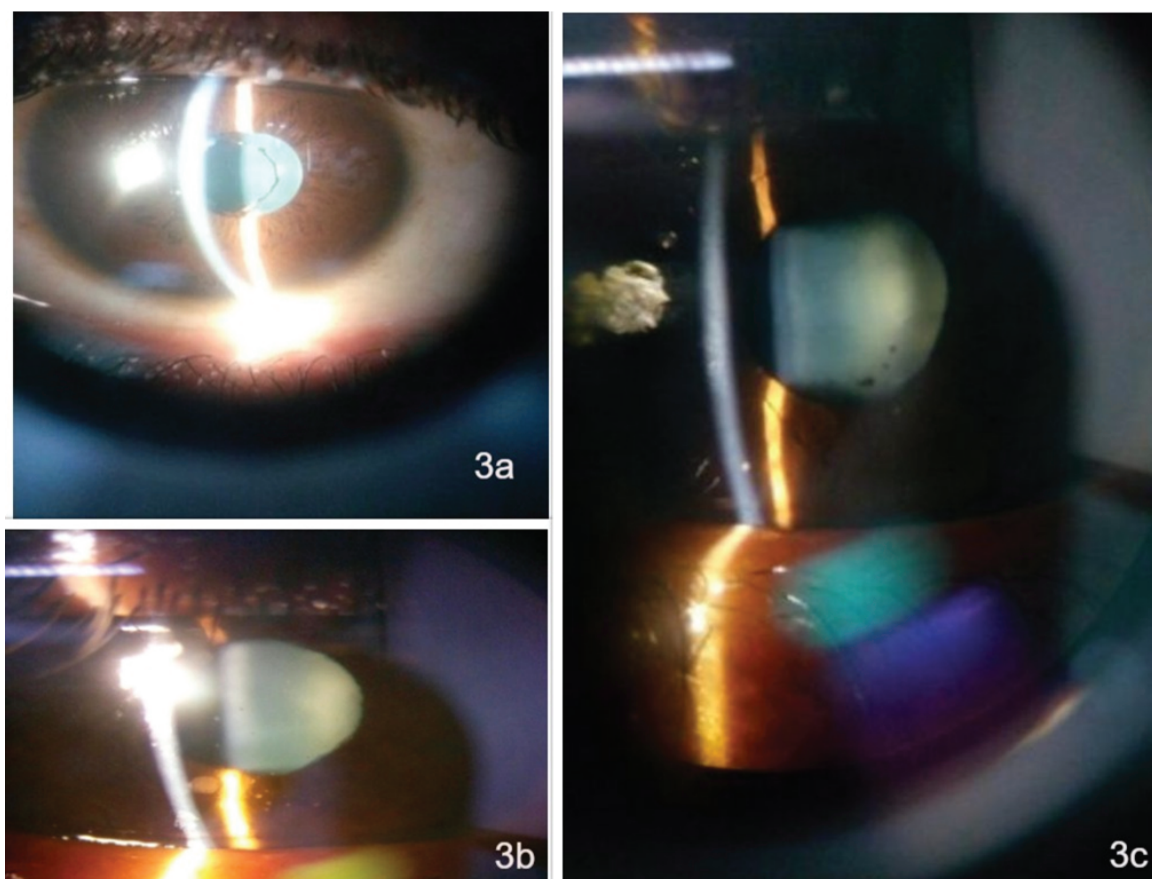


Figure 3: 3a: Slit lamp showing posterior synechiae suggestive of healed anterior uveitis, 3b and c: Slit lamp showing keratic precipitate suggestive of anterior uveitis.

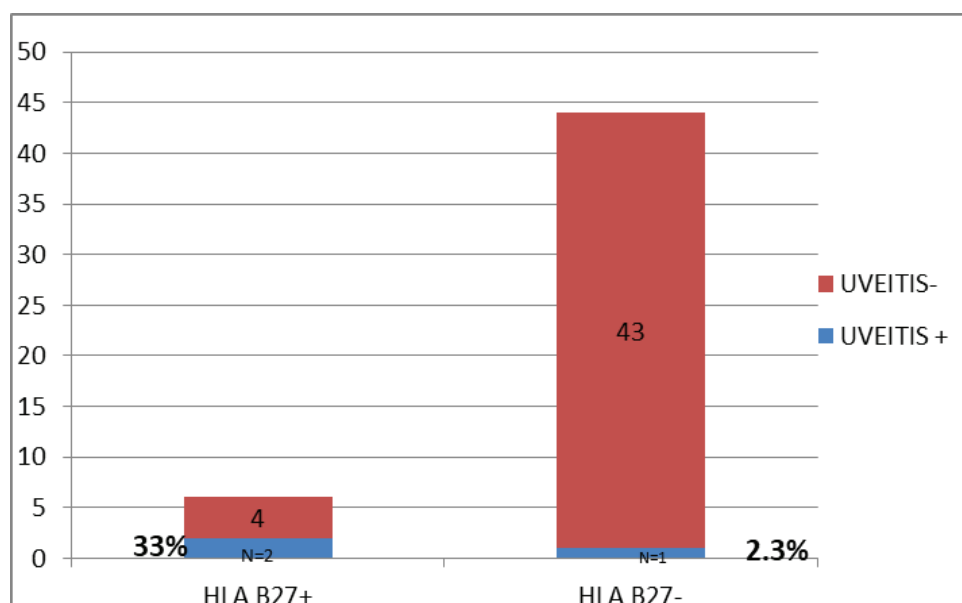


Figure 4: Association of uveitis with HLA B27 positivity in psoriasis patients.

patients 5 were males and one was female, which in concordance with other Indian studies showing male predominance, which could be due to the overall proportion of male patients visiting the clinic being higher [10]. Two patients had symmetrical polyarthritis, 2 patients had isolated spondyloarthropathy while 2 patients had both symmetrical polyarthritis as well as spondylitis. Studies by Rajendran CP, et al. (48.3%) and Reich K, et al. (58.3%) have reported polyarthritis as the most common pattern while some other authors reported spondylitis as the predominant type occurring in 50% cases [11,12].

Nail changes were seen in 60% of the patients i.e. 30 patients which lies within the reported range of 50-80% psoriasis patients having nail changes [2]. About 83% patients of psoriatic arthritis had nail changes which corresponds to the reported frequency of nail involvement in patients with PsA that varies from 63% to 97% [2].

HLA B27 in psoriasis

In our study of 50 patients, 6 were HLA B27 positive with incidence of 12%. HLA B27 was positive in 4 out of 6 psoriatic arthritis i.e. 66% of the psoriatic arthritis patients were HLA B27 positive, which is more than the reported frequency of 20% in psoriatic arthritis in literature, while 3% of the psoriasis patients with only skin involvement had HLA B27 positivity almost near to 5% reported in literature (Table 4). Among them only one patient was female while rest 5 were male, each contributing to 17% and 83% respectively showing male predominance of the HLA B27 allele which is in concordance with previous studies showing higher incidence in males [13-16].

Ocular involvement in psoriasis

Eye findings in conjunction with psoriatic arthritis were reported in 1976 by Lambert and Wright, who noted the presence of ocular inflammation in 31.2% of 112 patients with psoriatic arthritis (Table 5).

They found that conjunctivitis was the most common lesion (19.6%) followed by iritis (7.1%) [17].

In previous studies from western countries, uveitis has been described mainly in psoriatic arthritis at a rate of 2-20% [12]. Uveitis patients with psoriasis in Asian population has been described in patients from Japan and Singapore with studies emphasising the association between psoriatic arthritis and anterior uveitis whereas little attention has been paid to the association between uveitis and psoriasis without psoriatic arthritis. Studies from recent past, done on patients of only psoriatic skin disease shows frequency of uveitis around 2% [18-21]. In our study 3 out of 50 patients had uveitis with a frequency of 6%.

Pathogenesis of uveitis in psoriasis patients

Both Th1 and Th17 T cells are involved in the pathogenesis of psoriasis. TNF- α is a key inflammatory mediator that is produced by both Th1 and Th17 immune response. El-Asrar AM, et al [22] analysed cytokine levels in the aqueous humor of patients with uveitis and found that the levels of IL-17 in the aqueous humor of patients with uveitis were higher than those in the control group, correlating significantly with the severity of the uveitis. IL-17 exerts a pro inflammatory effect, inducing the secretion of other pro inflammatory cytokines and chemokines including prostaglandin E2, intercellular adhesion molecule- 1.

(ICAM1) and metalloproteinases in various tissues. In addition, IL-17 acts synergistically with other cytokines such as IL-1 β and TNF- α [22-38].

Uveitis associated with psoriasis tends to be anterior, bilateral, chronic (mean duration 11.2 weeks) and recalcitrant. Bilateral uveitis occurs in up to 56% of cases of uveitis associated with psoriasis as

Table 4: Important studies showing association between HLA-B27 with psoriasis and/or psoriatic arthritis.

Name of study	Type of study	Subjects	Result/Remark
Chandran V [14]	Case-control study	678 cases of PsA and 688 controls.	HLA-C 12, HLA B 38, HLA B 27, HLA-C 06 and HLA B 57 haplotypes (alleles) are robustly associated with PsA. HLA-B27 positive in 20% of cases.
Eder L, et al. [15]	Population based Case-control study	712 adult patients with PsA 335 adult patients with psoriasis without arthritis 713 healthy controls	HLA-B27 is a strong genetic marker for PSA with prevalence of 19.2% No association found between HLA B27 and psoriasis without arthritis. suggesting that HLA-B27 is not a marker for skin disease.
Winchester R, et al. [16]	Population based case-control	Four cohorts: 1. Discovery subcohort (n 197) patients with psoriatic arthritis 2. Validation subcohort (n 162) of patients with psoriatic arthritis 3. Discovery subcohort (n 102) patients with psoriasis 4. Validation subcohort (n 112) of patients with psoriasis.	Increased frequency of HLA B27 in patients with psoriatic arthritis, but not in those with psoriasis. 13.7%- Psoriatic Arthritis Discovery subcohort 17.9%- Psoriatic arthritis Validation subcohort 0%- Psoriasis discovery subcohort 8.9% - Psoriasis validation subcohort
Queiro R, et al. [13]	Case control	100 patients with PsA	RESULTS: 36% of male PsA- HLA B27 + 27% of female PsA- HLA-B27 + Concluded that HLA-B27 is associated with an earlier onset of joint manifestations in patients with cutaneous psoriasis compared to non-carriers. Therefore, HLA-B27 can be considered as the strongest HLA risk allele for PsA among patients with cutaneous psoriasis

compared to Idiopathic cases where bilateral involvement is seen in only 7-21% patients. In patients with psoriasis, uveitis begins later (at a mean age of 48 years), whereas in Idiopathic cases uveitis is early in onset occurring at 30-40 years of age [9].

Frequency of uveitis in psoriasis and PsA is variably reported in different regions.

A brief summary is shown below (Tables 6 and 7).

Table 5: Reported Frequency of ocular manifestation in psoriasis patients in various studies [18-20].

Ocular manifestations	Percentage
Cataract/pseudophakia	5- 63% [18-20]
Dry eye	37% [19]
Blepharitis	24%-40% [19,20]
Chronic conjunctivitis	8%-14% [19,20]
Corneal involvement	16% [20]
Episcleritis	1% [20]
Retinal pigmentary disturbance	4% [18,20]

Two patients had flare 1+ in the anterior chamber while one had posterior synechiae (suggesting healed anterior uveitis) of unilateral eye examined through slit lamp suggestive of anterior uveitis. None of the patients gave history of acute onset of symptoms of acute red eye, pain photophobia suggesting the onset to be insidious [5]. These clinical features of psoriatic uveitis are in concordance with literature which reports uveitis in psoriasis to be acute anterior with insidious onset and recurrent. Since our study was cross sectional, we could not

Table 6: Reported Frequency of uveitis in Psoriasis without arthritis.

Study	Study population	Uveitis number (%)
Chandran NS, et al. [18]	Cross sectional prevalence study of 100 patients with psoriasis	2 patients (2%)
Kilic B, et al. [20]	Case control study of 100 patient with psoriasis	2 patients (2%)
Maitray A, et al. [19]	75 psoriasis patients	2 patients (2.6%)

Table 7: Reported frequency of uveitis in Psoriatic arthritis.

Study	Study population	Uveitis number (%)
Robert MET, et al. [23]	168 PsA patients	37 (22%)
Lambert JR, et al. [17]	112 PsA patients	8 (7.1%)
Kammer GM, et al. [24]	100 PsA patients	25 (25%)
Leonard DG, et al. [25]	30 PsA patients	1 (3.3%)
Galdman DD, et al. [26]	220 PsA patients	15 (6.8%)
Torre-Alonso JC, et al. [27]	180 PsA patients	5 (2.8%)
Jones SM, et al. [28]	100 PsA patients	5 (5%)
Queiro R, et al. [29]	70 PsA patients	13 (18.6%)
Kane D, et al. [30]	129 PsA patients	2 (1.5%)
Queiro-Silva R, et al. [31]	120 PsA patients	17 (14%)
Taylor WJ, et al. [32]	588 PsA patients	62 (10.5%)
Sampaino- Barros PD, et al. [6]	63 PsA patients	5 (7.9%)
Collantes E, et al. [33]	290 PsA patients	4 (1.4%)
Cantini F, et al. [34]	236 PsA patients	18 (7.6%)
Lima FB, et al. [35]	40 PsA patients	2 (5%)
Niccole L, et al. [36]	242 PsA patients	Found uveitis in 22 patients (9%). Out of these, 51% patients had peripheral PsA, 17% axial and 28% mixed. 5(22%) patients were positive for HLA-B27.
Edeberg A, et al [37]	cohort of psoriasis population .	IR of uveitis per 10000 person-year 2.02-reference population 2.88-mild psoriasis 4.23-severe psoriasis 5.49 psoriatic arthritis, Concluded that patients with psoriatic skin disease even in absence of arthritis are at increased risk for uveitis directly proportional to severity of skin disease.
Abbouda A, et al. [38]	Retrospective study of 3278 cases of uveitis. 117(3.6%) patients had psoriasis. (92- only psoriatic skin dis.+25 PsA)	Found in agreement with Paiva et al: - axial pattern of PsA was associated with anterior, unilateral and early onset of uveitis - Author found that in HLA-B27+ is associated with early age of onset of PsA and anterior uveitis.
Fraga NA, et al. [9]	Review of studies [33-37]	Concluded that patients with psoriasis without PsA have a low risk of developing uveitis and suggested HLA B27 positivity, psoriasis pustulosa, arthropathic psoriasis, axial arthropathy, late onset psoriasis (type II) and male sex as the main factors associated with the presence and/ severity of uveitis in psoriasis patients

assess the patients for recurrence. All the patients were male as seen in literature showing male predominance with ratio of Male: female-2.6:1 [39].

Two patients with uveitis had duration of psoriasis >5 years while All the three patients had chronic plaque psoriasis with PASI >10 and two patients had BSA >10% (severe psoriasis), while one patient had 8% BSA (moderate psoriasis) suggesting the association of uveitis with longer duration and severity of the psoriatic disease [19].

Association of uveitis with HLA B27 positivity in psoriasis patients

Two patients with uveitis had joint involvement both of them had axial as well as peripheral joint involvement and HLA B27 positivity which is in concordance with literature which suggests that uveitis is more common in patients with axial arthritis and HLA B27 positivity [40].

In our study 2 out of 6 HLA B27 positive patients had uveitis i.e. 33% patients of psoriasis in presence of HLA B27 positivity had uveitis, while out of rest 44 psoriasis patients who were HLA B27 negative only one had uveitis i.e. 2.5% patients of psoriasis in absence of HLA B27 positivity had uveitis, giving us the insight that HLA B27 being a genetic marker for a proinflammatory cytokine milieu specially IL 17 predispose psoriasis patients to anterior uveitis. In literature several studies have demonstrated an association between HLA B27 and uveitis showing 1% incidence of uveitis in the HLA-B27-positive population, although the relationship among psoriasis, uveitis and HLA B27 is not fully understood in literature.

Conclusion

Psoriasis is a skin disease affecting multiple systems of the body in addition to skin, nails, and joints. The systemic involvement in psoriasis is usually under investigated by dermatologists. However, systemic involvement may have marked contribution to morbidity in psoriasis. The systemic associations like metabolic syndrome, increased cardiac risk, non-alcoholic steatohepatitis and insulin resistance have all been studied in detail in psoriasis patients. In the literature the ocular complications of psoriasis specially uveitis has been under addressed, however a thorough understanding of ocular involvement is important to the comprehensive care of patients with psoriasis.

Considering psoriasis and uveitis as immune-mediated disease, we conducted this cross sectional descriptive study to frequency of uveitis in the patients of psoriasis by ophthalmological examination and to study its clinical characteristic and to record the frequency of HLA B27 positivity in psoriasis patients. An attempt was made to study association between the frequency and severity of uveitis with psoriasis and HLA B27 positivity.

A total of 6% (n=3) patients in the study showed features of uveitis and 12% (n=6) patients were positive for HLA B27 antigen. Among these 12% (n=6) HLA B27 positive patients 33% had uveitis while among the rest 88% (n=44) patients with absent HLA B 27 antigen only 2.3% had uveitis.

In our study it is proposed that HLA B27 being a genetic maker for a proinflammatory cytokine milieu specifically IL17, predisposed the genetically predisposed patients of psoriasis patients to uveitis, which is anterior, insidious in onset and unilateral.

Source of Support

Nil.

Conflict of Interest

None declared.

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