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Relation between psoriasis and psoriatic arthritis: A study of 40 patients

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Abstract
Introduction: Psoriasis is a chronic, immune-mediated, systemic disorder with a worldwide prevalence of 0.9–8.5%. Psoriatic arthritis is a seronegative, chronic, inflammatory arthropathy often associated with psoriasis.
Objective: To study the relation between Psoriasis and Psoriatic Arthritis.
Methodology: Study Area: New Civil Hospital Surat. Sample Size: 40.
Results: Out of 40 patients there were 25 males (62.5%) and 15 females (37.5%). Arthropathic changes in males were found in 8 (20%) cases and in 4 (10%) cases in females.
Conclusion: It is concluded from the above study that nearly 30 % of patients having Psoriasis also suffer from Psoriatic Arthritis associated with different joint involvement of hands, feet, Sacroiliac Joints, Knee, Cervical spine and Hip joints.

Keywords: psoriasis, psoriatic arthritis

Introduction

Psoriasis is a chronic, immune-mediated, systemic disorder with a worldwide prevalence of 0.9–8.5%. Psoriasis leads to sustained inflammation and epidermal hyperplasia, ultimately resulting in the formation and persistence of lesions, which are commonly located on the scalp, elbows, knees, umbilicus, and lumbar area.

Psoriatic arthritis is a seronegative, chronic, inflammatory arthropathy often associated with psoriasis. Prevalence estimates in the general population show marked variability, possibly due to variations in epidemiological study methodology. However, using newer classification criteria, the estimated prevalence ranges from 0.16% to 0.25%. Psoriatic arthritis may affect between 20% and 30% of patients with psoriasis and is characterized by synovial hyperplasia and immune cell infiltration and expansion in both skin and synovium. Patients experience pain, swelling, and joint tenderness, which produce reduced functioning in daily activities and impaired quality of life.

Aim: To study the relation between Psoriasis and Psoriatic Arthritis.

Objectives: To study radiological changes in different joints affected by psoriatic arthropathy. To study the age and sex distribution of patients affected by psoriasis and psoriatic arthropathy.

Material and Methods: Study Population: Forty patients with Psoriasis were evaluated in the study. 12 out of these 40 patients had psoriatic Arthritis. Study Area: New Civil Hospital, Surat. Study Type: Prospective. Sample Size: 40 patients having Psoriasis. Inclusion Criteria: Patients having Psoriasis and having joint pain. Exclusion Criteria: 1. Patients with positive RA Factor. 2. Patients with Positive ANA. 3. Patients having other comorbidities. 4. Patients having other infective pathologies.

Observations

The present study was carried out in 40 consecutive cases of patients attending the Skin OPD of New Civil Hospital Surat during January 2018 to September 2018.

Sex distribution of patients with psoriasis and psoriatic Arthropathy

Out of 40 patients there were 25 males (62.5%) and 15 females (37.5%). Arthropathic changes in males were found in 8 (20%) cases and in 4 (10%) cases in females.

Table 1: The sex wise distribution of patients of psoriasis and Psoriatic Arthropathy

Disease	Male	Female	Total
Psoriasis	25	15	40
Psoriatic Arthropathy	8	4	12

The age of patients examined for arthropathic changes varied from 12 years to 75 years. The mean age of total patients were 39.5 years and that of males 41.8 years and of females 37.2 years.

The maximum incidence of psoriasis was found in the age group of 31 – 50 years.

There were 20 (50%) patients of this age group and 5 (25%) patients showed arthropathic changes.

The duration of the disease varied in different cases from 1 month to 20 years. The extent of involvement varied from occurrence of localized to discrete patches, to almost generalized involvement.

Incidence of Arthropathy

Out of 40 patients of suspected psoriatic arthropathy, 12 patients were found to have arthropathic changes hence the incidence was 30% in general psoriatic patients.

The incidence of arthropathy in different age groups ranged from 0.00% to 66.6% however no arthropathy was observed in patient of psoriasis of less than 20 years of age. The incidence of arthropathy gradually increased with the age of the patients.

Table 2: Age and sex distribution at the onset of psoriasis and Arthropathy

Age	Psoriasis					Arthropathy		
	Male		Female		Total No.	Male	Female	Total %
	No.	%	No.	%				
0-9	-	-	-	-	-	-	-	-
10-19	-	-	3	7.5	3	-	-	-
20-29	5	12.5	2	5.0	7	1	-	14.2
30-39	6	15.0	3	7.5	9	1	1	22.2
40-49	8	20.0	3	7.5	11	3	-	27.2
50-59	3	7.5	1	2.5	4	1	1	50.0
>59	3	7.5	3	7.5	6	2	2	66.6
Total	25	62.5	15	37.5	40	8	4	

THE pattern of occurrence of psoriatic Arthropathy

The pattern of occurrence of psoriasis associated with arthropathy was different. Out of 12 cases in 10 (83.33%) cutaneous lesions appeared preceding the arthropathy, the duration of which ranged from one year to eight years. In 2 (16.66%) of the cases the arthropathic changes preceded the cutaneous lesion. None of the patients had simultaneous involvements of skin as well as joints. (Table 3)

Table 3: The pattern of occourance of psoriasis and Arthropathy

Pattern	No. Of Cases	Percentage
Arthropathy preceding Psoriasis	2	16.66
Simultaneous onset	NIL	NIL
Psoriasis preceding Arthropathy	10	83.34
Total	12	100.00

To demonstrate the various joint involvements the sites of examinations were mainly hands, feet, ankle, sacroiliac joints and spine and others according to complaint of patients.

Cutaneous findings

Out of 40 patients of psoriasis 30(75%) patients showed mild to moderately severe, predominantly discoid (Psoriasis Vulgaris) type of Psoriasis. 6(15%) patients had a more severe generalized exfoliative variety and 4 (10%) had pustular variety of psoriasis.

Clinical features

In this study of 40 cases of psoriasis none of the patients showed subcutaneous nodules of rheumatoid type. No vascular lesions were seen. Out of 40 patients 11 (27.5%) patients had involvement of various small joints of the hands, 9 (22.5%) patients showed involvement of joints of feet, 12(30%) patients showed involvement of sacroiliac joints and 4 (10%) patients had involvement of the knee joints. Involvement of cervical spine was observed in only 2 (5%) cases.

Radiological changes in bones of hands

The radiological changes in bones of hands were observed in the form of an area of sclerosis most commonly in the 2nd 3rd and 4th proximal phalanx. An associated terminal tufting was observed in 6 (15%) of the cases and acroosteolysis was observed in 4 (10%) cases (Table 4)

Table 4: Radiological changes in bones of hands

Parts	Male		Female		Total	
	No.	%	No.	%	No.	%
Area of sclerosis seen in second third and fourth proximal phalynx	11	27.5	6	15.0	17	42.5
Terminal Tufting	3	7.5	3	7.5	6	15.0
Acroosteolysis	2	5.0	2	5.0	4	10.0

Radiological changes in joints of hands

Out of total 11 patients showing radiological changes in joints of hands, all (100%) the patients showed generalized reduction in the distal interphalangeal joint space and juxta-articular osteoporosis at distal interphalangeal joint space. Marginal erosions were present in 9 (81.1%) cases, flexion deformity was observed in 2 (18.1%) cases and osteophytes formation at metacarpophalangeal joint was present in 2 (18.1%) cases. Out of 11 patients with joints of hands involvement, soft tissue swelling was present in 2 (18.1%) cases. (Table 5)

Table 5: Radiological changes in joints of hands

Parts	Male		Female		Total	
	No.	%	No.	%	No.	%
Soft Tissue Swelling	1	2.5	1	2.5	2	5.0
Generalized reduction in the distal interphalangeal joint space	7	17.5	4	10.0	11	27.5
Juxta-Articular osteoporosis at distal interphalangeal joints	6	15.0	5	12.5	11	27.5
Marginal erosion	5	12.5	4	10.0	9	22.5
Flexion deformity	-	-	2	5.0	2	5.0
Osteophyte formation at metacarpophalangeal joint	-	-	2	5.0	2	5.0

Radiological changes in bones of feet

Out of 7 patients, all (100%) cases showed area of sclerosis in different bones. Terminal tufting was present only in 1 (14.2%) cases and calcaneal spur formation were present in 5 (71.4%) cases. (Table 6)

Table 6: Radiological changes in bones of feet

Parts	Male		Female		Total	
	No.	%	No.	%	No.	%
Area of sclerosis seen in different bones	5	12.5	2	5.0	7	17.5
Terminal tufting	1	2.5	-	-	1	2.5
Accessory bones	1	2.5	-	-	1	2.5
Calcaneal Spur	4	10.0	1	2.5	5	12.5

Radiological changes in joints of feet

Out of 9 patients showing radiological changes in joints of feet, all (100%) the patients showed generalized reduction in the distal interphalangeal joint space. Marginal erosions were present in 6 (66.6%) cases, juxta – articular osteoporosis at distal interphalangeal joints and osteophytes formation at tarsal joint space were present in 3 (33.3%) cases. Deformity were present in 2 (22.2%) cases and soft tissue swelling was found in 1 (11.1%) cases. (Table 7)

Table 7: Radiological changes in joints of feet

Parts	Male		Female		Total	
	No.	%	No.	%	No.	%
Soft tissue swelling	-	-	1	2.5	1	2.5
Generalized reduction in the distal interphalangeal joint space	7	17.5	2	5.0	9	22.5
Juxtaarticular osteoporosis at distal interphalangeal joints	2	5.0	1	2.5	3	7.5
Marginal erosion	4	10.0	2	5.0	6	15.0
Deformity	-	-	2	5.0	2	5.0
Osteophyte Formation at tarsal joint space	2	5.0	1	2.5	3	7.5

Radiological changes in sacroiliac joint

There was a tendency for sacralization in 10 (83.4%) cases, out of 12 cases of involvement of sacro iliac joint and all cases (100%) showed sacroilitis. (Table 8)

Table 8: Radiological changes in sacroiliac joint

Parts	Male		Female		Total	
	No.	%	No.	%	No.	%
Sacralization	6	15	4	10	10	25.0
Sacroilitis	7	17.5	5	12.5	12	30.0

Radiological changes in cervical spine

Out of 2 patients showing radiological changes in cervical spine, both (100%) cases showed osteophytes formation. (Table 9)

Table 9: Radiological changes in cervical spine

Parts	Male		Female		Total	
	No.	%	No.	%	No.	%
Osteophyte Formation	-	-	2	5.0	2	5.0

Radiological changes in knee joint

Out of 4 patients showing radiological changes in knee joint, all (100%) cases showed osteophyte formation, subchondral sclerosis was present in two(50%) cases and loss of knee joint space was observed in 1 (2.5%) cases only. (Table 10)

Table 10: Radiological chages in knee joint

Parts	Male		Female		Total	
	No.	%	No.	%	No.	%
Loss of Joint Space	-	-	1	2.5	1	2.5
Osteophytes	1	2.5	3	7.5	4	10.0
Subchondral Sclerosis	1	2.5	1	2.5	2	5.0

Unusual findings in bones of different sites

Some unusual findings in bones of different sites were also observed in the present study of psoriatic arthropathy. Out of 40 patients, the commonest were cortical thickening obliterating the medullary cavity of metacarpals and metatarsals, found in 4 (10%) cases. Cyst formation in small bones of hand and feet were found in 3 (7.5%) cases while rectangularization of metacarpal bones of hand proximal phalynx of feet were found in 2 (5%) cases and cystic area above the roof of acetabulum was present in 1 (2.5%) case only (Table 11).

Table 11: Unusual findings in bones of different sites

Parts	Male		Female		Total	
	No.	%	No.	%	No.	%
Cortical thickening obliterating the medullary cavity of metacarpals and metatarsals	2	5.0	2	5.0	4	10.0
Cyst formation in small bones of hand and feet	2	5.0	1	2.5	3	7.5
Rectangularization of metacarpal bones of hand and proximal phalanx of foot	1	2.5	1	2.5	2	5.0
Cystic area above the roof of acetabulum	1	2.5	-	-	1	2.5

Unusual findings in joints of different sites.

Amongst the unusual findings in joints of different sites, out of 40 patients, the osteitis pubis were present in 1 (2.5%) case, osteitis condensans ilei in one (2.5%) case and Hallux Valgus deformity in 1 (2.5%) case only. (Table 12).

Table 12: Unsual findings in joints of different sites

Parts	Male		Female		Total	
	No.	%	No.	%	No.	%
Hallux Valgus	-	-	1	2.5	1	2.5
Osteitis Pubis	1	2.5	-	-	1	2.5
Osteitis condensens ilei	-	-	1	2.5	1	2.5

Routine examination of blood

Out of 40 patients, all patients showed normal hemoglobin and total leucocyte count however 6 (15%) cases had raised ESR. In 1 case the ESR was found raised related to pregnancy. (Table 13).

Table 13: Routine examination of blood

Name of Test	Male	Female	Total
Hemoglobin	Normal	Normal	Normal
Total Leucocyte Count	Normal	Normal	Normal
ESR (Raised)	3 (7.5%)	3(7.5%)	6(15%)

Biochemical tests

Out of 40 patients all patients showed normal serum uric acid level. Rheumatoid factor and the lupus erythematosus cell phenomenon was negative in all the cases. (Table 14).

Table 14: Biochemical Tests

Name of Test	Male	Female	Total
Serum Uric Acid	Normal	Normal	Normal
Rheumatoid Factor	Negative	Negative	Negative
Lupus Erythematosus cell phenomenon	Negative	Negative	Negative

Discussion

The idea of psoriatic – arthropathy as a separate entity as opposed to a variant to rheumatoid arthritis, is of relatively recent origin (Storm, 1921; Hench, 1927; Jeghers and Robinson, 1937) [1, 2, 3]. Acceptance of the concept of association between psoriasis and arthritis was, however, not universal, and notable opposition at this time can be seen in papers of Brocq (1910) [4], Margolis (1941) [5], and Gribble (1955) [6]. Even now there are some who remain skeptical about the association. In the present work, clinico – radiological and bio – chemical studies were carried out in 40 patients with psoriasis. Some of the patient's were also studied histopathologically, where required. Among the 40 patients with psoriasis, there were 25 (62.5%) males and 15(37.5%) females, out of these 12 patients comprising of 8 males and 4 females had arthropathy. (Table 1). A similar male preponderance in the ratio ranging from 1.7 : 1.0 to 2.7 : 1 has also been reported by Baker *et al* (1963) [7]. However, others (Moll & Wright 1973, Scarpa at el, 1984) [8] reported female preponderance.

12 (30%) out of 40 patients in the present study had arthropathic manifestations. The prevalence of arthropathic manifestations in psoriasis has been variably reported from 0.5% to 40 % in different studies (Wright 1981). The mean age of the patients was 39.52. It was 41.8 years for males and 37.2 years for females. The age range of patients was 12 to 75 years. The incidence of psoriatic arthropathy was found to increase with the age of the patient in both the sex. There are 4 patients with age 20 years or less but interestingly none of these patients developed arthropathy, the mean age of arthropathic group (12 patients) was 49.25 years, 9 (83.3%) out of these 12 patients of psoriatic arthropathy developed arthropathy after the age of 40 years. (Table 11). A similar high mean age of onset of 41 years in psoriatic arthritis as compared to 36 years in psoriasis, as seen in our study was also reported by Ray Chaudhary *et al* (1990), however Martel *et al* (1980), reported a higher incidence (42%) of psoriatic arthritis in patients of psoriasis of less than 40 years of age. The nature of onset of psoriatic arthropathy was insidious in 10 (83.3%) patients and acute in 2 (16.6%) out of 12 patients. A similar incidence rate of insidious onset of 63.3% and acute onset in 36.7% of cases is also reported by Ray Chaudhary *et al* (1990).

The skin lesions of psoriasis preceded arthritis in 10 (83.3%) cases while in 2 (16.6%) cases arthritis preceded the skin lesions. None of the patients had simultaneous onset of skin lesions and arthritis. (Table 3). Similar observation that arthritis antedates psoriatic skin lesion were also reported by Baker *et al* (1963) [7], Roberts *et al* (1976) and Ray Chaudhary *et al* (1990). The arthritis was found to be severe in patients with widespread involvement, pustular psoriasis and erythrodermic psoriasis. Lecizinaky (1948) and Scapra (1984) also found arthritis to be severe in patients with extensive skin lesions, however, Moll & Wright (1973) [8] and Ray Chaudhary *et al* (1990) found no distinctive pattern of dermal psoriasis in psoriatic arthritis. Nail changes in the form of pitting, discoloration, thickening, linear striations and subungal hyperkeratosis were present in 8 (66.6%) of the 12 patients with psoriatic arthropathy. A high incidence rate of 66% to 85% of nail involvement in psoriatic arthropathy is also reported by Robert *et al* (1976), Scarpa *et al* (1984), Ray Chaudhary *et al* (1990). The polyarticular type was the only form of presentation of psoriatic arthropathy. Malviya *et al* (1984), Scarpa *et al* (1984) and Ray Chaudhary *et al* (1990) also found polyarticular as the commonest form of psoriatic arthropathy. However, Moll & Wright (1973) [8] found 70 % of their patients had asymmetrical oligo arthritis. The small joints of the hands were involved in 11 (91.6%) cases, small joints of the feet were involved in 9 (75%) of the cases, sacro iliac joints were involved in 12 (100%) cases and cervical spine was involved in 2 (16.6%) cases. Larger joints were affected in only 4 (33.3%) cases. The findings of the present study with earlier observations (Baker *et al* 1963, Robert *et al* 1973, Ray Chaudhary *et al* 1990) [7] that psoriatic arthropathy affects both large and small joints but the small joints of hand and feet are predominantly involved holds true. Among the radiological changes in small joints of hand, a generalized reduction in distal

interphalangeal joint space and juxta – articular osteoporosis at distal interphalangeal joints was the most frequent observation, seen in 11 (91.6%) cases. Marginal erosions were present in 9 (75%) cases. These findings are in accordance with the previous studies conducted by Avila *et al* (1960) Sharma and Sepaha (1964) and Ray Chaudhary *et al* (1990), however, Martel *et al* (1980) reported a lower incidence rate of 27% involvement of distal interphalangeal joint in psoriatic arthropathy. Besides these, an area of sclerosis seen in 2nd 3rd and 4th proximal phalanx and terminal tufting was also observed in 42.5% and 15 % of our cases, respectively. Black (1979) also reported linear opacities along the shaft of proximal phalanx in some of his patients of psoriatic arthropathy. (Table 4 and 5). In small joints of the feet a generalized reduction in distal interphalangeal joint space again was the most frequent observation seen in all 9 (75%) cases out of the 12 cases of psoriatic arthropathy followed by the presence of marginal erosions observed in 6 (50%) cases. A similar observation of involvement of interphalangeal joints of feet in 70% cases of psoriatic arthropathy was also recorded by Martel *et al* (1980). (Table 7). The presence of calcaneal spur was present in 2 (16.6%) out of 12 cases of psoriatic arthropathy and in 3 (10.7%) patients of psoriasis without arthropathy. Martel *et al* (1980) in their study also concluded that calcaneal bone apposition was common in psoriatic arthropathy (Table6). The incidence of sacroiliac joint involvement in psoriatic arthropathy has been reported to vary from 14.2% to 86% (Killbrew *et al* 1973) in different studies. In the present study sacroiliitis was observed in 12 (100%) and sacralization was seen in 10 (83.3%) out of the total cases of psoriatic arthropathy. Wright 1961 also concluded that sacroiliitis was more common in psoriatic arthritis than in rheumatoid arthritis. (Table 8). Kaplan *et al* (1964) suggested that there is a specific cervical lesion associated with psoriasis with or without arthritis. Previous reports has shown that spondylitis can be detected in 10 - 36% of patients with psoriatic arthropathy (Baker *et al* 1963, Peterson and Silbiger 1967 and Sholkoff *et al* 1970) [7] in the form of syndesmophytes, atlantoaxial subluxation and apophyseal joint fusion were not present in any of our cases. (Table 9). Among the large joints of the body, the involvement of the shoulder, elbow, wrist, hip and knee joint has been reported in 8 % to 36% cases of psoriatic arthropathy by Roberts *et al* (1976) and Ray Chaudhary *et al* (1990). The involvement of knee joint in the form of osteophyte formation, sclerosis and reduced joint space was also present in 4 (33.3%) of our cases of psoriatic arthropathy, however, other bigger joints of the body were not found to be affected. (Table 10). Certain unusual radiological changes were also observed in bones of our patients of psoriasis such as cortical thickening in metacarpals and metatarsals. Cyst formations, and rectangularization of metacarpal bones of hands and proximal phalanx of foot. A cystic area above the roof of acetabulum was also observed in one of our case. The presence of cortical thickening and cyst formation is also reported by Black (1979) and Martel *et al* (1980) in patients of psoriatic Arthropathy. Besides these Hallux Valgus deformity in feet, osteitis pubis, osteitis condenses ilei were also present in one case each in our patients of psoriasis. We could not find these observations in any of the previously reported studies on psoriatic arthopathy. (Table 11 and 12).

Result

Out of 40 patients there were 25 males (62.5%) and 15 females (37.5%). Arthropathic changes in males were found in 8 (20%) cases and in 4 (10%) cases in females. The age of patients examined for arthropathic changes varied from 12 years to 75 years. The maximum incidence of psoriasis was found in the age group of 31 – 50 years. There were 20 (50%) patients of this age group and 5 (25%) patients showed arthropathic changes. The duration of the disease varied in different cases from 1 month to 20 years. The extent of involvement varied from occurrence of localized to discrete patches, to almost generalized involvement. The pattern of occurrence of psoriasis associated with arthropathy was different. Out of 12 cases in 10 (83.33%) cutaneous lesions appeared preceding the arthropathy, the duration of which ranged from one year to eight years. In 2 (16.66%) of the cases the arthropathic changes preceded the cutaneous lesion. None of the patients had simultaneous involvements of skin as well as joints. Out of 40 patients of psoriasis 30(75%) patients showed mild to moderately severe, predominantly discoid (Psoriasis Vulgaris) type of Psoriasis. 6(15%) patients had a more severe generalized exfoliative variety and 4 (10%) had pustular variety of psoriasis. In this study of 40 cases of psoriasis none of the patients showed subcutaneous nodules of rheumatoid type. No vascular lesions were seen. Out of 40 patients 11 (27.5%) patients had involvement of various small joints of the hands, 9 (22.5%) patients showed involvement of joints of feet, 12(30%) patients showed involvement of sacroiliac joints and 4 (10%) patients had involvement of the knee joints. Involvement of cervical spine was observed in only 2 (5%) cases.

Conclusion

It is concluded from the above study that nearly 30 % of patients having Psoriasis also suffer from Psoriatic Arthritis associated with different joint involvement of hands, feet, Sacroiliac Joints, Knee, Cervical spine and Hip joints. It is therefore essential to screen these patients having Psoriasis for any joint pain and joint stiffness to rule out psoriatic arthritis.

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